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As executives, analysts, engineers and stakeholders gather Oct. 8-11 in Hollywood, FL, for TITANIUM USA 2017 conference and exhibition, the tempo and status of the global aerospace industry, as usual, will be among the topics of discussion. It’s no secret that aerospace, especially the commercial sector, remains the bellwether for the titanium industry.

Moving into the fourth quarter of 2017, the consensus among industry observers is that, from a titanium perspective, the commercial aerospace industry had a relatively lackluster year in 2016, saw mild improvement this year, and is due for a stronger year in 2018.

Henry Seiner, vice president, business strategy for Timet (Titanium Metals Corp.), based in Toronto, OH, and the president of the International Titanium Association’s board of directors, said Timet believes that titanium mill product shipments to the commercial aircraft industry experienced low growth (less than 2 percent) during 2016, and due to strength surrounding the new engine platforms and political tailwinds, Timet is confident that industry volume growth in 2017 will exceed 5 percent.

“Indications for 2018 are positive, based upon build-rate confidence in both the single aisle and wide body (commercial aerospace) markets,” Seiner said. “Concern continues for the period beyond 2018 that build rates may be going too high, too fast as the original equipment manufacturers (OEMs) battle for market share supremacy supported by unprecedented backlog strength. Concern is that this could require a correction post-2018 or early in the next decade.”

Seiner, who oversees the marketing, product management, purchasing and production planning organizations for Timet, went on to say that the Boeing 787 and the Airbus A350-XWB lead the way in titanium consumption. “Due to titanium content higher than its competition and the volume of deliveries, the Boeing 737 is also a major consumption driver.”

Recently published data reveals that the Asian Pacific region is responsible for the most air traffic expansion, followed by Europe and North America, but that growth percentages in the Middle East have been highest in recent years, albeit from a low base, according to Seiner.

As for developments in defense aerospace business, Seiner said that although the Lockheed Martin F-35 fighter aircraft gets the most press, the resurgence of the F-15 and F18 are also significant consumers of titanium mill products.

Along with global aerospace industry trends, there is ongoing interest in new-alloy development and enhanced manufacturing technology methods for titanium, which will be required to meet increasing demands to reduce cost, strengthen the international supply chain, and meet more stringent demands for part strength and higher temperature resistance in next-generation jet engines.

“There are new titanium alloys at various points of commercialization. For the most part, these are evolutionary products,” according to Seiner, who is a keen observer of the international titanium supply chain. He remains confident that the existing industry infrastructure can keep pace with challenges associated with manufacturing technology and new alloys.

As for advances in manufacturing technology, Seiner said 3D/additive manufacturing is at a point in its cycle “where reality is setting in. What will follow is an extended period of hard work to develop and understand the process including improvement of design tools. There will be some successes and some failures. The
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The survey narrative has finally switched from “headwinds” associated with wide-body production cuts and next-generation engine start-up challenges to “tailwinds” attributed to the single-aisle commercial aircraft build rate adjustments and increased military/defense spending, according to Olin’s projections.

Of particular interest to the titanium industry, Olin’s survey included “takeaways” on the jet engine market and inventory levels. The report indicated that the jet engine market is showing surprising strength during this year’s third quarter. “For the first time in two to three years, we highlight broad-based purchase activity across all major OEMs, including GE-CFM, Pratt & Whitney, and Rolls-Royce. Many early-cycle tier-4 company contacts reported sequential revenue acceleration, primarily driven by the production ramps on new engine models.”

Olin sees steady inventory levels building across all tiers of the supply chain. “A net-40 percent of industry contacts communicated a need to build finished or work-in-progress inventories over the next two to three months. This represents three consecutive quarters of aggressive warehouse management, which tends to be a bullish leading indicator for the peer group.” Olin said that the full-year revenue targets for 2017 (a plus 7-8 percent) and 2018 (a plus 8-9 percent) will support procurement strategies.

The ‘Super Cycle’ Keeps on Spinning

Richard L. Aboulafia, vice president of aviation analyst at the Teal Group, Fairfax, VA, said the titanium industry continues to benefit from the commercial aerospace sector’s “super cycle” of good business, which began in 2004. Aboulafia said that, going back to the 1950s, the aerospace industry typically would experience seven “good years” followed by three “bad years.” However, the current aerospace super cycle has lasted more than a dozen years, even taking into account the relatively tepid performance of 2017 and 2016. He projected commercial aerospace would see a modest uptick in 2018, driven by continued strong growth in air traffic, especially in the Asian market.

He said titanium continues to benefit from its use on the Boeing 787 and Airbus A350 XWB jet platforms. However, in a separate area of business, the two aerospace giants have experienced some delays—mostly due to transitioning to new engine designs—in the rollout of their next-generation Boeing 737 MAX and Airbus A320neo, according to Aboulafia.

Much like Aboulafia, Glenn McDonald, a senior associate with AeroDynamic Advisory LLC, an aerospace consulting firm based in Ann Arbor, MI, is generally upbeat about aerospace business conditions and jet production moving in 2018. Offering one caveat on this outlook, Mc-
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Donald and other industry observers have detected some weakness among the Middle East “Big Three” airlines (Emirates, Etihad, and Qatar) regarding orders for wide-body commercial jets. But overall he expressed confidence in the success of Boeing’s twin-aisle 777X. “We show the 777X eventually getting up to 120 units per year by the early/mid-2020s, assuming an on-time ramp-up,” he said.

Tom Captain, vice chairman, Deloitte U.S. and Deloitte Global Aerospace and Defense sector leader, Deloitte LLP, New York, contacted in late August, confirmed the summary of his organization’s “2017 Aerospace and Defense Outlook,” which was published last February in The Wall Street Journal. According to the Deloitte outlook, investments in emerging technologies will be one of several factors bolstering growth in the global aerospace and defense sector this year and next.

“The global aerospace and defense sector is likely to experience stronger growth in 2017 after multiple positive but subdued years. Deloitte forecasts sector revenues will grow by about 2 percent in 2017. Stable global gross domestic product (GDP) growth, relatively lower prices for commodities including crude oil, and strong passenger travel demand, especially in the Middle East and Asia-Pacific regions, will likely drive commercial aerospace subsector growth. Strong global airline passenger traffic and improved global airline profits, primarily due to lower fuel costs, may drive increased large commercial aircraft production and, in turn, commercial aerospace revenues in 2017 and 2018.

“On the defense side, resurgence of global security threats, anticipated increases in U.S. defense budgets and higher defense spending from other major regional powers such as Japan and India, will likely promote global defense subsector revenue growth in the near future,” the report continued. “In addition to boosting the number of troops, the U.S. military will likely add aircraft and ships, which will drive revenue growth at defense prime contractors over the next few years.”

As for emerging technologies in the aerospace sector, Deloitte also took note of recent advances in additive manufacturing. “Beyond prototyping, leading aerospace and defense companies are now using additive manufacturing/3D printing technology to design and produce a range of products, from complex engine and wing components to relatively simple yet customized parts such as armrests and food trays.”

Citing feedback from aerospace industry analysts, the Times report indicated that “high production rates created a glut of large jets, and the drop in oil prices has reduced business travel to and from the Middle East, where carriers like Emirates Airlines, Etihad Airways and Qatar Airways have been among the biggest buyers of 777s and A380s.”

The Times reported Boeing and Airbus are developing slightly larger versions of the Dreamliner and the A350, and that Boeing is developing more fuel-efficient versions of the 777, to seat 350 to 425 people, which will not be ready before 2020. “These new planes are blurring the lines in the traditional sizes of wide-body planes, and some airlines are holding back on orders to get the latest technology on the new 777.”

The New York Times, in its coverage of the Paris Air Show, published on June 18, reported that “as one of the longest upswings in sales in aviation history falters, Boeing has been forced to cut production of its giant 777 and 747-8 jets. And
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Additive Manufacturing Progress Continues To Fuel Interest And Investments In The Aerospace Industry

By Michael C. Gabriele

3D additive manufacturing continues to capture the imagination of the titanium industry as a production technology of the future, and recent announcements continue to fuel that interest as well as attract significant levels of capital investment.

In recent months several milestone programs have marked the evolution of additive manufacturing. Titanium executives along with their colleagues and customers in key business sectors, especially the aerospace industry, continue to weigh the question of whether these achievements—along with other related business developments and technological advances in materials and equipment—add up to a serious inflection point for this much-touted production technology. No doubt the scrutiny will continue and additive manufacturing will be a popular topic of discussion at TITANIUM USA 2017.

Earlier this year, a variety of statements reported by online business news sites and Business Wire indicated that Norsk Titanium is supplying structural titanium aerospace components via the additive manufacturing process for the Boeing 787 Dreamliner. Norsk is producing the parts at its Plattsburgh, NY facility via a fleet of 20 MERKE IV™ Rapid Plasma Deposition™ machines. Norsk declined to provide details on the project in press reports, saying only that the parts offer “structural support for internal elements” near the rear of the cabin. In addition, there was no word on the number of parts being produced or when the parts would begin flying on Boeing’s Dreamliner.

Last year reports described the program as a partnership between Norsk, the State of New York and SUNY Polytechnic Institute, with Norsk planning to invest $1 billion in the Plattsburgh facility during the next 10 years and ramp up to 40 MERKE machines. As for the additive manufacturing technology being employed at Plattsburgh, Norsk officials said Rapid Plasma Deposition process utilizes two plasma torches to preheat the substrate or prior layer, and then melt the titanium wire quickly and precisely. The process, which uses wire as the feedstock, takes place in an argon environment similar to tungsten inert gas (TIG) welding. Norsk is said to be developing a system combining additive manufacturing with a forging process.

Last July Pittsburgh-based Allegheny Technologies Inc. (ATI) formed a joint venture with GE Aviation to “develop a meltless titanium alloy powder manufacturing technology to be used in 3-D printing and other additive manufacturing applications.” The announcement, published online via Business Wire and picked up by various news websites, indicated the joint venture will construct a new research and development pilot production facility.

The release from the two companies didn’t provide details on the pilot production facility and didn’t spell out the terms of the joint venture. The statement did say that ATI “will provide operational, technical, and project support to the joint venture. The joint venture will leverage ATI’s technology, manufacturing, and quality leadership in the production of specialty metal powders and premium-quality titanium and nickel-based alloys for critical and technically advanced applications. The joint venture will also draw upon GE Aviation’s engineering and development capabilities and technical knowledge of the use of alloyed titanium powders.”

GE Aviation, headquartered in Evendale, OH, is an operating unit of General Electric Co. and provides jet and turboprop engines, components and systems for aircraft.

The announcement of the joint venture included a prepared statement from Rich Harshman, ATI chairman, president and chief executive officer. “We are pleased to join with GE Aviation to create this innovative next-generation technology joint venture. The science of specialty metal powders is a transformative technology, and we intend to maintain and enhance our industry-leading position.”

Earlier this year at the Paris Air Show, British tier-one aerospace manufacturer GKN Aerospace and the U.S. Department of Energy’s Oak Ridge National Laboratory (ORNL) signed a five-year, $17.8-million cooperative agreement on additive manufacturing research and development. According to reports, the partnership involves using the Department of Energy’s Manufacturing Demonstration Facility at Oak Ridge as the site to test and develop a family of additive manufacturing processes.

Research and development efforts in this alliance will focus on two technologies. The first, laser metal deposition with wire (LMD-w), is an additive manufacturing technique that builds metal structures by using a laser to melt metal wire into beads onto a substrate layer by layer. The goal is to create a prototype production system that will manufacture complex medium- and large-scale aircraft structures in titanium. The second will be on electron beam melting (EBM), a process that can produce precise, complex small- to medium-sized components. A metal powder is melted with an electron beam, building up the component layer by layer.

In separate development at the Paris Air Show, GE, in its online “GE Reports” website, touted progress from its GE Additive business unit, which is “dedicated to supplying 3D printers, materials and engineering consulting services, announced today it is developing the world’s largest laser-powered 3D printer that prints parts from metal powder.”

The GE Reports article, quoting Moham-
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Additive Manufacturing Progress Continues To Fuel Interest And Investments In The Aerospace Industry (continued)

Additive manufacturing continues to fuel interest and investments in the aerospace industry. GE Additive, the vice president and general manager of GE Additive, said the company’s 3D technology can “print aviation parts suitable for making jet engine structural components and parts for single-aisle aircraft. It will also be applicable for manufacturers in the automotive, power, and oil and gas industries.” Ehteshami said the additive machines fuse fine layers of powdered metal with a laser and print three-dimensional objects directly from a computer file.

GE also said it continues to move forward with the production of 3D fuel nozzles for LEAP jet engines at its Auburn, AL, installation. The fuel nozzles are used on engines produced by CFM, a joint company between GE and Safran Aircraft Engines of France. LEAP engines are used for the Airbus A320neo commercial jets.

Last year Alcoa entered into an agreement with Airbus to supply 3D-printed titanium fuselage and engine pylon components for Airbus commercial aircraft. Press reports at the time said the agreement would draw on technologies that Alcoa gained through the acquisition of RTI.

ITA Lauds James Paddock for ‘Titanium Lifetime Achievement’ Citing his Leadership in Titanium’s Global Supply Chain

Paddock, who has spent more than 40 years in the industry, is best known for his leadership of Titanium Industries Inc., a global supplier of specialty metals for the aerospace, industrial, medical and energy markets. Founded in 1972, Titanium Industries operates in Rockaway, NJ, as well as facilities and sales offices around the world. Paddock’s son Brett, the current president and chief executive officer of Titanium Industries, is a former president of the ITA’s board of directors.

Thomas Deming, manager of safety, security and compliance for Titanium Industries, wrote in his nomination form that “through his innovation and foresight, Jim Paddock pioneered titanium distribution and significantly impacted the development of the overall titanium industry.”

Deming recalled that Paddock, throughout the early years of his career, doing business with major producers of titanium parts, “was relentlessly focused” on quality and material traceability. “Jim believed there was a need for a global sales force to promote and educate companies on the advantages of titanium and understood that small businesses and startups could not afford the risk and cost of holding inventory while growing their businesses but also needed material quickly and economically,” Deming continued. “For these reasons, Jim implemented the concept of having multiple global facilities, inventory, and expertise in close proximity to the global customer base; a new concept to the titanium industry, which allowed these emerging markets and customers much greater access to their specific titanium product needs.”

“IT’s a tremendous honor to have been chosen for this award,” Paddock said. “The titanium industry has certainly provided a challenging and rewarding career for me, and I’m honored to have worked with so many talented and dedicated people during my time in the industry. I look forward to attending TITANIUM USA and honoring many of those great relationships that made this award possible for me.”

ITA leadership will present Paddock with the award at the TITANIUM USA 2017 conference and exhibition, which will be held October 8-11th in Hollywood, Florida.

“IT’s a tremendous honor to have been chosen for this award,” Paddock said. “The titanium industry has certainly provided a challenging and rewarding career for me, and I’m honored to have worked with so many talented and dedicated people during my time in the industry. I look forward to attending TITANIUM USA and honoring many of those great relationships that made this award possible for me.”

Perryman credited Paddock’s stewardship with sustaining the International Titanium Association during its early years. “In the late 1980s, the then-called Titanium Development Association was on the verge of failure. Mr. Paddock saw the need for an association that focused on the use and promotion of titanium. Titanium Industries was one of the members who offered to loan the association the funds to continue through the hard period. This led to the formation of the International Titanium Association.”

Established in 1984, the ITA’s (website: www.titanium.org) membership includes over 200 organizations and 1,500 individual members.
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Global Titanium Industry Weighs News From Developments At Paris Air Show

By Michael C. Gabriele

(Note: the following article on news from the 2017 Paris Air Show, which ran June 17-23, contains information originally gathered by online show-daily reports published by SAP Media Worldwide Ltd., Mumbai, India, as well as follow-up material from other industry sources and media outlets.)

Additive Manufacturing Alliance
British tier-one aerospace manufacturer GKN Aerospace and the U.S. Department of Energy’s Oak Ridge National Laboratory (ORNL) have signed a five-year, $17.8-million cooperative agreement on additive manufacturing research and development. The announcement, initially made at the Paris Air Show, received additional coverage from a variety of online media sources.

Additive manufacturing continues to attract attention in all corners of the global titanium industry as a technology with the potential to streamline and reduce production costs for aerospace and other markets. According to reports, the partnership will support work already in progress, aiming to make this process ready for introduction into full-scale, high-volume aerospace production. The Department of Energy’s Manufacturing Demonstration Facility at Oak Ridge will serve as the site to test and develop a family of additive manufacturing processes, which will support “progress towards their use in the manufacture of major, structural components for aircraft.”

Research and development efforts will focus on two technologies. The first, laser metal deposition with wire (LMD-w), is an additive manufacturing technique that builds metal structures by using a laser to melt metal wire into beads onto a substrate layer by layer. The goal is to create a prototype production system that will manufacture complex medium- and large-scale aircraft structures in titanium. The second focus will be on electron beam melting (EBM), a process that can produce precise, complex small- to medium-sized components. A metal powder is melted with an electron beam, building up the component layer by layer.

Mike Grunza, the chief executive officer of GKN, quoted in various online articles, said additive manufacturing processes “could cut material waste by as much as 90 percent and manufacturing times by around 50 percent and will unlock new manufacturing horizons, allowing us to create complex components with no performance compromise.”

Based in Redditch, UK, GKN Aerospace is a global tier-one supplier of airframe and engine structures, landing gear, electrical interconnection systems, and aftermarket services. It supplies products and services to a wide range of commercial and military aircraft and engine prime contractors, and other tier-one suppliers. GKN Aerospace has 55 manufacturing locations in 14 countries around the world.

In a separate development announced at the Paris Air Show, GKN Aerospace signed a multi-million dollar, long-term agreement with Kawasaki Heavy Industries (KHI) to supply low-pressure compressor (LPC) vanes for the PW1100GJM and PW1400G-JM Pure Power Geared Turbofan (GTF) engines. The contract covers the planned production period for this program through the year 2027. Production of these compressor parts takes place at GKN’s Aerospace Engine Systems (AES) facilities in Newington, CT, which is equipped to manufacture these aluminum and titanium parts.

Winkelmann Facility in Alabama
Winkelmann Group, Ahlen, Germany, a high-tech manufacturer serving the aerospace, energy and defense industries, said it would invest $12 million to establish a manufacturing facility in Auburn, AL, a metal-forming operation that will produce titanium and high-strength steel thin-wall, “rotosymmetrical” parts.

The new facility, expected to have 50 employees, will be known as Winkelmann Flowform Technology LP. While Winkelmann’s plans were rolled out at the Paris Air Show, numerous online media outlets in Alabama and elsewhere also picked up on the announcement.

Chief Executive Officer Heinrich Winkelmann said the Auburn installation would serve the aerospace, defense, automotive and oil and gas industries in the United States. Winkelmann officials, contacted via email, said Winkelmann Flowform expects to ramp up full production in Auburn by early next year. One online media outlet reported Winkelmann, in June, began equipment installation at the former site of Cumberland Plastic Systems, which is where Winkelmann Flowform will be located.
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Another online media outlet quoted Alabama Governor Kay Ellen Ivey, who said Winkelman’s choice of Auburn opens the doors for the potential collaboration with Auburn University. The university’s Samuel Ginn College of Engineering has 6,000 students and is considered one of the top engineering programs in the United States.

Information posted on the Winkelmann-Flowforming website (https://winkelmann-flowforming.us) indicated that the range of aerospace components it manufactures includes seamless cones, housings and nozzles of titanium, niobium, tantalum, Inconel and other heat-resilient materials are produced via conic flow-forming or “shear-forming,” and helicopter tail rotor drive shafts made of titanium, stainless steel or aluminum. Other product lines for the oil and gas industry include titanium tubes and pump components, also produced using the flow-form process.

India as an Aerospace Hub
Several announcements at the Paris Air Show underlined India’s efforts to tout itself as an emerging hub for the global aerospace industry. Given its strategic location as a democracy in the Asian subcontinent, with a population of 1.3 billion people, India has demonstrated its industrial capabilities in recent years (especially in steel production), with a growing interest in the global titanium market. Speakers at the TITANIUM USA 2014 conference and exhibition held in Chicago discussed strides made by India at a titanium sponge production facility in at Kerala Minerals and Metals Ltd. (KMML), with a production capacity of 500 metric tons per year, with the capability to scale up to 1,000 metric tons.

Representatives of the Mission Aerospace Foundation of India (Aerofi) and the Society of Indian Aerospace Technologies and Industries (SIATI), in an announcement at the Paris Air Show, said they are working to “provide a common platform for global aerospace companies to interface with the Indian aerospace industry.” Dr. C.G. Krishnadas Nair, SIATI president, said he hoped that the global aerospace community would cooperate with India on various levels for a deeper and higher engagement.

Global Titanium Industry Weighs News From Developments At Paris Air Show (continued)

An article by AIN online, reporting from the Paris Air Show, tracked the progress of Indian subcontractor Aequs Aerospace. AIN reported that Aequs, two years ago, became the first Indian aerospace manufacturing company to expand into North America when it acquired Paris, TX-based machined parts and assemblies company T&K Machine, now known as Aequs Aero Machine. The company specializes in three-, four- and five-axis precision detail work for aerospace components for customers such as Boeing and Bell Helicopter.

In another move involving the Indian aerospace sector, Bombardier Commercial Aircraft signed a letter of intent with the Indian carrier SpiceJet for up to 50 Q400 turboprop airliners, an order estimated at up to $1.7 billion. SpiceJet operates India’s largest regional fleet. The airline currently operates 20 Q400 aircraft in a 78-seat configuration to domestic and international destinations. When concluded, this fleet expansion will provide SpiceJet the ability to grow profitably and leverage the robust demand forecast in the world’s fastest-growing regional aviation market, according to the show report.

Boeing has raised its forecast for new airplane demand, projecting the need for 41,030 new airplanes over the next 20 years valued at $6.1 trillion dollars. Dr. Dinesh A. Keskar, senior vice president, sales, Asia Pacific and India for Boeing Commercial Airplanes, said 14 percent of the world market for commercial jets will be in Asia, with Boeing estimating
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16,000 airplane deliveries for the Asia market during that two-decade span.

Trends in Military Expenditures
The Stockholm International Peace Research Institute (SIPRI), providing updated figures from a previous report, estimated that total world military expenditures reached $1.7 trillion in 2016, an increase of 0.4 percent over 2015 levels. The United States has the highest annual military expenditure in the world, with spending reaching $611 billion in 2016, up 1.7 percent from 2015. Military expenditures by China rose 5.4 percent to $215 billion in 2016. Russia increased its spending by 5.9 per cent in 2016 to $69.2 billion, while spending by Saudi Arabia fell by 30 percent in 2016 to $63.7 billion, despite its continued involvement in regional wars. India’s military expenditure grew by 8.5 per cent in 2016 to $55.9 billion.

SIPRI (website: www.sipri.org) is an independent, international institute dedicated to research into conflict, armaments, arms control and disarmament. Established in 1966, SIPRI provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.

Aerospace Outlook Forecasts
Deloitte Touche Tohmatsu Ltd., the professional services group based in New York, expects the global aerospace and defense industry is likely to experience stronger growth in 2017. Following multiple years of positive but a subdued rate of growth, the report forecasts aerospace revenues will likely grow by about 2 percent in 2017.

However, considering the anticipated growth, Deloitte Touche noted there are questions regarding the impact on the supply chain.

According to a Deloitte report, total global demand for new commercial aircraft production over the next 20 years is estimated to be 35,155 aircraft (excluding regional jets). The report indicated that an increase in travel demand “has been primarily driven by global demographics and wealth creation in Asia and the Middle East, resulting in a significant order increase for new aircrafts.” Using a seven-year moving average, production levels have increased 120.5 percent since 1996. Over the next decade, commercial aircraft annual production levels are anticipated to increase an estimated 29.3 percent.

The Accenture Commercial Aerospace Insight Report offered similar findings regarding a forecast for global aerospace business trends. “We’re seeing 2016 will be flat compared to 2015, and 2017 will be up 2.3 percent over 2016,” Jeffrey Wheless, global lead for aerospace and defense industry research for professional services company Accenture.

The Accenture outlook uses econometric data and surveys of executives throughout the supply chain for insights on future supply and demand. The two dominant global aerospace giants, Airbus and Boeing, have indicated production rate increases will occur in 2017 and 2018. Airbus’ A320neo is likely to ramp up production in 2017, while Boeing estimates that the production rate of its 737 will rise from 42 per month currently to 47 per month in 2017 and 52 per month in 2018.
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Invitation to Titanium Industry to Participate

As a professional in the titanium industry, you have a wealth of information and wisdom to share with students, and the ability to encourage them by your own example. We invite you to consider coming to our first TITANIUM on Tap networking event to help participating students explore possible career paths.

Sunday, October 8, 2017
7:30 - 9:00 pm
Diplomat Resort & Spa, 3555 South Ocean Drive
Hollywood, Florida 33019

This is a hybrid event bringing together students, human resource professionals and employers for networking, recruiting and industry education. The format for this new event is less formal than a traditional career fair and will include industry-specific chat areas and “hubs” assigned to each organization. All Employers from ITA Member organizations are invited to participate.

The STEM Meetup is a career education event bringing together undergraduate and graduate students from all STEM majors with alumni and professionals from various industries. This event has been created in response to students’ desire to explore broad career possibilities and learn about different organizations and industries. ITA Members and other professionals interested in connecting with students will also gain insights on what students are studying and their career aspirations through one-on-one and small group conversations.

To learn more about lending your expertise at the networking reception, please email Jennifer Simpson (jsimpson@titanium.org) or call ITA at 303-404-2221.
The following chart provides a quick overview of the features and advantages of TFC's coating processes:

<table>
<thead>
<tr>
<th>substrates</th>
<th>advantages</th>
<th>benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>Stable base for other coatings &amp; adhesive bonding; appearance; color coding</td>
<td>Prevents fretting &amp; galling</td>
</tr>
<tr>
<td>Titanium Alloys</td>
<td></td>
<td>Natural, reproducible colors</td>
</tr>
<tr>
<td>Aluminum</td>
<td>Non-toxic; Non-hazardous; Nonpolluting</td>
<td>Corrosion-resistance</td>
</tr>
<tr>
<td>Steel</td>
<td></td>
<td>No hydrogen embrittlement</td>
</tr>
<tr>
<td>Alloys</td>
<td></td>
<td>High operating temperature (1100°F)</td>
</tr>
<tr>
<td>Titanium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>Hardness; eliminates burning &amp; dissolution of parts</td>
<td>Allows aluminum application where wear, corrosion or other factors would otherwise exclude its use</td>
</tr>
<tr>
<td>Aluminum Alloys</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Titanium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtually all metals</td>
<td>Automatic &amp; manual application; TFC processes comply with a variety of mil specs; combines with other coatings</td>
<td>Provides excellent lubricity; improves corrosion resistance</td>
</tr>
</tbody>
</table>

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[TITANIUM FINISHING COMPANY]

[TITANIUM FINISHING COMPANY]
The 3868 Carbide Triple Set “Xtra” TSX Bandsaw Blade from Bahco is engineered to be versatile in cutting materials well on both vertical and horizontal bandsaw machines.

The 3868 Carbide Triple Set “Xtra” is a triple chip tooth design blade with a positive 10° rake angle, which is ideal for providing smooth, high-efficiency precise cuts on titanium and other difficult and abrasive materials. The advantage of a set blade is that it is much more forgiving in less stable machines compared to unset blades.

The 3868 Carbide Triple Set “Xtra” is versatile to run on both horizontal and vertical bandsaw machines to increase productivity while reducing users’ cost per cut. The grind of the carbide and set tooth design helps the 3868 Carbide Triple Set “Xtra” reduce vibration, especially on vertical cutting applications that tend to produce added vibration.

Features and benefits of the 3868 Carbide Triple Set “Xtra” TSX Bandsaw Blade from Bahco include:

- Exact same blade as Bahco’s Triple Set Stainless (TSS), except not honed, making it perfect for applications where a sharp blade is needed
- Triple set tooth design and good kerf clearance help eliminate tooth loss
- Perfect for cutting, titanium alloys, graphite alloy, aluminum with high silicon or matrix alloys
- Greatly improved blade life

For more information about Bahco and the 3868 Carbide Triple Set “Xtra” TSX Bandsaw Blade, call 800.446.7404, visit www.snaponindustrialbrands.com or email industrialbrands@snapon.com.
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Ural Boeing Manufacturing has become a resident of Special Economic Zone “Titanium valley”

Aerospace giant Boeing Corp. and the biggest producer of titanium components for aerospace industry Corporation VSMPO – AVISMA officially announced that their joint venture – Ural Boeing Manufacturing - has become a resident of the Special Economic Zone “Titanium valley”. Being a resident of Special Economic Zone “Titanium valley” UBM will be able to reduce costs for organization of manufacturing due to specific tax exemptions and preferences.

Vice- Minister of economic Development of Russian Federation Alexander Tsibulskiy officially presented the certificate of resident to CEO Corporation VSMPO-AVISMA Mikhail Voevodin and President of Boeing Russia and CIS Sergey Kravchenko. Governor of the Sverdlovsk Region Evgeniy Kujvashev and CEO Special Economic Zone “Titanium valley” Artemiy Kyzlasov joint the ceremony.

The new factory will focus on machining of titanium stampings for landing gears for all Boeing commercial Aircrafts including new models 737 MAX, 787 and even 777X, which will be produced since 2017. UBM will employ 100 people.

In December 2016 Boeing Corp. and Corporation VSMPO-AVISMA officially announced enlarging of their 50:50 co-production – Ural Boeing Manufacturing, which was created in 2009. The second stage of a factory is now being constructed at the territory of the Special Economic Zone “Titanium valley”. The total square is 19,5 thousand m2. The factory will come to operation in 2018.

Sergey Kravchenko, President of Boeing Russia and CIS:
“This fact demonstrates strengthening of the strategic partnership of Boeing and VSMPO-AVISMA Corp. with the support of regional and federal authorities as well. UBM as a resident of the Special Economic Zone “Titanium valley” gives us new opportunities for developing our business in the Ural region”.

Mikhail Voevodin, CEO Corporation VSMPO-AVISMA:
“Joint-venture Ural Boeing Manufacturing has proven its efficiency and robustness. Construction of the new facility at the territory of the Special Economic Zone “Titanium valley” is the next step in our partnership. I am sure cooperation of VSMPO-AVISMA Corp. and Boeing corp. will gain momentum”.

Artemiy Kyzlasov, CEO “Special Economic Zone “Titanium valley”:
“UBM is an anchor resident of the Special Economic Zone “Titanium valley” and drives the industrial specialization of the platform. First of all the main task of SEZ “Titanium valley” is enlarging production of components with the use of titanium alloys. Secondly, creation of a joint venture of Corporation VSMPO-AVISMA and Boeing Corp. at the territory of the SEZ “Titanium valley” might be a starting point, a signal for other international companies to consider SEZ “Titanium valley” as an industrial platform for placing the production and effective business with minimal risks”.

Ural Boeing Manufacturing has become 12th resident of the Special Economic Zone “Titanium valley”. Corporation VSMPO-AVISMA is a partner and a supplier of titanium raw material components for Boeing since 1997. Currently Boeing Commercial Airplanes buys over 35 % of titanium form VSMPO-AVISMA. According to a 30 years long program of partnership of Boeing and VSMPO-AVISMA signed in 1990, Boeing intends to spend 18 bln. $ for organization of titanium raw materials and components supply.
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AccuFit Solutions, Inc. is scheduling private DEMO’s of our newest version 3D Planning Software at the ITA Titanium Convention in Miami, FL on October 8th---11th in Booth #207. Please contact AccuFit Solutions, Inc. to schedule a one hour block of time during the convention.

If you have any questions, or require additional information, please let me know. I look forward to meeting you in person.

Keith Pollan - President AccuFit Solutions, Inc. 23986 Aliso Creek Road #347 Laguna Niguel, CA 92677 Kpollan@AccuFitSolutions.com (949) 370-1363
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From the Wire

Solar Atmospheres of Western PA Adds A New Climate Controlled Room

After surviving one of the hottest and most humid summer seasons on record, Solar Atmospheres of Western PA decided to construct a climate-controlled environment for the daily operation of its brand new all-metal hot zoned vacuum furnace. The critical climate within this room is controlled utilizing a high quality HVAC system and is equipped with dehumidifiers and customizable thermostats. A heavy duty insulation package was installed, which ultimately helps to manage and stabilize temperature and humidity around the clock. The space also was constructed to produce a slight positive pressure environment, which will help eliminate dust and debris from entering the set-up and fixturing areas.

Kevin Bekelja, Vice President of Operations, states, “With the new third party accreditation programs such as MedAccred gaining momentum, and knowing how detrimental high levels of humidity can be in the vacuum thermal processing of certain critical materials, we believe this venture is well worth the investment.”

Both medical and aerospace contractors are continuing to demand that environmental conditions be controlled, processes validated, and the risk of foreign object debris (FOD) be totally eliminated. This newly constructed environmentally controlled room will enable Solar Atmospheres of Western PA to pristinely thermally process critical components, which in turn will add even more value to the customer’s operations.

For additional information about Solar Atmospheres of Western PA, contact Mike Johnson at 866.982.0660, ext. 2223, or mike@solarwpa.com, and visit www.solaratm.com.
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International Titanium Association (ITA), has issued a “Call for Papers” to be presented at the first TITANIUM ASIA 2018, to be held 4-5th February 2018 at the Grand Hyatt Singapore located at 10 Scotts Road, Singapore.

“It was a natural progression for the International Titanium Association” stated Jennifer Simpson, executive director of the ITA, “We have successfully hosted the US Conference which is now comprised of nearly 1,000 titanium related professionals annually; ITA has had a regular delegation of 400 in Europe since 2013; and now ITA has selected Singapore as our first venue for the TITANIUM ASIA event”. TITANIUM ASIA will be held the day before the Singapore Air Show officially starts and ITA will offer roundtrip transportation to and from the Singapore Air Show included with conference registration.

TITANIUM ASIA 2018 is organized and hosted by the International Titanium Association (ITA), the titanium metal global trade association representing the World’s Primary Titanium Metal Producers who together account for over 90% of worldwide titanium production. ITA provides a forum for the exchange of ideas within the industry and educates the public on every aspect of using titanium metal within their design. ITA is comprised of over 200 member organizations representing North America, Europe, Asia and Australia.

The Call for Papers Deadline is December 31, 2017.

ITA is seeking technical papers on the topics of Commercial Aerospace; Industrial markets, specifically topics of waste water treatment, seawater cooling, seawater corrosion, power generation and gas processing and oil refining; Land Based Military Applications; and Titanium melting technologies. Abstracts from ITA Members, Non-Members and Academia are encouraged and welcomed. Abstract submission guidelines are located at www.TitaniumAsia.org.

ITA Board of Directors include Henry S. Seiner, Vice President – Business Strategy - TIMET, Titanium Metals Corporation; Donald E. Larsen, Vice President Technology and R&D, General Manager of Advanced Manufacturing - Arconic Manufacturing; Wade Leach, Senior Vice President, Commercial - ATI Specialty Materials; Dawne S. Hickton, Former CEO RTI International Metals, Inc.; Prof. Markus Holz, President, AMG’s Engineering Systems and Division CEO, ALD Vacuum Technologies GmbH; Brian J. Malloy, Vice President and Chief Commercial Officer - Carpenter Technology Corporation; Michael G. Metz, President - VSMPO Tirus US; Edward J. Newman, Senior Vice President - United Alloys & Metals, Inc.; Brett S. Paddock, President & CEO - T.I. (Titanium Industries, Inc.); Frank L. Perryman, President and Chief Executive Officer - Perryman Company; Edward Sobota, Jr., President - TSI Titanium; Michael Stitzlein, President - Tricor Metals; Graham P. Walker, Vice President, Sales and Marketing - AMETEK – Reading Alloys; Brian

United Performance Metals Expands Slitting/Edging Operations

United Performance Metals (UPM) announced the relocation of additional slitting and added edging operations to its west coast branch in La Mirada, California as well as the addition of a new edging line in the Hamilton, Ohio headquarters.

The Ohio headquarters installed new edging equipment, while the existing Ohio edging line and 12” slitting equipment have been transferred to the California branch. This allows for slitting and edging capabilities in both facilities.

“The additional edging capability in our West Coast facility compliments the current slitting operations in that branch. Having edging capacity in multiple locations allows us to offer our customers shorter lead times and faster delivery, regardless of our customer’s geographic location,” remarked JJ Johnson, Director of Operations for the company.

“Edging lines are capable of delivering a #1 round or #5 partial or full square skived edge,” Operations Manager, Roger Haire commented. “Our edging equipment can also be customized to minimize camber for customers who require the tightest tolerance. 2R and 3R groove inserts are also available.”
Our specialty is metal conditioning, utilizing customized systems that are built to the individual needs of steel mills, forge shops, and titanium producers. The capability to grind any size or shape within the limits of the horizontal and vertical travel of the grinding head, combined with our cantilevered boom arrangement, provide the flexibility required for job shop operations without sacrificing the productivity necessary for high-tonnage applications. Please visit our website for more information on all Mid-West Machine™ equipment, or contact us today and get more specifications on how the 6840T could benefit your operation.
Laboratory Testing Inc. Acquires Fracture Technology Associates

Laboratory Testing Inc. (LTI) is happy to announce the acquisition of Fracture Technology Associates (FTA) of Bethlehem, PA. Both FTA and LTI have been in the materials testing business for over thirty years. FTA is a commercial, independent testing laboratory that has provided Fracture Mechanics Testing Services and tailored software systems to a wide variety of commercial, government and university labs. Laboratory Testing is an independent, full-service Materials Testing, Non-destructive Testing and Metrology Lab serving a wide-range of industries, including aerospace, power, medical, military and commercial.

FTA was owned and operated by J. Keith Donald, an internationally-recognized expert with over 40 years of experience in the field of experimental fracture mechanics. The company has performed Fracture Mechanics Testing, including Fatigue Crack Growth Rate Testing (FCGR) to ASTM E647 and non-linear Fracture Toughness Testing (NLFT) to ASTM E1820 and E1921. FTA also provided all of the software and data acquisition hardware required for customers to run their own FCGR and NLFT tests.

Laboratory Testing Inc. began as a Non-destructive Testing Lab in 1984 with twenty employees housed in a 30,000 sq. ft. shop and office. Since then, the Lab has grown into many complementary lines of business with 175 employees and 102,000 sq. ft. of building space. The business is family run by some of the children and grandchildren of the founder, Robert W. McVaugh, Sr.

LTI is highly experienced in Fracture Mechanics, with its own Department that provides NADCAP and A2LA accredited Fatigue Crack Growth and Fracture Toughness Testing. The Lab is also well-versed in FTA software, with all of its 19 servo-hydraulic mechanical test frames operating with the software systems. Mike McVaugh, second-generation family member and President of LTI, said “LTI is enthusiastic about the opportunity to enhance and expand existing service, support, and training capabilities. LTI also plans to invest in ongoing software development to increase features and functions which will improve the productivity of software users.”

Keith Donald has worked closely with the fracture mechanics team at LTI over the past few years to pass along his years of research and experience. The two companies have collaborated on significant cutting-edge projects in the fatigue crack growth arena. McVaugh explained, “Keith will continue to consult with our team to ensure a smooth transition, while also continuing his pioneering research in the field”.

Construction of a new Fracture Mechanics Lab is well under way at LTI with over twice the square footage of the present lab. It will house LTI’s current test frames and allow for the addition of FTA’s 10 frames and staff within the next year. In the meantime, FTA’s test systems will be operated for additional capacity at the FTA building in Bethlehem, PA. According to Brandon McVaugh, grandson of LTI’s founder and the Director of Operations, “We plan to integrate FTA’s equipment and personnel into the Fracture Mechanics Department at Laboratory Testing Inc. within the next year. They will remain operational, as an extension of LTI.”

For more information, contact LTI at 800-219-9095 or sales@labtesting.com.
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TITAN Metal Fabricators Closes on Acquisition of Edge International

TITAN Metal Fabricators has announced that it has closed on the acquisition of selected assets of Edge International, a leading stocking distributor of medical grade raw materials used in the manufacture of implants and instruments for the orthopedic, spine, and trauma markets.

The addition expands and diversifies TITAN’s portfolio with a complementary business model similar to Supra Alloys, a division of TITAN Metal Fabricators, adding a strategic warehouse location in Dayton, Ohio to more effectively support the Midwest and East Coast customer base. Edge International will continue to operate as a separate brand and with its current team of employees under the guidance of its President, Stephen R. Smith. Steve Muscarella, President of TITAN commented, “Edge International is well-positioned in the medical market with a strong brand, a loyal customer base, and has a significant opportunity to benefit from taking on some of the additional products and services already being offered by Supra Alloys. We look forward to serving Edge International’s customers by bringing them the years of knowledge and expertise of TITAN’s operations staff and engineers. We also see the opportunity for Supra to learn from Edge’s extensive experience in the distribution of Cobalt Alloys and Stainless Steels in the medical industry.”

Stephen Smith added, “We believe this new partnership will strengthen our existing product offerings and enable us to drive improved performance, resulting in greater market share in the distribution of medical grade raw materials. Edge International has always been a successful business, but we look forward to the challenge of a new future with unlimited potential as part of TITAN.”

Titanium Industries Press Release

T.I. is pleased to announce a twenty-five percent increase in installed cutting capacity. The additional capacity includes both water jet and mechanical saw equipment and is strategically located throughout T.I.’s global service center network.

A key part of this expansion is the purchase of the assets of Cutting Techniques Inc. (CTI), a NJ based company specializing in precision water jet cutting. The assets of CTI have been relocated to T.I.’s Rockaway, NJ service center and the additional water jet cutting machines are in operation.

Brett Paddock, President and CEO of T.I. states, “CTI brings a strong loyal customer base adding the capacity and expertise to support continued growth in this important aspect of our business. CTI’s service focused culture along with its geographic proximity made this acquisition a great fit for T.I. and has had an immediate impact on our flat product precision cutting, near-net-shape service capabilities, and lead-times”.

Complementing this purchase, T.I. has added additional water jet cutting equipment and multiple mechanical saws throughout its service center network.

These investments support increasing requirements for value added services, including near-net-shape capabilities at reduced lead-times and are key elements of T.I.’s near term growth plan which most recently included the opening of a new customer service, stocking, and processing facility in Michigan.

T.I. is the global leader in specialty metals supply for the aerospace, medical, industrial, and oil & gas markets. Holding the world’s most complete inventory of specialty metals across a global service center network, T.I. delivers supply solutions at all levels of sophistication and complexity. With a globally experienced and technically driven team, T.I. has been providing dependable, quality driven service to our customers since 1972.
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» Full line of major aerospace approvals
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From the Wire

International Titanium Association (ITA) announces incoming ITA Board of Directors Brian J. Malloy, vice president and chief commercial officer, Carpenter Technology Corp., and Brett S. Paddock, president and chief executive officer of T.I. - Titanium Industries, Inc. effective immediately.

Henry S. Seiner, president of the ITA board and the vice president, business strategy for Titanium Metals Corp. (TIMET), and Jennifer Simpson, executive director of the ITA, announced the appointments. Malloy and Paddock will be formally inducted into the ITA board at the TITANIUM USA 2017 conference and exhibition, which will be held October 8-11, 2017 in Hollywood, Florida at the Diplomat Resort & Spa.

Philadelphia-based Carpenter named Malloy to his current executive position in March 2016. He oversees all of the company’s commercial operations, which account for $2.2 billion in total annual net sales, including marketing, sales and customer service for Carpenter’s Specialty Alloys Operations and Performance Engineered Products business segments. He joined Carpenter in August 2015 as vice president, sales and customer service for the Specialty Alloys business unit, which typically accounts for nearly 80 percent of Carpenter’s total annual net sales.

Prior to joining Carpenter, Malloy worked for Global Precision Tubes where he was the senior vice president and chief strategy officer. He previously served as the vice president, commercial, for industrial gas turbines in Alcoa Inc.’s Power and Propulsion business group.

Malloy is a co-inventor with five patents, has an MBA degree from the College of William & Mary, and earned a Bachelor of Science degree in Civil Engineering from Virginia Polytechnic Institute and State University.

Paddock is returning to the ITA board following a one-year hiatus. From October 2006 to 2016 he held a number of officer positions, including secretary/treasurer, vice president, president, and past president. He is also the past chairman of ITA’s Grant Committee.

In 2001 Paddock became the leader of Titanium Industries, based in Rockaway, NJ, and during the last 16 years he has steered the company as a global supplier of specialty metals for the aerospace, industrial, medical and energy markets. The company sells a full line of titanium and specialty metal products from its 16 facilities throughout the world, and provides supply chain management and value added services to a diverse global customer base.

His resume in the metals industry consists of executive positions in engineering consulting, fabrication, manufacturing, contracting, and sales. Paddock holds a Bachelor of Science degree in Engineering and a Master of Science degree in Structural Mechanics from Lehigh University, and is a licensed professional engineer.
Conventional titanium milling can’t cut it compared to Makino T-Series 5-axis horizontal machining centers. They deliver four times the productivity and up to nine times the tool life. Purpose-built for high-performance production of large aerospace parts, T1, T2 and T4 machines enable manufacturers to succeed with the most demanding applications.

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Leads Innovation in Titanium Foil

Ulbrich Stainless Steels & Special Metals, Inc. continues to provide titanium UltraLite Foil® as thin as 0.0125 mm (.0005”) for the most demanding applications.

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With more than 12,000 sq. ft. of dedicated space for its UltraLite Foil® program, production consists of rolling, tension annealing, slitting and packing. Ulbrich’s commitment to continuous improvement has led the quality department to achieve and maintain the following certifications: ISO 9001, ISO 17025, NADCAP, GEAE, Rolls Royce, LCS and A2LA. Thanks to the exceptional development and supply chain partnership capabilities, coupled with the experienced product managers and metallurgists on staff, Ulbrich is able to meet specific customer requirements.

Ulbrich Stainless Steels & Special Metals, Inc., headquartered in North Haven, Connecticut, is a 4th generation, family-owned precision re-roller and distributor of stainless steel and special metals strip, foil, shaped & fine wire, sheet, plate and bar products for use in the medical, automotive, nuclear and aerospace industries. Ulbrich offers twelve locations in five countries across North America, Europe and Asia, with additional sales representation world-wide.

For more information, please visit Ulbrich.com or contact us at 1-800-243-1676.
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Website: www.baoti.com
New Job Announcements

Jill Adkins
Infrastructure Development Manager, Perryman Company

Brian Bishop
Business Development Manager- AM, Oerlikon Metco

Michael Wellham
President, Advanced Integration Technology

Work Anniversaries

• Gene Panaro celebrating 13-years with VSMPO-Tirus US
• John Size celebrating 6-years with Caledonian Alloys
• Dmytro Kovalchuk celebrating 20 years with NVO Chervona Hvilya
• Sarah Mott celebrating 8 years with Precision Castparts
• Claudio Emilio Mantegazza celebrating 11 years with Industrie De Nora S.p.A.
• Joyce Downey celebrating 11 years with Uniti Titanium LLC
• William Grüss celebrating 10 years with UTICA ALLOYS FRANCE
• John Hamulak celebrating 12 years at United Technologies Aerospace
• Jeff Carpenter celebrating 20 years at Boeing Commercial Airplanes
• Ulf Edling celebrating 28 years at Sandvik

In Memoriam

Tricor Metals announces the passing of Ray Tresenrider, Market Manager and friend at age 67, on August 7, 2017. Ray will be missed by all of us at Tricor.

Ray was an integral part of our sales and marketing team and was well known throughout the Titanium and Chemical Processing Industries. He worked with Tricor Metals for over 10 years, after spending many years working for various other companies in the titanium fabrication industry. Ray was also very well known for his knowledge and expertise in the Chlorine Industry and represented Tricor Metals in the Chlorine Institute the Materials Technology Institute and at the ALTA (mining) and ANNA (ammonium nitrate- nitric acid) conferences. Ray’s expertise in sales, titanium fabrication and the chemical industry, as well as his wit and sense of humor, will be sorely missed and hard to replace.

Please contact either Ron Krajcik (ext. 2114) or Chuck Young (ext. 2500) at 330-264-3299 if you have any comments or questions.
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TITANIUM FASTENERS IN GRADES 2, 7, 9 & 12 – GREAT PRICES & DELIVERY TIMES

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PM International Suppliers specializes in providing products in exotic materials such as duplex, super duplex, 6% molybdenum stainless-steels, titanium, copper nickel and nickel alloys. We supply pipe and fittings, tubing, valves, flanges, bars, sheet, forgings and fasteners for limitless applications. Industries we deliver to include the offshore petrochemical segment, geothermal, chemical manufacturing, aerospace, desalination, power plants, water treatment facilities and more. Our customers are worldwide, and we handle everything from one-off emergency deliveries to complex, long-ranging project installations.

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Calvi Holding S.p.A. holds equity investments in several manufacturing companies with specific focus on metallurgy and mechanics. Since 2004, Calvi Holding S.p.A. has been committed to creating value based on a network model, which develops synergies to provide its clients with products and solutions that are increasingly innovative and competitive.
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ITA is pleased to offer two educational workshops on Monday, 14th May:
Fundamentals of Titanium Metallurgy and Metallography of Titanium & Its Alloys

Airbus M400 Assembly Line
The second prototype A400M, Grizzly 2, at the 2010 Farnborough Airshow

This year’s conference will enjoy an industry related tour of the Airbus M400 Plant in Seville. The Airbus A400M Atlas is a multi-national, four-engine turboprop military transport aircraft. It was designed by Airbus Military (now Airbus Defence and Space) as a tactical airlifter with strategic capabilities to replace older transport aircraft, such as the Transall C-160 and the Lockheed C-130 Hercules. The A400M is positioned, in terms of size, between the C-130 and the C-17; it can carry heavier loads than the C-130, while able to use rough landing strips. Along with the transport role, the A400M can perform aerial refuelling and medical evacuation when fitted with appropriate equipment. The A400M’s maiden flight took place on 11 December 2009 from Seville, Spain. A total of 174 A400M aircraft had been ordered by eight nations by July 2011. In March 2013, the A400M received European Aviation Safety Agency (EASA) certification. The first aircraft was delivered to the French Air Force in August 2013.

Special Thanks for our friends at Airbus SAS for making this tour possible.

Visit Sevilla 3 Hour Tour by Bus Transport
Bus transport will visit the Triana neighbourhood, The Plaza de toros de la Real Maestranza de Caballeria de Sevilla and The Macarena Basilica church

Visit Sevilla Walking Tour (3.5 hours)
Discover the most important sites in Seville on this 3.5 hour walking tour with an expert, English speaking local guide, who will explain the city’s fascinating 2000-year history.
Welcome New Members

Formed in London in 2016, Cumberland Highstreet Partners was created in response to the need for executive leaders to have access to a team of proven, experienced professionals who possess a deep domain knowledge of manufacturing. We bring accomplished and creative industry experts to the table who have personally led significant organizations. We are executives with proven track records of successfully navigating the ever-changing needs and requirements of industry.

Manufacturer of titanium exhaust systems. Every CMI header is built to exacting standards that have made them the number one choice for offshore racers and performance-oriented boaters who demand on-water performance. CMI headers are manufactured using state-of-the-art materials, like 316L and 317L stainless steel, offering superior corrosion resistance and durability. A unique, patented bending process assures uniform wall thickness and eliminates any rippling and crazing of the tubing during production. Semi-automated tungsten inert gas welding, plus heat treating of the complete manifold following assembly, significantly reduces internal stresses that commonly cause fatigue, corrosion and premature failure in most high performance applications. To complement its header systems, CMI also manufactures custom tailpipes, exhaust accessories and integral mufflers for virtually any single, dual, triple or quad engine configuration, including small block or big block applications, Chevrolet and Buick V-6s and Ford 460 and SVO's. With CMI, boaters get a combination of performance and reliability unparalleled by any competitive products on the market.

Exova Group plc is a leading provider of laboratory-based testing and related advisory services, operating primarily within the Testing segment of the Testing Inspection and Certification (“TIC”) sector. Exova has been hired to do the autoclave work for the NACE MRO175 testing of Gr 12 project by the ITA Industrial committee.

By joining the ITA as a Vendor member Exova would become an active participant in the ITA committee dedicated to industrial applications.

Exova would also benefit from discounted registration at the annual events, would receive a complimentary company description in the membership directory and would be able to take advantage of a variety of other ITA membership benefits.
A leader in Metallurgy

The Quebec Metallurgy Center is located in Trois-Rivières, Quebec, Canada. Our focus is to support the technological development of manufacturing companies in the metallurgical sector.

CMQ provides an incomparable knowledge base on metallic and ceramic materials as well as on metallurgical processes. CMQ conducts research and development activities on advanced alloys such as titanium, zirconium and nickel.

Main research areas and services:
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- Thermal spraying
- Custom alloy development


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Quebec Metallurgy Center
Centre de métallurgie du Québec
Baoji JHY Titanium Industry Co., Ltd was founded on 25-09-2002. It is a professional manufacturer for titanium and titanium alloy fasteners and machined products. We can produce them according to different standards, like GB, ISO, DIN, ANSI and JIS etc. They are widely used in petroleum, metallurgy, chemical, pharmacy, marine engineering, racing car, motorcycle, bicycle, yacht, outdoor camping and sports equipment.

Our company insist the “Quality First” strategy rather than “Low priced” one to earn trust from customers, which has been proved correct after 15 years in this industry. Now over 85% our products are exported to Japan, United States, United Kingdom, Germany, Netherlands and other European countries.

Jiangsu Tiangong Technology Company Ltd was founded in 1981. Our company stared in 2012 to produce titanium products, including rods, tubes, plates, and wire materials. Products in full compliance with GB/T3621, ASTM B265, ASTM B338, ASTM B348 standard, related technical indicators have reached the advanced level in the industry, meeting the user’s application requirement.

Products are widely used in the petrochemical, salt, offshore industry, energy generation and other related industries, typical applications: Titanium and titanium alloy bar for hot-rolling; Medical devices; Titanium alloy standard parts; Various types of titanium equipment; Ion-exchange membrane, divide slot; Titanium and titanium alloys used in construction board.

K-TIG is a full-penetration welding technology designed to help fabricators to be more productive – by an order of magnitude.

K-TIG is a TIG/GTAW welding system capable of performing a traditional 6-hour TIG weld in 3 minutes, to a quality standard which meets the most demanding requirements of the nuclear, aerospace & defence industries.
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luoyang hexin titanium industry co., ltd was founded in 2014. our company produces titanium products since 2014, including rods, tubes, plates.

products are widely used in petrochemical, sallt, offshore industry, energy generation and other industries. typical applications include: titanium and titanium alloy bar for hot-rolling; titanium alloy standard parts; all kinds of corrosive fluid transmission pipeline system; titanium bicycle tube; automobile exhaust pipe; offshore aquaculture.

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preparing titanium with multi-etch enables anodizers to produce brilliant colors and welders to achieve welds that can withstand the rigors of deep space and deep ocean uses.

multi-etch is also used to brighten titanium mill products and tumbled titanium parts, and to erase anodizing mistakes. industries regularly using multi-etch include aerospace, medical, dental, marine, architectural, industrial, jewelry and other arts.

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nobelclad is the world leader in the field of explosion welding. we have more than half a century of expertise, and we are the one company with the most global resources and infrastructure committed to clad, offering bi-metallic solutions for complex industrial markets, including oil and gas, chemical, and transportation. we work with global partners across the supply chain not only to deliver the highest-quality, most cost efficient clad materials on time, but to inform and help develop project specifications from the onset. our design ingenuity, technical proficiency, and unparalleled dependability make us an invaluable resource for process architects, engineers, and fabricators alike. that's why our clad materials are the preferred specification for high stakes industrial infrastructure applications all over the world. specialties: explosion welded clad, longitudinally welded pipe, pressure vessels, heat exchangers, structural transition joints, electrical transition joints, cryogenic transition joints, flat plates & cylinders, heads, tube sheets.
Welcome New Members

Oerlikon is a leading global technology group providing market leading technologies and services. Oerlikon has more than 13,800 employees at over 180 locations in 37 countries and sales of CHF 2.331 billion in 2016. The group is structured in three Segments: Surface Solutions, Manmade Fibers and Drive Systems, each operating under their own well-established brands and with their own market-specific strategies. It has a long-standing presence in Asia, particularly in the emerging markets of China and India, a strong foundation in Europe and serves the most important markets in the Americas. In 2016, the group continued to invest over 4% of its annual total sales in R&D, corresponding to CHF 94 million, and filed 67 patents worldwide.

Materials research conducted by iMatSE students and faculty lead to advances and discoveries that become the building blocks of tomorrow. Through formal coursework in small classes and participation in cutting-edge sponsored research, students in the Intercollege Graduate Degree Program in Materials Science and Engineering enjoy a graduate education that prepares them well for their future careers.

iMatSE students receive full funding (stipend and tuition) in the form of fellowships or research assistantships. Program Highlights:

- Penn State ranked #1 in funded materials research in the US (NSF)
- Thesis-based Ph.D. and M.S. degrees
- Multi-disciplinary research programs and centers
- Over 50 MatSE and affiliated faculty members
- Approximately 150 current graduate students
- Specialized laboratories and shared facilities

The Precision Thin Metals (PTM) business of Arnold Magnetic Technologies produces thin and ultra-thin alloys that improve the power density of motors, transformers, batteries and many other applications in Aerospace, Industrial, Automotive, and Medical markets. Customers rely on us for thin-rolled titanium in applications that demand high performance and consistent quality. Arnold's Precision Thin Metals business offers titanium products in a number of commercially pure grades and several standard alloy compositions. Our titanium and titanium alloys are available in cold rolled or annealed condition. PTM is Nadcap certified for heat treatment.
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At Scanacon, our mission is to help stainless, titanium, zirconium and specialty alloy finishers achieve efficient, high quality production at the lowest cost.

With over 30 years' experience as the World’s preferred supplier of acid management equipment, our knowledge, experience and equipment offers the producer the ability to achieve productive, efficient and cost effective finishing operation. Our solutions have consistently proven themselves across a wide range of pickling, etching and milling applications for all wrought and cast forms.

Scanacon understands that ease of use, low maintenance requirements and efficiency is key to designing process equipment that delivers value, day after day. No two producers or applications are exactly alike. Delivering value requires a knowledge that can only be gained by experience and is why Scanacon continues to be the chosen supplier for acid management system by all major producers, worldwide.

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Structure Medical is a leading manufacturer of medical implant products that are used by orthopedic surgeons to treat disorders of the musculoskeletal system. Orthopedic surgeons use these medical devices to treat trauma, sports injuries, degenerative diseases, tumor and congenital conditions.

Structure Medical was founded in Naples, FL in 2004 and established a second facility in Mooresville, NC two years later. The company uses the most advanced machine tooled available around the world to produce products that meet the highest quality standards.
T-M Vacuum Products has more than 50 years' experience designing and manufacturing various standard and custom size vacuum furnaces and vacuum ovens in both rough and high vacuum configurations with temperatures up to 2,000°C.

We specialize in all metal hot zones and strive to create the best vacuum furnaces and vacuum ovens possible. Our team of experienced engineers and highly skilled technicians build the best systems in the industry. Our systems typically exceed 20 years of life in a full-time 24/7 production environment. This means that each vacuum furnace and vacuum oven you purchase from us is the most advanced and cost effective on the market.

As an ITA member company, T-M Vacuum is more than happy to assist customers in choosing the right vacuum furnace to meet their needs. Contact us or visit our web site for more information.

Verder Scientific Inc., comprised of the Retsch, Carbolite Gero, and ELTRA brands sets the standard in high-tech scientific equipment serving research institutions, analytical laboratories as well as manufacturing companies for decades. The company manufactures and supplies instruments for sample preparation, elemental analysis as well as heat treatment of solid materials.
5ME
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5ME is a technology company entirely focused on Manufacturing Efficiency. One of the core components within its solution portfolio is Cryogenic Machining Systems. 5ME has developed a unique, multi-patented solution for routing liquid nitrogen through a machine tool as well as inside the cutting tool to provide the most efficient means of removing heat from the metal cutting process. By taking the cutting tool to -321°F, 5ME’s technology is an enabler for processing difficult to machine materials - like Titanium, up to 5 times faster than what is possible with traditional water or oil-based coolants. It also has significant benefits with respect to part quality as white layer, grain boundary distortion, residual stress, and burr formation are all dramatically reduced. Additionally, it offers environmental benefits by eliminating coolants from the metal cutting process.

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Above Material Technology Co., Ltd (AMT) is specialized in R&D and Manufacturing, and holds annual production capacity 100 tons in superior Titanium Wires & Titanium powders for welding and 3D Printing or Additive Manufacturing. AMT also can manufacture performance medium complex 3D Printing Parts using titanium wire by Wire+arc additive manufacture (WAAM) up to 6 meters large.

Our Titanium Wires are silver shiny spooled wire with Low Impurity and Level Winding as well as Superior Strength and Superior Elongation. AMT Titanium Rod owns pretty logo printing and neat end-cut. The diameter of AMT Titanium Wires and Rods can be 0.1-5.0mm.

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ADMA Products Inc. is AS9100 registered fully integrated manufacturer of ADMA Hydrogenated Titanium Powder, ADMATAL® net shape and near net shape powder metallurgy titanium and titanium alloy products. These products, produced by ADMA under its proprietary and patented “solid state” (non-melt) consolidation processes, meet all critical specifications and standards, including Aerospace Materials Specifications (AMS). Components made from ADMA Hydrogenated Titanium Powder are characterized by high purity, refined microstructures, low oxygen content, excellent “weld-ability”, low energy input, almost 100% “buy to fly ratios”, low cost, and performance that is superior to those of titanium ingot based products. ADMA additionally specializes in stainless steel, nickel, niobium, zirconium and other advanced materials produced by powder metallurgy processes.

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Akrapovič is a producer and supplier of Titanium investment casting and carbon-fiber composites products. With many years of experience and constant development in the Titanium processing industry we can offer our customer high quality build to print products out of required certified material, precision and flexible delivery time and full service approach of our high specialized team support.

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ALD Vacuum Technologies – High Tech is our Business
ALD is a worldwide leading supplier of advanced furnace systems for melting, casting, coating and heat treatment of metals under vacuum.

ALD furnaces are used for the production of especially pure and specially alloyed metals, materials and parts. Our customers are comprised of the leading manufacturers of materials used in aerospace, energy, semiconductors, medical and commercial markets for a variety of applications that require those super-alloys, reactive and refractory materials as well as rare earth and powder materials.

ALD Vacuum Technologies also is the industry leader in EB PVD Thermal Barrier Coating Systems and our Precision Casting Systems are used for super-alloy, Titanium and Ti Aluminide cast parts. Our expertise in heat treatment furnace technologies and sintering furnace technologies are utilized by leading automotive manufacturing companies as well as the tool manufacturing industries for highly critical parts in gear case and fuel injection systems and specialty tools.

ALD has worldwide representation and services through wholly owned subsidiaries in North America, Japan, Russia, Mexico, India, Thailand, Poland, France and China. With more than 20 representatives across the globe, working together with nearly 400 employees at our corporate headquarters in Hanau, Germany ALD is able to provide timely and knowledgeable services and support.

ALD is part of the AMG, Advanced Metallurgical Group N.V., Netherlands, a public listed technology company with leading market position and interesting growth potential.

American Prosthetic Components

American Prosthetic Components is a manufacturer of prosthetic components.

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American Titanium Works LLC is completing plans to build a new, green-field, integrated, world-class titanium manufacturing facility in the southeast of the United States. ATW is targeting the defense, industrial, commercial, consumer and emerging markets with a range of products and services including alloy and commercially pure titanium plate, bloom, billet, slab, and ingot.

Applications for our products will include defense ballistics and general military equipment construction, chemical processing equipment, oil & gas systems, pulp & paper production facilities, medical implants, and a wide and growing range of consumer goods.

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JWoock@Alloyworks.com
Todd.Tomczyk@timet.com

AlloyWorks, a TIMET company, specializes in plasma cold hearth melting titanium aluminides, standard titanium alloys, and CP. AlloyWorks products are used to produce parts in aerospace, industrial, and military applications. AlloyWorks is AS9100, ISO 9001 certified and holds approvals from several leading engine companies.

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Alloy Metals Company is a full line distributor and key supplier of aerospace, defense and industrial grade titanium and other hard alloys.

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Ampere Scientific is the manufacturer and distributor of the VARmetric measurement system, seamlessly integrating existing process measurements and passive sensor technologies to monitor and visualize arc locations during the melting process. VARmetric couples with standard process signals to evaluate process dynamics and correlate this data with product quality measures. Thus, for the first time ever, the VARmetric system allows the user to visualize and act upon deleterious operating conditions, conditions that are not apparent in traditional VAR monitoring systems, during melting, conditions that could lead to safety related operations or defect formation.

Arcam Group

Arcam Group provides cost-efficient Additive Manufacturing solutions for production of metal components. Arcam’s Electron Beam Melting (EBM®) technology offers design freedom combined with excellent material properties and high productivity. Arcam provides Electron Beam Melting systems through Arcam EBM in Sweden, powder metals through AP&C in Canada and implant contract manufacturing through DiSanto in the U.S.
ARIES Manufacturing has developed a very innovative Hot Stretch Forming process, or HSF®, to contour titanium profiles for airframe component applications. This high temperature forming process precisely stretch forms titanium extrusions to the exact part design contour. The hot stretch formed part is then machined and finished into a critical airframe component. This valuable forming process saves starting titanium weight by offering a near net profile solution; contoured in a controlled, repeatable process, with minimal residual stress. In addition, under ARIES Manufacturing, we hot form and superplastic form titanium sheets for applications in nacelle and pylon components. Our facility in Nantes, France operates 12 hot forming/Superplastic Forming presses of varying sizes. Additionally, we can laser or machine trim, spot weld, hot brake form, and perform assembly work. All of our hot presses are designed and built within our corporation businesses. Finally, ARIES manufacturing has a facility in Grenoble, France that can perform pocket milling and final trimming on large aluminum alloy fuselage skins. This contract manufacturing work utilizes our internal expertise and design engineering of a very innovative “mirror milling” type CNC machining center.

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www.ATImetals.com
inquiries@ATImetals.com

ATI is one of the largest and most diversified specialty materials and components producers in the world. As a fully integrated supplier from raw material (titanium sponge) and melt (specialty alloy systems) through highly engineered finished components, we use innovative technologies to offer growing global markets a wide range of specialty material solutions.

Through unsurpassed manufacturing capabilities, industry-leading alloy systems, mill products, and engineered castings and forgings, ATI offers a unique supply chain solution that Creates Value Thru Relentless Innovation®.

Avon Metals Ltd.
+44-1452-874500
www.avonmetals.com

Avon Metals are a primary & secondary aluminum smelter manufacturing high performance aluminum-based master alloys and alloying products for the wrought aluminum, titanium and superalloy industries. We are actively engaged in the strategic sourcing & trading of primary and scrap metals for industry including Titanium CP &890/6/4 solids & turnings, Titanium sponge, Strontium Metal, Electrolytic Manganese Flake, Silicon Metal, Aluminothermic Chromium Metal, Primary Magnesium, Hafnium Crystal Bar and ingot, Zirconium/Zircolloy, SHG Zinc, Pure Tin ingot, Pure Lead Shot, Rhenium Pellets, Tantalum and Niobium.

BAHCO
+1-800-446-7404
www.snapon.com/industrialbrands
industrialbrands@snapon.com

Bahco’s 3860 Multi Chip Carbide bandsaw blade has been developed specifically for cutting Titanium Alloys. The 3860 Multi Chip Carbide blade improves and optimizes Bandsaw operation with a World leader in Cutting Technology. In the 1980’s Bahco developed and Patented the first “Set Tooth” Carbide Bandsaw blade to provide fast, efficient cutting of exotic alloys and have led the way in this sector ever since.

TITANIUM TODAY 61
Bahco is a registered trade name of Snap-on Incorporated a leading global innovator, manufacturer and marketer of tools, diagnostics, and equipment, software and service solutions for professional users. Products and services are sold through the company's franchisee, company-direct, distributor and Internet channels. Founded in 1920, Snap-on is a $2.8 billion, S&P 500 Company headquartered in Kenosha, Wisconsin. Our Mission - The most valued productivity solutions in the world. Snap-on Incorporated P.O. Box 1410 Kenosha, WI 53141-1410, U.S.A. 262-656-5200.

Banner Medical
+1-800-323-9732
www.banner-medical.com
dstoettner@banner-medical.com

Banner Medical specializes in providing complete single-source cold finished bar, plate, sheet and supply chain solutions for the medical, dental, and aerospace industries. We carry over 1 million pounds of raw and finished goods inventory to service our customers quickly. Our complete offering of stainless, titanium, aluminum, alloy, nickel and cannulated products coupled with unique value-added services sets Banner Medical apart. Some of these unique value-added services include:

- Custom supply chain management solutions
- Complete traceability from melt source to finished product
- In-house non-destructive testing
- Vendor managed inventory (service) and JIT programs
- Line marking
- Niton Gun material analysis
- Near-net shape machining
- Precision saw cutting
- Waterjet cutting

Quality Throughout

Baoji JHY Titanium Industry Co., Ltd
+86 917 3372 996
stella@ti-bolts.com

Baoji JHY Titanium Industry Co., Ltd was founded on 25-09-2002. It is a professional manufacturer for titanium and titanium alloy fasteners and machined products. We can produce them according to different standards, like GB, ISO, DIN, ANSI and JIS etc. They are widely used in petroleum, metallurgy, chemical, pharmacy, marine engineering, racing car, motorcycle, bicycle, yacht, outdoor camping and sports equipment.

Our company insist the “Quality First” strategy rather than “Low priced” one to earn trust from customers, which has been proved correct after 15 years in this industry. Now over 85% our products are exported to Japan, United States, United Kingdom, Germany, Netherlands and other European countries.

Baoji Titanium Industry Co., Ltd (Baoti) is the biggest manufacturer of titanium mill products and titanium alloys in China. An integrated production system that includes melting, forging, rolling, drawing and fabricating enables Baoti to manufacture various products such as titanium sponge, ingot, billet, bar, wire, plate, sheet, tubing, forging, casting of all grades of CP titanium and most titanium alloys as well as many down-stream products in accordance with AMS, ASTM, MIL, ASME, ISO, DMS, AWS, JIS specification. These products are widely used in every kind of industry ranging from aerospace and automotive to sports, medical, chemical and petrochemical industries. Baoti is an ISO9001 and NADCAP approved company.

Baosteel Special Metals Co., Ltd.
+86-021-26032903
www.baosteel.com

Baosteel Group is the largest and most advanced integrated steel company in China. Baosteel Special Metals Co., Ltd is a subsidiary company of Baosteel Group. Baosteel Special Metals Co., Ltd grew out of Shanghai No. 5 Steel Works, and started manufacturing of titanium alloys since 1968. The main titanium products include: ingot, slab, billet, bar, plate, coil, stock, isothermal forging and so on.

Beijing Hongda Titanium Science & Trade Co., Ltd
+86-10-82274866
www.chinabti.com.cn

Beijing Hongda Titanium Science & Trade Co., Ltd was established in 2002, and is located in Beijing, China. We are a professional manufacturer of titanium and titanium alloy. Our products mainly include sheets, plates, bars, strips, rods, wires, forgings, and processing titanium. As a leading corporation of titanium in China, we always stick to “Quality First”. We have ISO 9001:2008 quality certificate. We sincerely hope to establish long and friendly business relations with clients from all over the world.

BHN Special Materials Ltd.
+86 411 8924 9999 ext 8088
www.bhn-materials.com
sales@bhn-material.com

BHN special Materials Ltd. is a leading high quality master alloy producer in Dalian, P.R. China. BHN is certified according to EN9100:2009 and ISO 9001:2016.

BHN provides the full range of Vanadium, Molybdenum, and Niobium containing binary alloys for the Titanium Industry for aviation, military, and medical application in China and abroad.

The expertise of BHN is to supply tailor-made multinary master alloys well designed to simplify the customers’ manufacturing process to improve their competitiveness. To learn more about BHN, please visit our website at http://www.bhn-materials.com
BIBUS METALS
+41 44 877 54 11
www.bibusmetals.com
info@bibusmetals.ch

BIBUS METALS Group is 100% Swiss owned and has over 37 years of experience as a leading distributor and stockholder of Titanium (CP and Titanium alloys) as well as Nickel based alloys, Cobalt-Chromium and 316LVM (1.4441) in Europe and Asia. BIBUS METALS Group is a supplier for different applications in medical, chemical, aerospace, automotive, oil & gas, power generation industries and offers:

Sheets/Plates; Wire/Bars; Tubes/Pipes; Strip/Foil; Welding wire; Screw/Nuts; Profiles

The fully integrated Service Centres are located in Switzerland, Germany, Czech Republic, Poland, Hungary and China to ensure reliable and rapid service for customers worldwide.

Where necessary the entities of the Group are certified according ISO 9001, EN/AS 9120 for aerospace and EN ISO 13485 for medical. Quality, flexibility and tailored solutions are of great importance for the whole BIBUS METALS Group.

For further information please email to info@bibusmetals.ch

Blaser Swisslube Inc.
+41 34 460 01 01
www.blaser.com
m.hensel@blaser.com

Blaser Swisslube AG is an independent and family-owned Swiss company founded in 1936. Blaser Swisslube is represented in more than 60 countries on all continents. The company develops and produces high-performance cutting fluids for customers who manufacture tiniest to large titanium components as well as critical and structure components, particularly for aerospace and medical. Blaser Swisslube’s goal is to optimize manufacturing processes and to improve their economic efficiency, productivity and machining quality. In close cooperation with the customers Blaser Swisslube presents new solutions to fully exploit the potential of machines and tools by using the right metalworking fluid which becomes a liquid tool. This promise is backed by excellent products, customized services, competent experts and its long experience in the metalworking industry. For more information please visit www.blaser.com.

Butech Bliss
330-337-0000
www.butechbliss.com
sales@butech.com

Butech Bliss is a designer and manufacturer of capital equipment, repair components and engineering and field services for metals processors that roll, forge, melt, flatten, stretch, shear and extrude metals of all types. Butech Bliss is located in Salem, Ohio and is home to one of the largest manufacturing facilities in the industry. With over 50 engineers on staff, 400,000 sq. feet, 100+ machining centers, full fabrication and assembly departments, 200 ton crane capacity and a dedicated rail spur, Butech Bliss is equipped to handle any project. Butech Bliss product offerings include copper crucibles, liners, molds, hearths, etc. for VAR, ESR, PAM and EBM Re-melting equipment as well as Rolling Mills, Forging and Extrusion Press upgrades and Coil, Plate and Sheet processing equipment for all metals. Butech Bliss is comprised of Butech Inc., E.W. Bliss (Bliss-Salem), Loewy Machinery and Lombard Industries.

Caledonian Alloys
http://www.pccforgedproducts.com/brands/caledonian_alloys/

Caledonian Alloys is the world leader in the management of nickel and cobalt base superalloy and titanium alloy recycling for the aerospace, land-based turbine, and chemical industries.

The company transforms revert, through rigorous process, into material which can be re-melted, to produce new nickel, cobalt, or titanium alloys.
Titanium Buyers Guide (continued)

Revert consists of excess alloy material which can arise from high performance component manufacturing, from decommissioned parts, and from the melting process.

Caledonian Alloys provides customers with a range of tailored revert management services designed to enable them to optimize the use and value of their own revert material.

Accredited with all major vacuum and high temperature melters worldwide, Caledonian Alloys supplies fully processed nickel and titanium revert material to the melting industry. We also purchase revert material from a wide range of industrial customers throughout the world.

Calvi Holding S.p.A
www.calviholding.it

Calvi Holding S.p.A holds equity investments in several manufacturing companies with specific focus on metallurgy and mechanics. Since 2004, Calvi Holding S.p.A. has been committed to creating value based on a network model, which develops synergies to provide its clients with products and solutions that are increasingly innovative and competitive.

CEFIVAL SA - SIDERVAL S.p.A
CEFIVAL +33 1 39 37 12 25  SIDERVAL +39 342 67 41 11
www.cefival.fr  www.siderval.it

CEFIVAL and SIDERVAL manufacture special sections and tubes with hot extrusion process to obtain near net shape Profiles. The shapes are studied and manufactured according to customer’s requirements in a wide range of solid and hollow sections. Our manufacturing process improves the buy to fly ratio. Main grades are titanium, inconel, carbon steel alloys, super alloys, stainless steels and other on requirement. Main application fields are aeronautics for aircraft ring engines ( CFM56, GE90, G-7000, CF6-80, SM146, Gen X) and structural parts (such as seat tracks, floor and wings stiffeners, door hinges...), Power Generation for nuclear (ia drive rods) and conventional applications, medical and food industry.

Chaoyang Jinda Titanium Co., Ltd.
+86 421 2976177
www.jinda.cc

Chaoyang Jinda Titanium Co., Ltd. (Jinda Titanium) was founded in August, 2006. The main products are Jinda brand titanium sponge (famous brand products in Liaoning Province) and Titanium ingot and other processed products. Production ability per year for titanium sponge is 10,000 tons, for ingot is 2000 tons and 40,000 tons for anhydrous magnesium chloride.


The quality of Jinda titanium sponge is stable. Self R & D MHT-90 high-quality titanium sponge and small size titanium sponge have become the preferred raw materials of aerospace and defense, marine engineering and other high-end usage of titanium industries.

Jinda Titanium is a member of the International Titanium Association, the vice managing director of Chinese non-ferrous metal industry association titanium zirconium Hafnium Branch, the vice managing director of Titanium Industry Progress and the director of Baoji Titanium Association. Jinda Titanium comprehensive ranks forefront in titanium industry.

Chesapeake Industrial Cleaning Products, Inc.
+1-410-340-9052
www.chesapeakeindustrial.com

Chesapeake Industrial formulates and supplies manufacturing chemicals and degreasers to titanium recyclers and processors. Cleaners for removing oil from turnings, dirt and oil from scrap, cutting fluids from formed products and other typical operations are our expertise. Chesapeake provides a wide range of formulated products from general cleaners to high spec materials made at facilities in several US locations. Products specifically designed for individual operations can be formulated for costs often lower than ‘off-the shelf’ materials. Chesapeake has served customers in the titanium industry for over 10 years. Drums, Totes and Bulk deliveries of materials are all available.

China Huaxia Special Metal Limited
0886-21-58770128
helen@nonferrous-metal.com  csm@nonferrous-metal.com

China Huaxia Special Metal Limited is one of the largest manufacturers of titanium, nickel & nickel alloy, stainless steel/duplex & supper duplex with forms at sheet/plate, seamless tube/pipe, bar/rod, wire, welded pipe, seamless & welded fitting, flange, valve, clad material etc. With the logo CSM (China Special Metal), we hope to be the best one of special metal manufacturer in China. CSM always treat the quality as our life. CSM invest the quality and future. CSM material have been widely used in oil & gas industry, chemical industry, construction industry, sports industry etc, many big companies in these field have approved CSM material. CSM took the pride in CSM titanium sheet used in 2012 London Olympic Village decoration, CSM has the mission to be the enterprise to improve the position of Chinese titanium products in the international market.

China Steel Corporation
+886-7-802-1111

China Steel Corporation provides high quality titanium products, including ingot, plate, sheet, bar, wire coil and tube, for a wide range of applications in architecture, chemical industry, heat exchangers, copper foil facilities, fasteners, desalination, electronics, sports industry, leisure and moving forward to biomedical and aerospace application.

The stable and reliable quality of CSC’s titanium products have gained the acceptance of Asia industries widely, and CSC has also been selected as the first priority provider to purchase their needed titanium materials owing to CSC’s quick and efficient technical services. CSC will continue to improve customer services and the technical technologies both for customers and CSC itself to promote Titanium Alloy products’ international competitiveness.
**Cogitic Corporation**

Ursalitic.net

Cogitic is an engineering and manufacturing company specializing in the machining, assembly and test of complex components and assemblies produced from exotic alloys. Large 5-axis capability with full CMM validation of all products.

**Consarc Corporation**

Consarc Corporation, an Inductotherm Group Company, is a manufacturer of vacuum furnaces for the titanium forging and casting industry. Consarc custom designs and manufactures Reactive Vacuum Arc Melting (RVAR) furnaces for primary electrode melts of compacted sponge titanium and titanium alloys, and secondary melt furnaces for remelting fully dense electrodes. Consarc also designs and manufactures fully customized Induction Skul Melting (ISM) systems for melting titanium in a refractory free environment for casting or ingot withdrawal. Consarc is ISO 9001-2008 certified, and with operations on 5 continents, is well equipped to tackle fully customized furnace projects globally.

**Continental Steel and Tube Company**

Continental Steel and Tube Company is one of the world’s leading value added volume suppliers of quality metals. With an outstanding global reputation, our team of expert sales associates can supply a comprehensive inventory of metals to meet any application requirements.

Continental Steel supplies a wide range of metals including, titanium, stainless steel, nickel, steel, aluminum, hot/cold rolled, galvanized, and stainless and electrical steel in carbon and alloy grades. Our long list of Titanium Grades includes CP4 Gr1, CP3, Gr2, CP2Gr3, CP1 Gr4, Gr7, Gr5 Ti 6AL-4V, Gr6, Gr9, Gr 12., Gr 19 (Beta C) & Gr 11. Our materials are available in coils, sheets, strips, plates, angles, bars, rounds squares, hexagons, and other custom shapes. Continental also offers tubing or pipes in welded, DOM and seamless.

**Cristal Metals Inc.**

Cristal Metals was formed in 1997 as International Titanium Powder (ITP) to develop and commercialize Armstrong Process® patented and proprietary technology for high purity metal and alloy powders with specific emphasis on titanium. Armstrong Process® technology is intended to lower the production cost of powders suitable for direct consolidation, to lower the manufacturing costs of titanium products through powder metallurgy processing, and to reduce the environmental impact of titanium production.

**CSIRO High Performance Metal Industries**

The High Performance Metal Industries Program is engaged in applied research across the metal value chain, specialising in novel metal production techniques, interfaces/corrosion, energy systems, metal forming, and additive manufacturing / 3D printing, particularly for Titanium and its alloys. Strong Multiphysics modelling techniques are combined with practical experimentation to understand and develop advanced solutions for global industry. HPMI partners with industry and other research providers around the world, in applied research or to develop new technologies. HPMI also provides consulting services, use of specialized facilities, additive manufacturing training, and aims to be a global leader in the knowledge and application of fundamental metals technologies. It runs CSIRO’s ‘Lab22 Innovation Centre’ – the largest metallic additive facility in the Southern Hemisphere. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is Australia’s primary national research body, with over 5,000 researchers active over a wide range of fundamental and applied research challenges.

**Cumberland Highstreet Partners**

http://cumberlandhighstreet.com

Formed in London in 2016, Cumberland Highstreet Partners was created in response to the need for executive leaders to have access to a team of proven, experienced professionals who possess a deep domain knowledge of manufacturing. We bring accomplished and creative industry experts to the table who have personally led significant organizations. We are executives with proven track records of successfully navigating the ever-changing needs and requirements of industry.

**Custom Marine**

Custom Marine offers tubing or pipes in welded, DOM and seamless.

**Danobat S. Coop**

Danobat S. Coop is a global manufacturer of high-precision band saws, offering unparalleled quality and performance. With a presence in 5 continents, Consarc Corporation, an Inductotherm Group Company, is a leading manufacturer of vacuum furnaces for the titanium forging and casting industry. Consarc custom designs and manufactures Reactive Vacuum Arc Melting (RVAR) furnaces for primary electrode melts of compacted sponge titanium and titanium alloys, and secondary melt furnaces for remelting fully dense electrodes. Consarc also designs and manufactures fully customized Induction Skull Melting (ISM) systems for melting titanium in a refractory free environment for casting or ingot withdrawal. Consarc is ISO 9001-2008 certified, and with operations on 5 continents, is well equipped to tackle fully customized furnace projects globally.

**Danobat Group**

Danobat Group is a global manufacturer of high-precision band saws, offering unparalleled quality and performance. With a presence in 5 continents, Consarc Corporation, an Inductotherm Group Company, is a leading manufacturer of vacuum furnaces for the titanium forging and casting industry. Consarc custom designs and manufactures Reactive Vacuum Arc Melting (RVAR) furnaces for primary electrode melts of compacted sponge titanium and titanium alloys, and secondary melt furnaces for remelting fully dense electrodes. Consarc also designs and manufactures fully customized Induction Skull Melting (ISM) systems for melting titanium in a refractory free environment for casting or ingot withdrawal. Consarc is ISO 9001-2008 certified, and with operations on 5 continents, is well equipped to tackle fully customized furnace projects globally.

**Danobat Band Saws**

Danobat Band Saws are world-class band saws with unparalleled quality and performance. With a presence in 5 continents, Consarc Corporation, an Inductotherm Group Company, is a leading manufacturer of vacuum furnaces for the titanium forging and casting industry. Consarc custom designs and manufactures Reactive Vacuum Arc Melting (RVAR) furnaces for primary electrode melts of compacted sponge titanium and titanium alloys, and secondary melt furnaces for remelting fully dense electrodes. Consarc also designs and manufactures fully customized Induction Skull Melting (ISM) systems for melting titanium in a refractory free environment for casting or ingot withdrawal. Consarc is ISO 9001-2008 certified, and with operations on 5 continents, is well equipped to tackle fully customized furnace projects globally.

**CMI**

CMI is a manufacturer of titanium exhaust systems. Every CMI header is built to exacting standards that have made them the number one choice for offshore racers and performance-oriented boaters who demand on-water performance. CMI headers are manufactured using state-of-the-art materials, like Titanium, 316L Stainless, Inconel and duplex alloys offering superior corrosion resistance and durability. A unique, patented bending process assures uniform wall thickness and eliminates any rippling and crazing of the tubing during production. Semi-automated tungsten inert gas welding, plus heat treating (where applicable) of the complete manifold following assembly, significantly reduces internal stresses that commonly cause fatigue, corrosion and premature failure in most high performance applications. To complement its header systems, CMI also manufactures machined components, custom exhaust accessories and integral mufflers for virtually any engine configuration. With CMI, boaters get a combination of performance and reliability unparalleled by any competitive products on the market.

**Danobat S. Coop**

Danobat S. Coop is a global manufacturer of high-precision band saws, offering unparalleled quality and performance. With a presence in 5 continents, Consarc Corporation, an Inductotherm Group Company, is a leading manufacturer of vacuum furnaces for the titanium forging and casting industry. Consarc custom designs and manufactures Reactive Vacuum Arc Melting (RVAR) furnaces for primary electrode melts of compacted sponge titanium and titanium alloys, and secondary melt furnaces for remelting fully dense electrodes. Consarc also designs and manufactures fully customized Induction Skull Melting (ISM) systems for melting titanium in a refractory free environment for casting or ingot withdrawal. Consarc is ISO 9001-2008 certified, and with operations on 5 continents, is well equipped to tackle fully customized furnace projects globally.
Titanium Buyers Guide (continued)

Sixty years have gone by since DANOBAT manufactured its first machine. Nowadays, DANOBAT Sawing Division does not simply make saws, but innovates in the field of machine tools.

DANOBAT strategy is to offer custom solutions for highly complex sawing applications on high-tech products offering bandsaws and circular saws. The aerospace, automotive, railway, wind power, oil and gas sectors and outsourcing workshops are the main trading sectors.

The technological leadership of DANOBAT in the development and manufacture of horizontal and vertical saws makes it possible to offer leading-edge and highly effective sawing solutions to our customers.

DANOBAT provides solutions for solid bars, pipes and plates with the highest accuracy.

Automatic band saw machines, wagon style or gantry for large dimensions, vertical plate bandsaws and circular saws are the solutions offered by DANOBAT.

DHL Drawback Services
+1-585-328-7130
www.dhldrawback.com

DHL Drawback Services is a licensed Customhouse broker specializing in duty drawback matters. With offices in Houston, Texas and Rochester, New York, we have over 20 years' experience obtaining the maximum in allowable duty drawback refunds and excise tax credits for our clients in a compliant, timely, thorough, and professional manner that imposes the least amount of administrative burden on our client's time and resources.

DKSH Switzerland Ltd.
+41 44 386 72 72
www.dksh.com
ti@dksh.com

Pioneers in sourcing of Titanium bars and plates from Japan and China: DKSH Advanced Metals is part of a Swiss group with 140 years of experience in bridging Asia and the West. For the last 30 years, we have been instrumental in introducing high quality titanium and titanium alloys from top quality Japanese and Chinese producers to European, US and South East Asian customers. We serve stockists as well as end users in the Medical, Aerospace, Automotive, Chemical, Oil & Gas and other high tech industries. Our wide range of services includes access to a comprehensive stock of Ti semi-finished products, advanced supply chain management such as vendor managed inventory and subcontracting for machining and forging, tailor made financing solutions and metallurgical expertise. Our deeply rooted knowledge of sourcing and subcontracting markets coupled with our Swiss sense for premium quality ensures that we remain at the forefront of innovation when it comes to serving your needs.

Duferco SA

Duisburg Tubes Production AG
+49 203 6003 315
www.dtp-ag.eu
sales@dtp-ag.eu

The Duisburg Tubes Production AG is a German manufacturer and developer of high quality seamless tubes made of zirconium, titanium and nickel-based alloys with over 50 years of experience.

As a supplier of cladding tubes for fuel rods for the nuclear industry the DTP AG is the reliable partner for all demanding applications. To fulfill all quality requirements is the second nature.

The range of application is as mentioned before the nuclear industry. Moreover the use in all kinds of tubular heat exchangers, in the aviation industry, in the chemical industry, in the oil and gas industry, in the food processing industry and many other demanding environments.

The cold pilger mill seamless tube production is a special form of cold rolling and guarantees high precision and close tolerances. The combination of pilger know-how and the sophisticated annealing knowledge leads to an extraordinary product quality.

The quality management system is conform to ISO 9001, ISO 5001, ISO 14001 and EN 9100.

Edge International
+1(937) 395-7222
www.edgeintl.com
metals@edgeintl.com

Edge International, located in Dayton, Ohio, is an ISO 13485-certified stocking distributor of raw materials, specializing in medical grade Cobalt-alloys, Stainless Steels and Titanium for the manufacture of implants and instruments for the orthopaedic, spine and trauma markets. Edge works with its customers to provide cost-effective solutions and concentrates on the medical market to ensure the highest level of compliance, quality and service. Value-added services include precision grinding to size and tight tolerances, precision sawing, non-standard grades and sizes, and just-in-time inventory programs. Edge conducts business internationally, supplying to customers around the globe.

ELG Utica Alloys, Inc.
+1-315-574-1680
www.elguticaalloys.com

EUA is one of the world’s largest Titanium, Nickel and Cobalt alloy recycling companies. We operate under the tightest quality standards, utilize the latest equipment, offer unparalleled service, are fed by over 40 sister yards worldwide and have the financial backing of ELG Haniel GmbH.

Evraz Stratcor, Inc.
+1-312-533-3650
www.evrazstratcor.com

EVRAZ Stratcor offers titanium producers one-stop shopping for all their master-alloy requirements. Using a state-of-the-art, ISO approved production facility that is focused on meeting the ever-increasing quality needs of the aerospace industry, we can provide a full range of vanadium and other master alloys, including innovative and customized specialty alloys that are marketed and managed by EVRAZ Stratcor, Inc. based in Chicago, Illinois.
Titanium Buyers Guide (continued)

EWI
+1-614-688-5000
www.ewi.org
info@ewi.org

EWI is the leading engineering and technology organization in North America dedicated to developing, testing, and implementing advanced manufacturing technologies for industry. Since 1984, EWI has offered applied research, manufacturing support, and strategic services to leaders in the aerospace, automotive, consumer electronic, medical, energy, government and defense, and heavy manufacturing sectors. By matching our expertise to the needs of forward-thinking manufacturers, our technology team serves as a valuable extension of our clients’ innovation and R&D teams to provide premium, game-changing solutions that deliver a competitive advantage in the global marketplace. To learn more, visit www.ewi.org, email info@ewi.org, or call 614.688.5000.

Exova
www.exova.com

Exova Group plc is a leading provider of laboratory-based testing and related advisory services, operating primarily within the Testing segment of the Testing Inspection and Certification (“TIC”) sector.

Exova has been hired to do the autoclave work for the NACE MRO175 testing of Gr12 project by the ITA Industrial committee.

By joining the ITA as a Vendor member Exova would become an active participant in the ITA committee dedicated to industrial applications.

Exova would also benefit from discounted registration at the annual events, would receive a complimentary company description in the membership directory and would be able to take advantage of a variety of other ITA membership benefits.

FAE S.A.
54-11-63261493/94/95
www.fae.com.ar
fae@conuarfae.com

FAE is an Argentinean company qualified by Airbus for supplying hydraulic titanium Ti-3Al-2.5 tubing for Family 320. Also is the first Latin-American company in getting a tier one contract with EADS group. One of its main activities, apart from aerospace, is the manufacturing of seamless commercial pure titanium and titanium alloy tubes straight or U bend for heat exchangers which are up to 35 meters long. These tubes are also made in nickel alloys 690 & 800 for steam generators for nuclear power plants. The nuclear business is the origin of the company and the Zirconium cladding tubing for the nuclear fuel elements constitutes the main product of the company. It also produces ingots and bars in titanium alloys and bright annealed finish seamless instrumentation titanium tubes (O.D ¼” up to 5/8”). FAE is certified according UNE EN 9100: 2009, ISO 9001: 2008, ISO 14001: 2004, OHSAS 18001: 2007, PED 97/23/EC & CSA N285.0 standards. Its products are exported to countries all over the world and they are used in aerospace and corrosion resistant applications. Now also NADCAP certified company for heat treating and non-destructive test.

FE Mottram Ltd.
+44 1142446723

www.femottram.com

UK manufacturer of tailor-made and high grade ferro titanium.

Fine Tubes
+44 (0)1752 876416
www.finetubes.com
sales.finetubes@ametek.com

Fine Tubes, part of AMETEK Specialty Metal Products, is a leading global manufacturer of precision tubing in high performance titanium, stainless steel, nickel and zirconium alloys.

The company manufactures tubes in both seamless and welded forms used in critical aerospace applications for the civil aircraft, defence and space sectors

TITANIUM TUBE EXPERTISE
• Seamless titanium tubes from 1 mm (0.040 in) OD to 50 mm (2 in) OD
• Straight lengths up to 5.5 metres (18 ft.)

TITANIUM ALLOYS
Fine Tubes offers a comprehensive portfolio of titanium tubing in the following alloys:
Ti CP (Grade 1), Ti CP (Grade 2), Ti 6Al/4V (Grade 5), Ti 3Al/2.5V (Grade 9), Ti 5Al/4V and Ti 4Al/2.5V.

The tube mill has achieved NADCAP approval for Ultrasonic Testing, Heat Treatment, Fusion Welding and Chemical Processing.

WORLD CLASS FACILITY
Based in the United Kingdom, Fine Tubes operates several state-of-the-art titanium processing facilities including:
Pilger Rolling Mills, Draw Benches, Vacuum Furnace Heat Treatment, Chemical Processing and Conditioning & Degreasing

AEROSPACE APPLICATIONS
Critical hydraulic, mechanical and structural applications include:
• Hydraulic and pneumatic control systems
• Aerospace Engine tubes
• Instrumentation and transmission tubing
• Mechanical tubes
• Actuation

Fine Tubes, Superior Tube, Hamilton Precision Metals, AMETEK Wallingford, AMETEK Eighty Four and Reading Alloys – all leading manufacturers of high precision metal products – form the AMETEK Specialty Metal Products division.

Forecreu

World leader in high speed steel hollow bars for drills and coolant fed taps.

World leader in cannulated bars in stainless steel and titanium for surgical tools and implants.
Fort Wayne Metals
+1-260-747-4154
www.fwmetals.com
info@fwmetals.com

Fort Wayne Metals has a long history of producing precision titanium bar, wire and wire-based components for demanding applications. For many years, our efforts focused exclusively on the medical device industry. But our skills are just as valuable in aerospace applications.

After all we understand the critical importance of quality: our employees have experience producing materials for applications designed to save lives. We uphold the highest quality standards throughout our production process – beginning with melting material in our own furnace. We are 9100C and ISO 9001 certified, and maintain a A2LA - ISO/IEC 17025 compliant Materials Testing Laboratory.

Available diameters:
- Wire: 0.001" (0.0254mm) to 0.062" (1.5748mm)
- Coil: 0.040" (1.016mm) to 0.500"(12.70mm)
- Bar: 0.0787" (2.0mm) to 0.500" (12.70mm)

Available grades:
- Commercially pure Titanium (ASTM F-67 · ASTM B348 · ASTM B-863 · ISO 5832-2)
- Grades 1 - 4

Alloyed Titanium
- Ti-6Al-4V ELI (ASTM F-136 · ASTM B-348 · ASTM B-863 · ISO 5832-3)

Gautier Specialty Metals, LLC
814.535.9200
www.gautierspecialty.com
sales@gautiersteel.com

Gautier’s premier plate mill provides rolling capacity for advanced high performance metals to a variety of industries. At its heart is a 58” wide 4 High Mesta Reversing mill, capable of rolling the most difficult of specialty metals. The mill is expandable to 110” wide in the future. Building on Gautier’s long legacy of short lead times and excellent customer service, GSM will be able to provide high quality alloy, tool and stainless steel as well as advanced nickel based and titanium alloys.

Large Alloy Selection: Alloy & Tool Steel, Stainless Steel, Nickel Based Super Alloys and Titanium

Friggi N.A.
+1-519-421-9291
www.friggiamerica.com
info@friggiamerica.com

Friggi N.A. Inc., provides premium metal and aluminum cutting solutions to the North American market. With over 70 years manufacturing experience we now offer large vertical plate and block saws, high-speed carbide saws, plasma, and waterjet cutting solutions. Within our product line, we offer specialized equipment to cut challenging materials like Titanium or exotic metals with extreme precision and performance. Our plate saw capacity is over 20 feet and our Gantry models will cut blocks up to 140” with minimal material handling. Machines are available in automatic or semi-automatic version to cover any requirement. We service many key market segments including aerospace, automotive, defense, oil and gas, steel service centers, forging and mold makers. Whether the application is to cut ferrous or non-ferrous metals for ingot, bar, block, or plate we offer the best solution for our clients’ production needs.

G&S Titanium, Inc.
+1-330-263-0564
www.gs-titanium.com

G&S Titanium manufactures many grades of titanium in the form of round and hex bars, fastener wire, spring wire, weld wire, precision ground medical bars, and fine wire. This includes the standard grades such as CP Gr. 1-2-3-4, 6AL-4V, 6AL-4V ELI, as well as hard to find alloys such as 3-8-6-4-4, 13-11-3, 6-2-4-2, 8-1-1, Gr. 7, Gr. 9, Gr. 12, 21S, 230, 679, 685, 829, etc.

GfE Metalle und Materialien GmbH
+49 911 9315 299
www.gfe.com
alloys@gfe.com

GfE, founded in 1911 and being part of AMG Advanced Metallurgical Group N.V., is a leading manufacturer and global supplier of high performance metals and materials.

We offer a wide range of high-quality master alloys that meet the highest technical requirements for different specialized sectors, mainly aerospace, super alloy industry and ship-building.

Furthermore titanium as high-purity HDH powder is produced by GfE for thermal spray coatings. Its specific characteristics offer an advantageous material for porous layers on medical implants.

Our product spectrum is completed by inter-metallic Titanium Aluminum light weight alloys, known as gamma Titanium Aluminide alloys. Its present applications include low pressure turbine blades (LPT) for civil aircraft engines as well as turbocharger wheels for the automotive industry.

GfE is certificated in accordance to ISO 9001, EN 9100, ISO 14001, ISO 50001 as well as BS OHSAS 18001 and operates an accredited laboratory according to DIN EN ISO/IEC 17025.

Global Titanium Inc.
1-313-366-5300
www.globaltitanium.com

Global Titanium is a leading producer of ferrotitanium, titanium scrap products, and titanium HDH powder. Located in Detroit, Michigan, Global Titanium serves the steel, stainless steel, aluminum, and titanium industries. Global Titanium is an ISO 9001:2008 registered company with a strong commitment to safety, quality, and customer service.
Goldman Titanium, Inc.
716.823.9900
www.goldmanti.com
info@goldmanti.com

Goldman Titanium, Inc. purchases and processes scrap titanium in order to supply the highest quality finished product to our customers. As a pioneer in the titanium industry, our company was first established in 1955, and we have continuously expanded our business over the years. Titanium is the only metal we handle, making us experts in our field.

Goldman Titanium is certified to ISO 9001: 2008 and AS9100:2009, Rev. C, complying with the rigorous requirements of the aerospace and defense industries. Our company’s products have been approved by major U.S., European, and Asian melters, as well as by master alloy producers, steel and stainless steel producers, and ferro titanium producers.

Hi-Tech Alloys, Inc.
+1-925-937-3836
Incorporated in 1982

Hogue Metallography

Services Include:
- Metallographic Services
- Sample Preparation - metals and non-metals
- Documentation - macro and micro
- Interpretation of Microstructures and metallographic
- Failure Analysis
- Industrial Problem Solving
- Litigation
- Laboratory Design
- Equipment selection
- Selection of optimum consumables
- Layout

Consulting may be performed on site, in the field, or at my laboratory.
Training Courses Offered.

HORIE Corporation
+81-256-66-2237
www.horie.co.jp
a-tanabe@horie.co.jp

Horie Corporation is the world leader at surface engineering of Titanium such as precision coloring, etching, grain controlling and the solution provider to complex titanium fabrications. Horie has developed its original titanium technology using Horie’s electro-chemical technology and surface treatment technology. Our titanium knowledge provides our customers with unequaled solutions in titanium. Horie will continue to develop many new products and search the unlimited possibilities and beauty of titanium.

Inductotherm Corp. - Long Products Division
+609-267-9000
www.inductotherm.com
sales@inductoerm.com
President: Bernard Raffner
Director - Technical: Bert Armstrong
Director – Sales: Andrew Procopio

PRODUCTS and SERVICES - Inductotherm manufactures a complete line of induction heating and boosting systems for titanium slabs, billets, blooms, bars and rods prior to rolling. Other products include vacuum induction melting, holding, pouring, heating and coating equipment for thermal applications in air or controlled atmospheres for the metals industry. Coreless and channel furnaces with capabilities up to 500 tons; power supplies up to 42,000 kW; automatic pouring systems with vision control; computer controls and charge handling systems.
Titanium Buyers Guide (continued)

Industrial Metals International Ltd.
+1-631-981-2300
www.industrialmetals.com

IML is a supplier of bar, sheet, tube, wire, rings and forgings in aluminum, titanium, nickel stainless steel, alloy and bronze products. In business for over 40 years, IML is approved by companies such as Rolls Royce, Boeing, Airbus, UTAS, GE, and Pratt and Whitney. Located near JFK Airport in NY, IML is able to offer same day shipping to countries worldwide with no minimum order charge for stock items.

Inteco
www.inteco.at

Being a supplier and partner to the steel and general melting industry since 1973, INTECO is proud to be today the only single source supplier worldwide who offers and has already put into operation all production processes for the liquid treatment of steel, ferroalloys and super alloys such as:

- Melting (EAF, SAF)
- Refining (LF, VD/VOD, AOD, RH & Auxiliaries)
- Casting (CC, IC etc.)
- Special Melting & Remelting (VIM, ESR, Pressure ESR, ESRR, VAR) and Titanium Production Technologies
- Automation & Level 2 Systems (incl. Titanium-Workshops)
- Consulting Services

Invera
+1-610-325-0124
www.invera.com
peterd@invera.com

Invera is the leading supplier of ERP software for the metal distribution industry. Our STRATIX software provides advanced functions for sales, inventory control, production, shipping and outside processing of specialty metals.

Metal Specifications, Mill Test Certs and third party certificates can be controlled within STRATIX and as required emailed to customers upon shipment.

Full product traceability enables companies to have complete control and accountability of all material purchased, processed and shipped to customers.

Invera also provides INVEX for eCommerce and Customer Web Service options over the internet. Coupled with the INVEX-CRM applications companies can optimize the sales process by recording quotes, activities and tasks. STRATIX-ONE a Decision Support & Management Dashboard provides executives and managers with real time sales, operations and financial information.

Because STRATIX was designed from the ground up for metal distributors and processors the inventory can be accessed using metal industry nomenclature. A complete solution tailor made for titanium metal companies.

Jiangsu Tiangong Technology Company Ltd.
0511-86319358
www.tgqi.cn
rongjun_jiang@tiangong-tools.com

Jiangsu Tiangong Technology Co., LTD was established in 2010, is a wholly owned subsidiary of Tiangong International. The company is located in JuRong City, JiangSu Province, our company is a production, sales strategy based on titanium and titanium alloy new materials, Tiangong has smelting, forging, hot rolling, cold rolling, finishing a series of production process of finished materials, the main products are titanium ingot, titanium bar, titanium tube, titanium plate, titanium coil, hot rolled tape. Titanium wire etc..

K-Tig
www.k-tig.com
belinda.latz@k-tig.com

K-TIG (Keyhole TIG), a variant of GTAW, is a high speed, single pass, full penetration welding technology that welds up to 100 times faster than TIG welding in materials up to 16mm in thickness, and typically operates at twice the speed of plasma welding. K-TIG reduces power and gas consumption by up to 95%, dramatically reduces labor costs and routinely delivers overall savings in excess of 90%.

K-TIG is ideally suited to Titanium, exotic materials and most corrosion resistant materials. K-TIG is a robust process with a board operating window and simple set-up requirements.

K-TIG welding requires no edge bevelling of the materials, and eliminates the need for wire consumables by autogenously welding the parent materials in both pipe and plate.

Save the time, labor, energy and cost of V-prepping your materials and eliminate the need for setting root gaps. Plus, tack welds are simply consumed in the K-TIG process. K-TIG can even be used to perform a sealing pass around the joint prior to welding if airtight purging is required for reactive materials like titanium.

K-TIG is a TIG/GTAW welding system capable of performing a traditional 6-hour TIG weld in 3 minutes, to a superior quality standard but don’t take our word for it. We prefer to let our customers do the talking:

“K-TIG has significantly improved our cost position and greatly improved our delivery times. The results speak for themselves – faster welding, less consumables, less prep, cleaner welds, reduced re-work and higher quality. The machines are easy to use, simple to setup and the K-TIG team is great to work with.”

Jeff Thomas, Vice President, Operations, TITAN Metal Fabrication

KASTO, Inc.
1-724-325-5600
www.kasto.com
sales@us.kasto.com

KASTO, Inc is the world’s only COMPLETE supplier of Metal Cutting Machinery offering all available Metal Sawing methods. These include Band Saws, Plate & Block Saws, Cold Circular Saws & Hacksaws. Customers benefit from un-biased recommendations about which Metal-Cutting Equipment is best for their application. We also offer complete Storage and Retrieval Systems!
Titanium Buyers Guide (continued)

Kevin Kreitman, EFO
530-921-1711
kkkreitman@gmail.com

Chief Kreitman has 36 years’ experience in the fire service beginning his career as a firefighter in Albany, OR. He was Fire Chief with the City of Albany from 1999 until accepting the Fire Chief’s job with the City of Redding, CA in Sept. 2008. Kreitman developed significant experience during his time in Albany dealing with the numerous metal industries handling materials that presented unique fire hazards. Based on those hazards, Kreitman wrote a paper on the proper handling of titanium and zirconium metal fires.

He’s a member of National Fire Protection Association (NFPA) Combustible Metals committee and has been active in the standard process with emphasis on the development of the Fire Prevention, Fire Protection and Emergency Response Chapters. He has written articles on dust & combustible metal hazards and conducted presentations at national conferences; he has assisted NFPA and the National Institutes for Occupational Safety and Health on investigations and publications dealing with combustible metal hazards, and was an author of the Combustible Metals chapter in NFPA’s recent 9th Edition of the Fire & Life Safety Inspection Manual.

Keywell Metals, LLC
+1-773-572-6173
www.Keywell.com

Keywell Metals, LLC is the industry leader in specialty steel recycling and a worldwide purchaser, processor and seller of titanium scrap metal for ingot formulation, alloy additions and ferro-titanium production. In addition to the complete range of processing capabilities, Keywell Metals, LLC operates the largest and most modern fully equipped on site analytical laboratory in the scrap metal industry. Every product shipped from Keywell Metals, LLC is fully certified and guaranteed to meet Customer Specification.

Kings Mountain International (KMI)
+1-704-739-4227
www.kmiinc.net
sales@kmiinc.net

Kings Mountain International (KMI) is an ISO 9001:2008 / AS9100C certified precision grinding company.

KMI processing includes:

- Flat / Tapered / Contoured precision thickness machining
- Tolerances to +/- .001” (.0005” upon request)
- Sizes up to 110” x 360: larger sizes upon request
- Weight control for Aerospace applications
- Thin sheet grinding to .010”
- Surface Finishes from 250 RMS to 12 RMS and finer
- Polishing of sheet and plate to #3, #4 or #8 mirror. Non-directional also available

Benefits:

- State of the art measurement instrumentations
- Experience with all types of metals
- Plate / Sheets arrive clean, damage free and ready for fabrication

Industries we serve:

- Aerospace / Defense / Energy / Commercial Aircraft / Architecture

Kropp Forge
www.kroppforge.com

Kropp Forge opened as a job forging shop in 1901. Output was limited to flat die work produced on three small hammers. Today, Kropp Forge is an industry leader, producing high quality forged materials in over 450,000 sq. ft. of production space using small and large hammers as well as hydraulic presses. The plant produces a wide variety of forgings ranging from 3,000 pounds to parts weighing just a few pounds. Our Markets include: Military and Commercial Aerospace, Power Generation, Oilfield/Petrochemical, Construction Equipment, Heavy Truck and other General Industrial forgings. Materials Forged include: Titanium, Nickel Based Alloys (Inconel), Stainless Steel, Steel and other forgeable grades of material. We furnish product as forged, Heat Treated, Rough Machined and/or Finish Machined and are equipped for Non-Destructive and/or Destructive Testing.

L.C.M.A.
+352 26 55 43-1
www.lcma.lu
Mr Otis Claey – CEO - claey@lcma.lu
Mr Mr Mitidieri – Production Manager - Thomas@lcma.lu

Founded in 1996, LCMA is now a fully integrated producer, processor and distributor of a wide range of semi-finished titanium and titanium alloy products for aerospace, medical, petrochemical and industrial applications.

We work with several manufacturers based in Ukraine and Europe who convert our Grade 1 to 5 ingots in forged and rolled bars, sheets, plates, coils, spools, electrodes, tubes and more. LCMA is ISO 9001:2008 and EN9100:2009/AS9100:2009 aerospace approved and is PED97/23EC certified.

Being part of a vertical structure LCMA controls quality at all production processes and all products are US, EC and HB tested. We deliver to customers all over the world and our Quality, Experience, Flexibility, Short lead time, Large stock and Competitive prices makes us one of the key players on the market.

Please contact us at fax: +352 26 55 13 45 or Email : lcma@pt.lu

Laboratory Testing Inc.
800-219-9095
www.labtesting.com
sales@labtesting.com

Laboratory Testing Inc. (LTI) offers aerospace primes and their supply chains a full-line of Destructive and Nondestructive Testing services and the quality assurance that is needed to meet the industry’s stringent requirements. Standard turnaround for most testing and certified reports is just a few days. Same-day, Next-day and 2nd-day expedited services are offered for even faster turnaround.

LTI supports our global clients with highly reliable testing for raw materials and finished products. Our lab has the technical expertise and the qualifications needed by the aerospace industry, including:
Titanium Buyers Guide (continued)

- NADCAP and A2LA accreditation
- ISO/IEC 17025 certification
- Approvals from aerospace primes, material suppliers and manufacturers
- Testing performed to industry standards

LTI has been in business since 1984 providing cost-effective solutions for clients. Although metal testing is our specialty, some services are offered for powdered metals, plastics, composites and ceramics.

With a 104,000 sq. ft. facility, Laboratory Testing, near Philadelphia, PA, is one of the largest independent testing laboratories in the USA and fully capable of handling and testing materials of all shapes, sizes and quantities. Call or visit www.labtesting.com for a fast quote.

LAI International
+1-518-273-3912
www.laico.com/industrial

LAI International (formerly Zak Incorporated) is a fully integrated design, fabrication, machine, and test facility. We engineer, manufacture, and refurbish crucibles, liners, molds, and accessories for the remelting and production of specialty metals. Our manufacturing and consulting experience has contributed significantly to the VAR, ESR, Plasma, EB, C.C., and EBPVD processing industries. This experience, along with our precision CNC machining capabilities, will extend your product life cycles and improve the reliability of your process. Our ISO 9001-2008 certified services include a full range of dual pallet, multi-axis CNC machining centers with live tooling; MIG, TIG, and stick welding of copper and other dissimilar metals; hydro, helium, X-ray and other available NDT services. For more information about Zak Incorporated, please visit us at www.laico.com/industrial

Laube Technology
(888)-355-2823
www.laubetitanium.com
tisales@laube.com

Laube Titanium Mill Products is a division of Laube Technology. Laube began its long history of quality and service in 1948 as a Chicago based warehouse distributor of steel mill products. Anticipating the growing influence of the Pacific Rim countries in supplying product to the United States, Laube’s corporate offices were moved to the west coast in 1961. Strategically poised, Laube became an industry leader, pioneering the importation of metal products from Asia and elsewhere. Today the Laube group consist of three separate divisions. Those are: Titanium Mill Products; Offering titanium forms of sheet, plate, bar, tube, pipe, and coil from both domestic and foreign mills. The Custom Metal Parts division, which specializes in providing the industry with unique metal components usually designed for a specific use; and Electronic Components and Assemblies Division. This department supplies all types of custom control panels and keyboard assemblies. Laube is a privately held, family run company and continues in its proud heritage of providing decades of quality product at competitive costs.

LOTERIOS S.p.A., a TIMET Company
+39-02-9648281
www.loterios.com

LOTERIOS S.p.A. core business: TIMET Italian Service Center (sheets, plates, bars, forgings, etc.) and leading fabricator of titanium pipe, fittings, shell and tube heat exchangers and vessels as required.

Louyang Hexin Titanium Industry Co., Ltd

Louyang Hexin Titanium Industry Co., Ltd was founded in 2014. Our company produces titanium products since 2014, including rods, tubes, plates.

Products are widely used in petrochemical, sial. Offshore industry, energy generation and other industries. Typical applications include: Titanium and titanium alloy bar for hot-rolling; Titanium alloy standard parts; All kinds of corrosive fluid transmission pipeline system; Titanium bicycle tube; automobile exhaust pipe; Offshore aquaculture.

Louyang Titanium Group (LTiG)

Luoyang Titanium Group, Inc. (LTiG) is the exclusive North American Representative of Luoyang Sunrui Wanji Titanium Industry Company Limited (Sunrui Wanji). Sunrui Wanji primarily produces high-quality (pure and near pure) titanium sponge for the domestic (Chinese) and international markets. In our capacity as North American Representative, LTiG is responsible for Sunrui Wanji’s entrance into the North American titanium market.

Since its inception, the evolution of the black sand has been a global effort that has inspired scientists, scholars and entrepreneurs alike. We live in a global economy where free-flowing-resources, pursue global opportunities and titanium is arguably one of the best example of a global commodity, fulfilling the growing demands of a multi-nation audience of consumers. Luoyang Titanium Group Inc., along with our global partners, sees our existence and opportunity for growth, as an extension of the global titanium phenomena.

For more information about our products and services; email corporate@ LTiGus.com or by calling 707-787-LTiG.

Mair Research S.p.a.
+39 0445 634 444
www.mair-research.com
salesdept@mair-research.com

Since 1977, MAIR Research has offered specialized equipment and services to the steel industry, specifically helping tube and bar producers to create profitable and efficient production processes in a safe environment.

The highest levels regarding innovation and quality are achieved through young and well experienced technical personnel, for the electrical design, software programming and the pre and after sale service.

Single stand-alone equipment or customized complete and integrated finishing lines are developed by an experienced team of technicians and are entirely manufactured in two modern production facilities covering a total surface area of 36000 sqm.
Mair Research has gained significant experience in the field of finishing lines for ERW and Seamless tubes by supplying turnkey solutions to customers in over 45 nations.

Recently a great number of producers of OCTG tubing have chosen Mair Research as supplier of their finishing lines taking the tube from the mill and delivering it in a bundle after having undergone the required finishing and testing operations (e.g. ID beam removal, chamfering, hydro testing, visual and NDT inspections, coating, automatic bundling and strapping). Data management and tube tracking are all features developed by our staff and integrated in the lines.

The range of Mair Research comprises also Bar finishing equipment with the possibility to supply fully integrated lines (e.g. peeling, straightening, multi-cutting, chamfering, automatic bundling and strapping).

**Makino**

1-800-552-3288  
[www.makino.com](http://www.makino.com)

A world leader in advanced CNC machining centers, Makino is committed to providing high-performance, leading-edge machining technologies and innovative engineered process solutions that enable manufacturers to focus on making what matters. Makino offers a wide range of high-precision metal-cutting and EDM machinery, including horizontal machining centers, vertical machining centers, 5-axis machining centers, graphite machining centers, and wire and sinker EDMs.

Makino’s flexible automation solutions provide reduced labor costs and increased throughput in a variety of production volumes and designs. Makino’s engineering services offers industry-leading expertise for even the most challenging applications across all industries. For more information, call 1-800-552-3288 or visit makino.com.

**ATS-MER, Materials & Electrochemical Research (MER) Corporation**

+1-520-574-1980  
[www.mercorp.com](http://www.mercorp.com)

The technologies MER pursues includes: Rapid Additive Manufacturing, Titanium Powder and Fabrication by Additive Manufacturing, Metal and Carbon Matrix Composites, Electrochemical Systems, Porous Materials, Coatings, Spinel and Nanotechnology. MER develops processing to produce titanium more economically that includes lower cost than sponge and downstream additive manufacturing processing to produce low cost titanium components. These technologies include producing titanium powder directly from ore/TiO2 at a cost substantially lower than that of Kroll sponge, engineering the Kroll process entirely in one reactor at a reduced cost, producing titanium alloy powder from ore/TiO2 and one-step production processing near net shape alloy components at a cost of under $10/lb.

**Medart, Inc.**

+1-724-752-2900  
[www.medartglobal.com](http://www.medartglobal.com)

Medart designs and manufactures centerless bar peelers, coil to coil peelers, coil to bar peelers, straighteners, fastener wire pay-off systems, take up systems, plane straighteners and engineered material handling equipment. Purpose built processing equipment for the titanium industry.

**METALVALUE**

+33680562848  
metal@honnart.fr

METALVALUE provides strategic consulting services and invests into selected industrial companies.

**Metalwerks PMD, Inc**

+1-724-378-9020  
[www.metalwerks.com](http://www.metalwerks.com)

Metalwerks PMD, Inc. produces a wide variety of specialty metals, superalloys and developmental alloys in Iron, Nickel and Cobalt based alloys. We melt current and developmental titanium alloys in ingot form from 400 grams to VAR ingots weighing up to 5000 pounds. We also convert these ingots into mill products for use by our customers.

**Metalysis Ltd.**

+44 (0) 1709 872 111  
[www.metalysis.com](http://www.metalysis.com)  
kartik.rao@metalysis.com

Metalysis is a UK-based technology company, which has developed a proprietary process to produce metal powders at low cost using electrolysis. It is currently focused on the production of tantalum and titanium alloy powders for use in conventional and additive manufacturing, with a variety of applications in industries including aerospace, electronics, bio-medical, petro-chemical and automotive.

**MetCon, LLC**

+1-724-888-2172  
[www.MetConLLC.net](http://www.MetConLLC.net)

MetCon provides conditioning and finishing services for both intermediate and finished products, including bloom, billet, bar, plate, sheet, and machined or fabricated components employing a patented “Green” electrochemical technology. Product yields and costs are dramatically improved when compared to conventional processing. The technology can also provide alpha case removal, precise gauge removal, and ultra-bright micropolishing. MetCon is based in Monaca, PA, 30 miles northwest of Pittsburgh.

**Mega Metals, Inc.**

+1-602-258-6677  
[www.megametalsunlimited.com](http://www.megametalsunlimited.com)

Mega Metals Inc., is a globally recognized high quality processor of Titanium Turnings and Solids. We are certified by major mills and casting houses for prepared aerospace grade material. Our philosophy is to unite the highest quality in customer service with the highest quality of our materials, in order to serve the expanding international demands of the metals recycling industry.
TITANIUM TODAY

METRACO NV
+32 56 234400
www.metraco.be

European traders of ferro-alloys and non-ferrous metals. Specialized mainly in ferro titanium, titanium sponge and manganese metal. Supplying all grades of FeTi 70 % and buyers of titanium scrap and low grade sponge for FeTi production. Supplying steel grade sponge directly to steelmills and masteralloy producers worldwide.

MetSuisse Distribution AG
+41 44 586 02 74
www.metsuisse.com
info@metsuisse.com

MetSuisse reflects the precision and high quality products the industry requires. Being the first metal distribution company specializing in the medical and watch industry, MetSuisse has been able to specialize in sourcing for these industries. The stringent and precise requirements found in the medical & watch industry has given us the experience and abilities required to meet the various requests. Next to our experience we are the first metal distribution company specialized in the medical industry, and operate strictly according to ISO 13485 (Medical) and the GDP standards valid for pharmaceuticals (besides ISO 9001). Currently, we are specialized mainly in the metals titanium, zirconium, CoCrMo, medical stainless and tungsten alloys. However, you can contact us with any of your sourcing requests. We work with dedicated partners worldwide.

MetSuisse has a unique grinding facility allowing:
- precision grinding of titanium foils, sheets and plates
- technology applied for the Swiss medical and watch industry
- no min. quantities for CP Grade 1, 2, 4 and Ti6Al4V Eli
- min. 0.09 +/- 0.015 mm
- (= in inch 0.003543307” +/- 0.000590551”)

Mid-West Machine
+1-205-663-0732
www.vulcangroup.com
sales@vulcangroup.com

Mid-West Machine™ provides metal conditioning equipment and systems for the Steel and Titanium industries. This includes both bonded wheel and coated abrasive belt grinders. We offer Traveling, Stationary, Gantry, Overhead, and Ingot End Grinders as well as material handling equipment for processing slabs, billets and rounds through the grinders.

Monico Alloys
(310) 928-0168
www.monicaloys.com
info@monicaloys.com

Monico Alloys specializes in the processing of titanium scrap in the form of solids and turnings. Monico is a Global Mill processor for Titanium Scrap metal ISO 9001:2008 and approved by every major titanium melter. Monico Alloys prepares bulk-weldable solids, feedstock, cobbles, and turnings to rotor quality specifications. Monico Alloys remains the industry leader by utilizing only the latest scrap processing technology. Monico Alloys offers a wide variety of Titanium Alloy inventory which includes CP, 6-4, 6-2-4-2, 6-6-2, 3-2.5, and others.

MoTiV Metals, LLC
+1-412-200-5832
www.motivmetals.com

MoTiV Metals, LLC is an independent sales and marketing company supplying molybdenum, titanium, vanadium and other products to the global steel, titanium and chemical industries. The company has a vast array of expertise and knowledge in domestic and international sales, logistics and supply chain management.

MoTiV Metals LLC offers Master Alloys to the Titanium industry, through its relationship with BHN Special Materials Ltd, including V-Al, Mo-Al, and other alloys.

Multi-Etch LLC
(928) 634-5307
www.multietch.com
info@multietch.com

Multi-Etch is a low-acid (pH 6.8), far safer etchant for titanium and other metals, with a less toxic waste stream, when compared with hydrofluoric and nitric acids. Preparing titanium with Multi-Etch enables anodizers to produce brilliant colors and welders to achieve welds that can withstand the rigors of deep space and deep ocean uses. Multi-Etch is also used to brighten titanium mill products and tumbled titanium parts, and to erase anodizing mistakes. Industries regularly using Multi-Etch include aerospace, medical, dental, jewelry and other arts, marine, architectural, and industrial.

nanoPrecision Products, Inc.
+1-310-597-4991
www.nanoprecision.com

nanoPrecision Products is a designer, developer & manufacturer of precision products with applications in the telecommunication, data communications, consumer electronics, mil/aero and bio &medical device markets. We employ various metals in our products including titanium. The products we are introducing to the market that utilize titanium are anticipated to consume large volume of material.

NEOTISS
+33 1 70 98 30 05
www.neotiss.com
contact.fra@neotiss.com

NEOTISS is leader in the manufacturing of titanium and stainless steel thin welded tubes serving all demanding industry markets from power generation to desalination, process, automotive and more. Our products include not only bare, straight tubes but enhanced surface tubes, such as low fin, helix and corrugated tubes as well as u-bent tubes for special applications. The highest level of quality and safety in the market is guaranteed by stringent control procedures and unchallenged technical experience. The best testimony of product quality is the long list of
references, worldwide. Our R&D teams develop ambitious innovation and research programs to enhance the performance of the tubes in the toughest environments. We have high manufacturing capacities, with production mills on three continents, Asia, North America and Europe, (namely in China, France, India, South-Korea, the USA) as well as a secured access to superior quality titanium strip.

NF&M International  
www.nfm-titanium.com

NF&M International, subsidiary of VSMPO-Tirus US, is a producer of premium quality triple melted and standard grade titanium bar and billet products for the aerospace market and manufacturer of small-diameter precision tolerance bar and seamless coil products for aerospace fastener, automotive and medical applications. NF&M also provides a wide range of conversion services, including intermediate grinding and finishing of bar/billet, heat treating, straightening, bar peeling, bar polishing, pickling and inspection. NF&M’s Nadcap approved laboratory performs room temperature tensile, hardness, hydrogen analysis and micro/macrostructure evaluation.

NobelClad  
+1 303.665.5700  
www.nobelclad.com  
sales@nobelclad.com

NobelClad is the world leader in the field of explosion welding. We have more than half a century of expertise, and we are the one company with the most global resources and infrastructure committed to clad, offering bi-metallic solutions for complex industrial markets, including oil and gas, chemical, and transportation. We work with global partners across the supply chain not only to deliver the highest-quality, most cost efficient clad materials on time, but to inform and help develop project specifications from the onset. Our design ingenuity, technical proficiency, and unparalleled dependability make us an invaluable resource for process architects, engineers, and fabricators alike. That’s why our clad materials are the preferred specification for high stakes industrial infrastructure applications all over the world. Specialties: Explosion Welded Clad, Longitudinally Welded Pipe, Pressure Vessels, Heat Exchangers, Structural Transition Joints, Electrical Transition Joints, Cryogenic Transition Joints, Flat Plates & Cylinders, Heads, Tube Sheets.

Norsk Titanium AS  
+47 97 42 22 00  
www.norsktitanium.com  
info@norsktitanium.com

Norsk Titanium AS is the world’s pioneering supplier of aerospace-grade, additive manufactured, structural titanium components. The company is distinguished in the aviation industry by its patented Rapid Plasma Deposition™ (RPD™) process that transforms titanium wire into complex components suitable for structural and safety-critical applications. The Norsk Titanium research and development team is committed to displacing the age old and inefficient forging process with a precision wire deposition technology embodying substantial savings for aerospace, defense, and commercial applications. www.norsktitanium.com

North American Alloys  
+1-800-985-2250  
www.northamericanalloys.com  
steve@northamericanalloys.com


Contacts: Michael Shulimson – President, Steve Meredith, Director of Sales and Peter Rockefeller, Warehouse Manager

Nu-Tech Precision Metals  
+1-613-623-6544  
www.nutechpm.com  
shook@nutechpm.com

Nu-Tech Precision Metals manufactures by hot extrusion seamless pipe, tube, fittings, bar, rod and shapes for nuclear, aerospace, military, medical, offshore, mining, chemical, sub-sea and corrosive environments. Extruded shapes, especially those for the aerospace industry in 6Al-4V, fit within a 12” (300 mm) circle size. Our extrusion process creates a near-net shape that reduces material and machining costs overall. Our ability to alpha-beta process results in improved fatigue resistance over beta extrusions… contact us to learn more about how this process will benefit your extrusion requirements. Seamless pipe from 1.5” (40 mm) to 14” (350 mm) plus specialty sizes and wall thickness. In-house finishing options including OD grinding or machining, ID honing or boring, hot straightening, pickling, non-destructive testing and electron beam welding are a few of the services we offer.

Oerlikon  
https://www.oerlikon.com

Oerlikon is a leading global technology group providing market leading technologies and services. Oerlikon has more than 13,800 employees at over 180 locations in 37 countries and sales of CHF 2.331 billion in 2016. The group is structured in three Segments: Surface Solutions, Manmade Fibers and Drive Systems, each operating under their own well-established brands and with their own market-specific strategies. It has a long-standing presence in Asia, particularly in the emerging markets of China and India, a strong foundation in Europe and serves the most important markets in the Americas. In 2016, the group continued to invest over 4% of its annual total sales in R&D, corresponding to CHF 94 million, and filed 67 patents worldwide.

“Titanium Valley” Special Economic Zone” OJSC  
+7-343-378-45-83  
www.titanium-valley.com  
welome@titanium-valley.com

Titanium valley is the special economic zone (SEZ), based in Russia, Sverdlovsk region, where unique conditions for production organization and development are created. The territory of the SEZ is located close to the OJSC “VSMPO-Avisma” Corporation”, the world’s largest titanium
producer, supplier of raw materials, forgings and finished production for Boeing, Airbus, Rolls Royce, Goodrich, Embraer, GE. Thus, the territory is known after the name “Titanium Valley”. The companies investing in the SEZ get prepared sites with all the necessary utilities. Moreover, they are exempted from customs duty on import of capital goods, VAT as well as from the corporate profit for the first 10 years. For the moment there are 8 resident companies, organizing their production in different industrial spheres at the SEZ. The key resident is LLC “Vsmpo-New Technologies”, that will start their production of machined titanium components for aerospace companies, mostly for Boeing, in 2017.

OSAKA Titanium technologies Co., Ltd.
+81 3 5776 3103
www.osaka-ti.co.jp

OSAKA Titanium technologies Co., Ltd. manufactures premium quality titanium sponge mainly for aerospace use, high-purity titanium billet and polycrystalline silicon for semiconductor industry, titanium powder for powder metallurgy and additive manufacturing, and other titanium-silicon related products.

Paris Saint-Denis Aero
http://www.psdaleaero.com

PSD AERO is one of the main suppliers for raw materials products of key players in the aviation sector, like for example AIRBUS, SNECMA, EUROCOPTER, DASSAULT AVIATION, etc. Our Quality Management System meets the IAQG’s series requirements.

With our experience and rigor acquired during the last few decades, the company consists of 90 staff members that have enabled them to increase their turnover 10 times over in 10 years.

PCC Metals Group
www.precast.com/

The PCC Metals Group joins together PCC’s metals companies: TIMET, a vertically integrated titanium supplier; and Special Metals, a leader in nickel alloy development. With over 200 years of collective experience, each organization is an original stronghold and remains a leader in their respective industries by developing and producing specialty alloys to meet customer demands. By uniting the unique capabilities of each company, the PCC Metals Group is able to better serve customers in the specialty metals market and bring successful product solutions to market.

Plymouth Engineered Shapes
800-718-7590
www.plymouth.com
jlake@plymouth.com

Plymouth Engineered Shapes is the premiere provider of near-net extruded shapes for a large variety of applications. All customers want to squeeze more cost out of their parts and Plymouth Engineered Shapes offers the solution in Titanium, Stainless steel, Alloy steel, or Nickel-based alloys. Our Engineers are capable and willing to work with your design engineers to develop the most optimum near-net shapes possible to make your finished parts. No other manufacturer in North America offers so much experience in special shape technology, or provides so many value-added options to meet your product specifications.

PMA Engineering / Design Group
253-926-0884
www.pma-engr.com

PMA Engineering/Design Group brings a broad and extensive depth of engineering and operating experience in titanium to work for you. With our expanded resources, and our understanding of the critical requirements of the RG/PG world opens the door for us to benefit your organization. Our experience and ability to assist across all facets of an operation, including sponge, sponge processing, scrap and scrap handling, scrap processing, blending, melting, finishing, flattening, and other operations, allows for integrated, comprehensive solutions.

We can partner with you to Optimize Processes and assist with reviews of your operations in regards to RG/PG standards and expectations. We will utilize our experience to upgrade or replace equipment to improve or increase your production capabilities. We can provide Facility Audits, Feasibility Studies, FEED Studies, and Detailed Engineering for new process and manufacturing facilities, including the integration of your control and data systems for reporting, chronological documentation and MIS reporting. And, we can audit your processes against industry quality standards and provide paths for continuous quality improvement.

We partner to make you better.

Perryman Company
+1-724-746-9390
www.perrymanco.com

Perryman Company is a vertically integrated producer of specialty titanium products. Our operations include melting, forging, and fabrication to finished products, Perryman’s quality, technical expertise, and customer services unmatched. Our Spectralloy facility is engaged in the recycling of titanium revert raw material for use in various titanium melt processes in the manufacture of titanium ingots. Perryman supplies and services customers in the aerospace, medical, consumer, recreation and 3D printing/additive manufacturing markets worldwide. Approvals include ISO9001:2008; AS9100, and NADCAP. Perryman Company is headquartered in Houston, Pennsylvania. Company offices are located in Philadelphia, Los Angeles, London, Zurich, Tokyo, and Xi’an.

PM International Suppliers, LLC
(863) 644-6300
www.PMfirst.com
info@pmfirst.com

We supply pipe and fittings, tubing, valves, flanges, bars, sheet and forgings with numerous worldwide sources for limitless applications. PM International Suppliers specializes in providing products in exotic
Titanium Buyers Guide (continued)

materials such as duplex, super duplex, 6% molybdenum stainless-steel, titanium, copper nickel and nickel alloys.

Industries we serve:
• Offshore Petrochemical
• Geothermal
• Chemical Manufacturing
• Aerospace
• Desalination
• Power Plants
• Water Treatment Facilities
• and more!

PMIS customers are worldwide, and we handle everything from one-off emergency deliveries to complex, long-ranging project installations.

Praxair Surface Technologies
www.praxairsurfacetech.com

We engineer gas atomized metal powders in a wide range of standard alloys for all your additive manufacturing techniques and applications. We’ve also developed a proprietary atomization process specifically designed for titanium. Out cobalt, iron, nickel and titanium metal powders for additive manufacturing flow easily and deposit evenly, resulting in successive layers with consistent density and uniform build rates. Ultimately, this helps products meet the mechanical, performance and final part specifications of 3D printed parts. Out powders are custom-engineered for specific industries – including aerospace, automotive and medical – and our chemistries and particle sizing can be modified to ensure customer’s finished products performance and surface finish needs are met.

Precision Thin Metals
http://www.arnoldmagnetics.com/Precision-Thin-Metals

The Precision Thin Metals (PTM) business of Arnold Magnetic Technologies produces thin and ultra-thin alloys that improve the power density of motors, transformers, batteries and many other applications in Aerospace, Industrial, Automotive, and Medical markets. Customers rely on us for thin-rolled titanium in applications that demand high performance and consistent quality. Arnold’s Precision Thin Metals business offers titanium products in a number of commercially pure grades and several standard alloy compositions. Our titanium and titanium alloys are available in cold rolled or annealed condition. PTM is Nadcap certified for heat treatment.

President Company Ltd.
+886-227411-190
www.presico.com.tw
presico@presico.com.tw

President Co., Ltd., established in Taiwan in 1969, is one of the largest titanium stockists in the Asia. Our business focus on the trading of high quality titanium with diverse stocks. Besides, our product includes titanium slabs, sheets, bars, wires, pipes, fasteners, castings, etc. We commit to supply the most satisfying high quality titanium materials for users with quick lead time and favorable after sales service. Currently, our sales network is well deployed all over China, Taiwan and South-East Asia countries.

President Titanium Co., Inc.
+1-800-225-0304
www.presidenttitanium.com
sales@presidenttitanium.com

President Titanium has the largest inventory of domestic 6Al/4V, 6Al/4V ELI, and Grade 4 titanium bar, sheet & plate in the country. We have been serving the aerospace, military and medical industries since 1973. Most orders shipped in 1-2 days, call for our free booklet.

Product Evaluation Systems, Inc.
724-834-8848
www.PES-Testing.com
Mic@PES-Testing.com

Product Evaluation Systems, INC. (PES) is an independent testing laboratory, specializing in mechanical, metallurgical, chemical and nondestructive testing and analysis. Since 1979, PES has been proud to offer exceptional personalized response to customer needs. The company includes a team of key personnel with 20-40 years of individual experience in machining, testing and metallurgical evaluation. PES is both NADCAP and ISO 17025 accredited and holds multiple customer accreditations such as GE Aviation, Pratt & Whitney (MCL), Rolls-Royce Aerospace and ATI Nuclear. Accreditation awarded to PES covers mechanical testing, test specimen preparation, metallography, chemical analysis and nondestructive evaluation. Industry sectors include, but are not limited to, Aerospace, Power Generation, Oil & Gas, Mining and Recovery/Reclamation.

Quebec Metallurgy Center
+1-819-376-8707
www.cmqtr.qc.ca

The Quebec Metallurgy Center is a technology transfer center located in Trois-Rivières, Quebec, Canada. Our activities focus on supporting the technological development of manufacturing companies in the metallurgical sector. CMQ has developed a broad expertise on the transformation and development of advanced alloys such as titanium, zirconium, aluminum and nickel. Our semi-industrial metalworking facility is equipped for short series production with controlled atmosphere casting, induction skull melting, plasma arc melting, permanent mold, shell mold and sand mold casting; advanced welding, thermal spraying, heat treating, hot isostatic pressing, additive manufacturing (directed energy deposition, binder jetting and ultrasonic welding) and non-destructive testing.
RathGibson
+1-608-754-2222
www.rathgibbon.com
inquiry@pccenergy.com

Company description: RathGibson is one of the world’s leading manufacturers of precision welded tubing and pipe in both stainless and specialty alloys. From straight lengths to coil, welded and drawn, or seamless tubing and pipe, our products can be made from any of our 40 high-performance alloys so that they will reliably perform no matter how demanding or corrosive the application. At RathGibson, a successful technical process to meet any customer requirements is a priority, so that only the finest and most high quality tubing is delivered. That is why RathGibson invests in unique capabilities to develop customizable products for industries including power generation, renewable, oil and gas, petrochemical, food and dairy, beverage, pharmaceutical, and general commercial.

ReMelt Scientific, Inc.
+1-330-440-0402
www.remeltinc.com
sales@remelt.net

ReMelt Scientific is a global supplier of Titanium Chip Melt Preparation Systems and Weigh and Blend systems. We specialize in titanium and high temperature alloy chip crushing, centrifuging, aqueous wash and solvent cleaning, thermal drying, fines screening, and magnetic and gravimetric separation to prepare chips to for melting. We also specialize in Weigh and Blend systems that weigh and blend titanium chips, sponge, master alloys, aluminum, iron, and TiO² to achieve customer specified chemistry requirements.

Renton Coil Spring Company
+1-425-255-1453
www.rentoncoilspring.com
info@rentoncoilspring.com

Renton Coil Spring Co. (RCS) is a world-class spring manufacturer for aerospace and performance markets and has been providing superior quality parts and performance since 1949. Design and material capabilities, along with complete performance solutions has lead RCS to become a top supplier of quality springs, wire forms, assemblies, and flat metal parts with thousands of applications across the world.

Reactive Metals Studio, Inc.
+1-928-634-3434
www.reactivemetals.com

Founded 1981, a supplier of exotic metals to include titanium and niobium to the jewelry and decorative arts market. We consult, teach and supply anodizing equipment. We supply jewelry components, chain and findings in titanium. We are small order specialists catering to the medical, crafts and arts community. RMS distributes MULTI-ETCH, a user friendly titanium etch. Multi Etch prepares titanium jewelry, medical & dental components for bright, smooth anodizing without the dangers of Hydrofluoric acids.

Rethet Systems LLC
+1 (707) 462-6522
www.retechsystemsllc.com
sales@retechsystemsllc.com

Rethet is the world’s leading supplier of Electron Beam (EB) and Plasma (PAM) Cold Hearth furnaces for melting and refining titanium and titanium alloys. Retech advanced vacuum metallurgical systems also include Vacuum Arc Remelt (VAR), VAR Consumable (Skull) Casting, EB and PAM Consolidation furnaces, Plasma Welders, Vacuum Induction melting (VIM), Precision Investment Casting (DS/SC/EQ), Cold Wall Induction melting and casting, Vacuum Heat Treating, and Gas Atomization for metal powder production. All our furnaces are available in various sizes and configurations, from simple laboratory-scale to large, custom engineered systems. Further, we provide customer access to a wide range of in-house resources, including technology, material and process development. Identifying customer needs, as well as understanding the importance of producing relevant, viable, and cost-effective technologies, is the foundation upon which Retech is built.

Rex Heat Treat
+1-215-855-1131
www.rexht.com
chris.constable@rexht.com

Rex Heat Treat is a family owned and operated business that was founded in 1938. We take pride in our ability to partner with our customers to gain insight regarding their future needs. We are a leader in customer service and quality for the heat treating industry. Our unique furnace design allows us to water quench titanium raw material and formed parts up to 16” long to meet aerospace and medical specifications. We have furnaces capable of annealing up to 30,000 lbs. in one batch and we are approved by almost all major Aerospace companies. We have 3 locations in Eastern United States, Anniston Al., Bedford PA., and Lansdale, PA. Rex Heat Treat has experienced metallurgists on site and we offer testing services. We look forward to exceeding your expectations with timely communication and time performance.

Roll Forming Corporation
+1-502-633-4435
www.rfcorp.com

Roll Forming Corporation’s Aerospace division offers Inline custom welding solutions and advanced fabrication applications. RFC’s highly skilled and experienced laser welding team is NADCAP approved for a range of aerospace welding and laser welding processes. Additionally RFC offers in house NDT, CWI and NADCAP accredited inspection.

Roll Forming Corporation has taken the initiative in technical development, and collaborating with our customers to find creative solutions to overcome many program hurdles. Our laser welders put us at the forefront of the Aerospace industry in-line laser welded fabrications, RFC continues to lead the way as our inline custom welding solutions, and advanced fabrication applications are RFC’s core competencies. For more information call (502) 633-4435 ext. 338.
Rolled Alloys
+1-800-321-0909
www.rolledalloys.com
sales@rolledalloys.com

Rolled Alloys, a global leader in specialty alloys, offers a comprehensive inventory in titanium, stainless steels, nickels alloys and cobalt alloys. We offer extensive processing capabilities, in-depth knowledge of material specifications, supply chain management support, and metallurgical expertise.

Rolled Alloys holds many quality approvals and certifications in the aerospace and medical industries. We are a preferred supplier to companies that are respected around the world for their exceptional quality standards.

Roskill Information Services Ltd.
+44 (0)208 417 0087
www.roskill.com
info@roskill.com

Roskill global market reports include the latest information on supply, demand, end-use applications, trade and prices for a wide range of metals and minerals including titanium, molybdenum and vanadium. Roskill reports also provide informed forecasts of future trends.

Roskill’s expert researchers make a thorough and objective analysis of all available data, from sources across the globe. This includes a large and invaluable network of contacts including the key industry players in these markets, making Roskill’s research unrivalled in terms of breadth, depth, accuracy and expertise.

To build on this wealth of data, Roskill also offers bespoke consultancy services that can help to explore and understand any specific scenarios or analysis requirements you may have.

S. Letvin & Son, Inc.
+1-310-327-0590
www.titaniumscrap.com

S. Letvin & Son, Inc., specialists in processing high temperature scrap metals, has been in business since 1947. We prepare a high quality 6/4 titanium feedstock package that meets AMS 4928 Chemistry specifications. We have developed a unique and proprietary process to return mixed 6/4 titanium fasteners to specification 6/4 titanium. The final product is 6/4 titanium “Rotor Grade” feedstock; heavy, dense, clean and extremely consistent in chemistry and gases. Our 6/4 titanium feedstock package is approved and desired by most major US titanium mills, as well as many smaller investment casters worldwide.

S+D Spezialstahl Handelsgesellschaft mbH
+49-211-230999-10
www.s-d-group.com
d.verhoeven@s-d-group.com

The S+D Spezialstahl / S+D Speciality Metals Group is one of Europe’s largest stockists for semi-finished high-performance materials like titanium and titanium alloys, special stainless steel for aviation and aerospace or nickel and nickel alloys.

We supply into the following markets:

- Aviation and Aerospace / Motor Sports / Defence Technology / Institutes
- Offshore / Petrochemical / Chemical and Process Engineering / Plant and Equipment Manufacturing / Electroplating / Turbine Manufacturing / Marine Engineering / Energy Industry / Automotive Industry / Universities and Research
- Institutes

We deliver just in time any time. At S+D we are able to cut all our materials according to our customer’s exact requirements utilising our “state of the art” bar saws and plate saws. We also offer precision water jet cutting. Our just in time service provides our customers with cost savings and security of supply. S+D is aerospace approved according to EN 9120 issued by DNV GL

Sandinox Comercio, Importação e Exportação LTDA
+ 55 15 3335 3565
www.sandinox.com.br

Established in 1986, Sandinox is the largest medical distributor for the Brazilian market, offering a full range of products in titanium, cobalt, and stainless steel alloys for the medical industry. Our goal is the constant search for technologically advanced products and materials that will ensure quality and the desired satisfaction of our customers.

Sandvik Materials Technology Product Unit Special Metals
+46-26-260000
www.smt.sandvik.com

Product Unit Special Metals with two manufacturing locations (Sweden and USA) belongs to Sandvik Materials Technology and is a long term experienced manufacturer of seamless tubes and complementary products in Titanium, Titanium alloys and Zirconium based materials for a broad range of industrial applications as well as applications within nuclear, aerospace and medical industries.

The full scale commercial manufacture, which started in 1964 is fully integrated from VAR-remelting of Titanium resp. Zirconium sponge up to finished product.

Scanacon, Inc.
330-877-7600
www.scanacon.com

At Scanacon, our mission is to help stainless, titanium, zirconium and specialty alloy finishers achieve efficient, high quality production at the lowest cost.

With over 30 years’ experience as the World’s preferred supplier of acid management equipment, our knowledge, experience and equipment offers the producer the ability to achieve productive, efficient and cost effective finishing operation. Our solutions have consistently proven themselves across a wide range of pickling, etching and milling applications for all wrought and cast forms.

Scanacon understands that ease of use, low maintenance requirements and efficiency is key to designing process equipment that delivers
value, day after day. No two producers or applications are exactly alike. Delivering value requires a knowledge that can only be gained by experience and is why Scanacon continues to be the chosen supplier for acid management system by all major producers, worldwide.

Schaffer Grinding Co., Inc.
+1-323-724-4476
www.schaffergrinding.com
info@schaffergrinding.com

SCHAEFFER GRINDING CO. is a toll processor of aerospace alloy materials including: Titanium, high temperature alloys, nickel based alloys, and ferrous materials. Processes include: Precision sheet and plate grinding (90” X 240”), band saw cutting, planer milling, rotary and surface grinding. Schaffer Grinding offers its customers coast to coast service with production facilities in California and Ohio.

Sector3 Appraisals, Inc.
+1-718-268-4376
www.sector3appraisals.com

Sector3 Appraisals, Inc. is a metals and chemicals valuation company offering a complete portfolio of asset valuations and advisory services regarding inventory, machinery and equipment and risk management.

Service Steel Aerospace
+1-800-426-9794
www.ssa-corp.com
sales@ssa-corp.com

Service Steel Aerospace is a customer oriented stocking distributor of high performance stainless steel, titanium, alloy steel, nickel based super alloy, and maraging steel. We are committed to providing quality products to the aerospace industry and other critical application industries throughout the world. SSA performs a wide array of value added processing services designed to meet the specific needs of our customers. Our commitment to the quality and service has made SSA the leader in the industry for over 40 years.

Shaanxi Lasting Titanium Industry Co., Ltd.
00 86 29 89651035 00 86 29 89651082
www.lastingtitanium.com
sales@lastingtitanium.com titanium01@263.net

Shaanxi Lasting Titanium Industry Co., Ltd. is the leading Titanium manufacturer and exporter in China. With more than 20 years’ experience, we own two mills in Baoji -The Chinese Titanium City. We are mainly engaged in melting, forging, rolling and machining manufacturing line in titanium and titanium alloy, with an investment of USD 50 million. Exported 3000 mt ingots, 2500 mt forgings and 5000 mt machined parts annually. Our main products include titanium ingots, slabs, bars/rods, plates/sheets, pipes/tubes, forgings, fittings, wire, powder, standard parts, non-standard equipment and other corrosion resistant metals such as zirconium, tantalum, tungsten, molybdenum, niobium.

Sierra Alloys / TSI Titanium PRV Metals Companies
+1-626-969-6711
www.prvmetals.com

Manufacture and supply forged and rolled products in Titanium alloys, nickel-cobalt base alloys, precipitation hardened stainless and high alloy steels from small rectangular and round bar to large section size open die forged bar and stock.

Simonds Saws
www.simondsinternational.com

Manufacturer of industrial saw blades. The oldest cutting tool manufacturer in North America, Simonds offers one of the broadest and most trusted names found anywhere in the world of cutting tools. Many industries have grown to depend on the quality and innovation of Simonds products and services. We have a continuing tradition of quality, design, and innovation. Simonds has innumerable patents, a global leader in high-performance and high-production sawing. The first bandsaw manufacturer in the world to be ISO certified and we remain certified so today. We set our goals high and our customers have grown to expect it.

Since 1832… The Professionals’ Edge.

Solar Atmospheres
+1-855-934-3284
www.solaratm.com
info@solaratm.com

Solar Atmospheres provides vacuum thermal processing for titanium material, parts, forgings, and weldments. With the world’s largest commercial vacuum furnaces up to 48 feet long, Solar is capable of vacuum processing furnace loads of bar, billet, sheet, and plate up to 150,000 pounds under 1X10-6 Torr vacuum levels. Specific heat treat services provided are: degassing, beta annealing, homogenizing, age hardening, creep forming, hydriding/dehydriding, stress relieving and Fluorescent Penetrant Inspection. ISO9001:2008 / AS9100C Registered, Nadcap Accredited for heat treating and NDT (Non-destructive testing), MedAccred Accredited for heat treating, and Boeing approved in heat treating, NDT (Non-destructive testing) services and BASCA (Beta Anneal Slow Cool Age). Solar Atmospheres serves customers with plants located in Pennsylvania, South Carolina, and California.
Solar Manufacturing, Inc.
+1-267-384-5040
www.solarmfg.com
info@solarmfg.com

Solar Manufacturing designs and manufactures high performance, technically advanced and energy efficient vacuum heat treat furnaces. Models range from compact R&D size furnaces to mid-size horizontal production furnaces to huge car-bottom vacuum furnaces for large heavy workloads. Our furnaces feature improved graphite insulation materials, curved graphite heating elements, tapered gas nozzles, high velocity gas quench systems, SolarVac® 4000, and 5000 interactive control systems, and ConserVac energy management system. We design for vacuum heat treat processes such as hardening, brazing, annealing, stress relieving, normalizing, tempering, sintering, low pressure carburizing and vacuum gas nitriding. Solar knows vacuum heat treating inside out. Our engineers and metallurgists bring decades of expertise to the design side of the business and our knowledgeable technicians provide world-class manufacturing keeping Solar in the forefront of vacuum furnace innovations. As an ITA member company, Solar welcomes the opportunity to assist our customers in choosing the right vacuum furnace, replacement hot zone, spare parts and service for your needs.

Specialty Metals Company
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www.uktmp.kz
Sylvain.gehler@specialtymetals.be
Danielle.vanoverschelde@specialtymetals.be

Specialty Metals Co is the major shareholder of UKTMP (Ust Kamengorsk Ti Mg plant) located in Kazakhstan. UKTMP produces Ti sponge, CP and alloy ingots and slabs.

Specialty Metals Processing, Inc.
+1-330-656-2767
www.specialtymetalspro.com
bwilson@specialtymetalspro.com

Specialty Metals Processing (SMP) is a leading processor of titanium plates, slabs, sheets and coil. Located in northeast Ohio, SMP has one of the largest abrasive belt grinding and polishing operations in the U.S. Our 170,000 sq. ft. facility houses multiple processing lines. We are your reliable source for precision grinding where we can accommodate widths up to 72”, material thickness up to 10” and lengths up to 240”. We are your reliable source for gantry grind services where we can accommodate widths up to 144”, material thickness up to 24” and lengths up to 1200”. In addition, we are your reliable source for pinch roll grinding, alpha case removal and reconditioning.

- Precision grinding up to 72” wide and 244” long
- Ability to polish/grind/recondition plate/slabs up to 12’ wide by 100’ long
- Providing #3, #4, # 6, brushed or matte finishes or custom matched abrasive belt finishes, one or two sides.
- Providing #7 and #8 buff finish on stainless coil
- Offering special inspections, packaging, line marking & PVC options
- ISO 9000 certified since 1996
- Offering one stop shopping on many orders
- Same day quoting on most inquiries
- One sheet or truck load quantities, no order is too big or too small

Please visit our website at www.specialtymetalspro.com

Spectore Corporation
954-481-8422
www.spectore.com
info@spectore.com

Spectore Corporation was founded in 1983 to reinvigorate the 3,000 year-old traditions of the jewelry industry with its introduction of titanium as a new noble element. New technologies were perfected to manipulate this extremely tenacious and non-traditional metal. The company’s ambitious designers and R&D team have persistently explored the potential of titanium to create truly unique collections. This resulted in being awarded the 2010 Titanium Development and Advancement Award by the ITA. Today Spectore remains dedicated to the development of new methodologies for the design, engineering and manufacturing of high-end consumer products made of titanium.

Spectore Corporation designs and manufactures for a range of world class brands focusing on consumer products from household, sporting, technology, apparel, corporate gifting and jewelry. Spectore Corporation has also developed their own in house designer brand, Edward Mirell which has won a wide range of national and internationally recognized design awards.

Starrag USA Inc.
+1-859-534-5201
www.starrag.com
ussales@starrag.com

Engineering precisely what you value

Starrag Group is a global technology leader in manufacturing high-precision machine tools for milling, turning, boring and grinding workpieces of metallic, composite and ceramic materials. Principle customers are internationally active companies in the Aerospace, Energy, Transportation and Industrial sectors. In addition to its portfolio of machine tools, Starrag Group provides integrated technology and maintenance services that significantly enhance customer productivity.

Aero Structures
The trend towards ever-more complex and larger structural components, which have to be manufactured within narrow tolerances and within short cycle times, means that innovative manufacturing technologies are crucial. The services offered by the Starrag Group range from five-axis machining of high-tensile titanium alloys to high-performance cutting of aluminum through to precision machining of transmission housings.

Aero Engines
Aeroplane engines are subject to continuous further development and improvement in order to meet demands for greater efficiency, lower kerosene consumption and lower noise emissions. As a long-term partner to the jet engine industry, the Starrag Group offers state-of-the-art production solutions and technologies for the machining of engine
blades, blisks and casings made from the most sophisticated materials.

Avionics
Avionics is a collective term for the electrical and electronic systems used on aircraft and satellites. Flight control, management, communications and navigation systems are the main avionics systems in use today. Avionics systems are highly complex and extreme precision is required. Starrag's machine tool competencies in this market segment are in the areas of injection systems, combustion chambers, gyroscopes and flight control components.

Strohecker Incorporated
+1-330-426-9496
www.strohecker.com

Well-established specialist in the fabrication and repair of copper crucibles, hearths and related equipment used in VAR, ESR, EBM, PAM, as well as various similar processes. Serving producers of the reactive metals and alloys, nickel alloys, refractory metals, and steel alloys.

Structure Medical, LLC

Structure Medical is a leading manufacturer of medical implant products that are used by orthopedic surgeons to treat disorders of the musculoskeletal system. Orthopedic surgeons use these medical devices to treat trauma, sports injuries, degenerative diseases, tumor and congenital conditions.

Structure Medical was founded in Naples, FL in 2004 and established a second facility in Mooresville, NC two years later. The company uses the most advanced machine tooling available around the world to produce products that meet the highest quality standards.

Sumitomo Corporation Of Americas
+1-847-384-5275
www.sumitomocorp.com
shinya.kuriyama@sumitomocorp.com

Sumitomo Corporation of Americas (SCOA) is a wholly-owned subsidiary of Sumitomo Corporation, which is one of the leading trading companies in Japan. SCOA is an integrated global trading firm with diversified investments in a wide variety of industries, products and services.

Supra Alloys, a division of Titan Metal Fabricators
805-388-2138
www.supraalloys.com
sales@supraalloys.com

Supra Alloys offers a fully-stocked Titanium Service Center with the convenience of extensive in-house processing capabilities, with a Management System certified to AS 9100 C & ISO 9001:2008. Located in Camarillo, California USA, Supra routinely provides Titanium for applications in the aerospace, chemical processing, medical, metal finishing and sports/recreation industries throughout the world.

www.tmvacuum.com
eurbanski@tmvacuum.com

T-M Vacuum Products has more than 50 years’ experience designing and manufacturing various standard and custom size vacuum furnaces and vacuum ovens in both rough and high vacuum configurations with temperatures up to 2,000°C.

We specialize in all metal hot zones and strive to create the best vacuum furnaces and vacuum ovens possible. Our team of experienced engineers and highly skilled technicians build the best systems in the industry. Our systems typically exceed 20 years of life in a full-time 24/7 production environment. This means that each vacuum furnace and vacuum oven, you purchase from us is the most advanced and cost effective on the market.

As an ITA member company, T-M Vacuum is more than happy to assist customers in choosing the right vacuum furnace to meet their needs. Contact us or visit our web site for more information

TE Wire & Cable
+1-201-845-9400 1-888-4TE-WIRE
www.tewire.com
sales@tewire.com

TE Wire & Cable LLC, a Marmon Wire & Cable/Berkshire Hathaway Company, is a premier thermocouple and specialty wire and cable manufacturer that was formed from the Wire and Cable Division of the Thermo Electric Corporation. Since 1941, the company has been manufacturing high-quality wire and cable solutions for the thermosensing and temperature measurement markets. TE Wire & Cable manufactures a full line of thermocouple wire and cable—from iron and nickel-based alloys to copper instrument and control cable. The company maintains an in-house ISO17025 Accredited laboratory directly certified by the National Institute of Standards and Technology (NIST), allowing it to calibrate its own wire. This results in a higher quality product at a lower cost and with improved performance. TE Wire & Cable is highly regarded as the industry leader and has maintained a reputation for providing high-quality temperature measurement wire and cable products with short lead times and competitive prices. TE Wire's thermocouple wire and thermocouple extension cable solutions can be used for several metallurgy applications, including heat treatment, component testing, furnace surveys and metals production.

Tekna Plasma Systems
www.tekna.com

Tekna offers spherical titanium powders specifically engineered for additive manufacturing applications.

These powders are produced by inductively-coupled plasma, a proprietary technology developed by Tekna which leads to high-purity powders having high density and flowability.

The Council for Scientific and Industrial Research (CSIR)
+27-128412600
www.csir.co.za

The Council for Scientific and Industrial Research (CSIR) is South
Africa’s leading national research and development organization. The Titanium Centre of Competence (TiCoC) within the CSIR has a mandate to develop technology building blocks needed to establish a new South African titanium industry. The TiCoC is developing a suite of complementary technologies to add value to South Africa’s vast resources of titanium. This programme primarily focuses on the development and commercialisation of cost-effective processes for primary titanium metal production and its conversion into finished and semi-finished products. The recently established Titanium Pilot Plant situated on the CSIR campus, is an important milestone in this entire process. Parallel to this the TiCoC is developing and adapting technologies to consolidate “low-cost” titanium powders into products. Formal collaboration agreements have been signed between the CSIR and global companies such as Boeing, Airbus and EADS. These mutually beneficial agreements support South Africa’s long-term economic development goals that include the supply of titanium to many industries, including aerospace.

The Pennsylvania State University

Materials research conducted by iMatSE students and faculty lead to advances and discoveries that become the building blocks of tomorrow. Through formal coursework in small classes and participation in cutting-edge sponsored research, students in the Intercollege Graduate Degree Program in Materials Science and Engineering enjoy a graduate education that prepares them well for their future careers.

iMatSE students receive full funding (stipend and tuition) in the form of fellowships or research assistantships. Program Highlights:

- Penn State ranked #1 in funded materials research in the US (NSF)
- Thesis-based Ph.D. and M.S. degrees
- Multi-disciplinary research programs and centers
- Over 50 MatSE and affiliated faculty members
- Approximately 150 current graduate students
- Specialized laboratories and shared facilities

Thermo Scientific

Thermo Scientific delivers best-in-class handheld and mobile x-ray fluorescence (XRF), near infrared (NIR), Fourier Transform Infrared (FTIR), and Raman-based analytical instruments to meet customers’ most demanding applications. Our Niton XRF analyzers serve metal processing, manufacturing and recycling customers in more than 75 countries, with more than 40,000 units installed worldwide. A culture of innovation and a distinguished history of breakthrough achievements have defined our instruments since we released the first handheld XRF analyzer in 1994. Now, with the introduction of the Thermo Scientific Niton XL5, the fastest, most accurate and smallest XRF alloy analyzer has arrived. Part of the Niton family of industry-leading instruments, Niton XL5 offers energy, metal fabrication and automotive industries performance, portability and speed never before seen in a handheld analyzer.

TiFast

+39 0744 736 307
www.tifast.com
info@tifast.com

TiFast is a European producer of titanium ingots, slabs, billets, bars and wires for industrial, medical and aerospace markets worldwide.

TiFast is fully integrated with a melting plant (3 melting furnaces including a VAR), a rolling mill, a bars precision finishing shop, laboratories and R&D facilities.

TiFast can supply bars in a full range of titanium grades with a lot of possibilities of finishing: close tolerances (from h7), surface finishing, straightening…

TiFast is certified ISO 9001, AS 9100, ISO 14001 for environmental, AEROSPACE NADCAP, TUV ADWO and PED for pressure equipment.

Timesavers International B.V.
+31 (0) 113 239910
www.timesaversint.com
timesaversint@timesaversint.com

Manufacturer of wide-belt grinding and brushing machines for stainless steel sheet and coil finishing; lasercut, punched, routed and flame cut deburring and edge radiussing; cast iron, ferrous, non-ferrous and titanium high precision calibration. Timesavers is based in Goes, The Netherlands, with regional offices around the globe in Shanghai (China), Taichung (Taiwan), Kuala Lumpur (Malaysia) an Timesavers Inc, in Minneapolis (USA). Worldwide the company has more than 200 employees supported by a network of local dealers and partners.

TIMET, Titanium Metals Corporation
+1 610-968-1300
www.timet.com

Titanium Metals Corporation (TIMET) is one of the world’s largest fully integrated titanium producers. Since 1950, TIMET has been leading the industry in mill and melted products, supplying nearly one-fifth of the world’s titanium. We convert rutile ore into sponge; melt and refine ingot and slab; and manufacture mill products. TIMET has a global network of service centers supported by its seven primary melting or mill facilities in Henderson, Nevada; Toronto, Ohio; Morgantown, Pennsylvania; Vallejo, California; Witton, England; Waunarlwydd, Wales; and Ugine, France. With products ranging from sophisticated high temperature alloys used in jet engines, to advanced corrosion resistant alloys used in the chemical industry, TIMET’s reach spans the breadth of the titanium applications, and has the technical depth to support developments across a wide range of applications. TIMET’s fully integrated supply chain, dedicated research facilities, and decades of experience make us the partner of choice for titanium.

TIODIZE Company, Inc.
+1-714-898-4377
www.tiodize.com

- Titanium Anodize
- Aluminum Anodize
- Dry film Lubricants
- Corrosion Coatings
Titanium Buyers Guide (continued)

- Paints & Primers
- Teflon Coatings
- Manufacturers of Composite Parts (Carbon & Glass)

Tipro International Co Ltd
+86 29 89181603
www.tipro-international.com
terry@tipro-international.com

Tipro produce aerospace titanium bars and wires for many years and signed LTA with some famous aerospace companies.

As a AS9100 and EN 9100 approved company, we can supply titanium products as follow: AMS 4921; AMS 4928; AMS 4965; AMS 6931; AMS T-9047; BS TA11;

TITANIUM Consulting & Trading S.r.l.
+39-055-642543
www.tct.it
info@tct.it


Being a major supplier in the European market for titanium mill products and its alloys, we can guarantee a prompt delivery for products including ingots, slabs, round bars, hexagonal bars, profiles, welding wire, plates, sheets, coils, tubes and pipes, as well as fasteners, forgings, flanges and fittings. Most ex-stock materials are shipped the next working day with full traceability for all items supplied.

Products supplied are employed in a wide range of applications, including aerospace, medical devices, industrial, chemical.

In 1996, Titanium Consulting & Trading further expanded its operations by setting up dedicated facilities to manufacture finished products on request. Processes available include cutting, welding, forming, turning, heat treatment and finishing.

Titanium Engineers
+1-281-265-2910
www.titaniumengineers.com

TITANIUM ENGINEERS supplies Titanium Bar, Seamless Tubing and Finished Components for oilfield and other industrial markets. Our capabilities include the expertise to process titanium to meet demanding and unique customer specifications. We specialize in bar, seamless titanium tubing and also offer products manufactured by: forging, rolling, and machining using common ASTM grades of titanium including: Titanium Grade 5, Titanium 6-2-4-6, Titanium Beta-C. With our metallurgical background we will support your team from design, through prototyping, and finally into full-scale production of components.

Titanium Fabrication Corporation
+1-973-808-4961
www.tifab.com
bbrownlee@tifab.com

A World leader for over 45 years in the application, design and fabrication of quality Titanium and Zirconium process equipment, whether solid or clad construction. Extensive experience in rotating, offshore, marine or ordinance equipment. Most extensive titanium field welding/erection service capability in the world. Mill products available from stock. For more information email bbrownlee@tifab.com.

Titanium Finishing Company
+1-215-679-4181
www.titaniumfinishing.com
melinda@titaniumfinishing.com
melanie@titaniumfinishing.com

Metal finishing services include: Titanium Anodize; Hardcoat Anodize of Aluminum; IVD Aluminum Coating; and Application of Solid Film Lubricants. We are a small, women owned business, and have been family owned and operated since 1970.

Titanium Industries, Inc. (T.I.)
+1-973-983-1185
www.titanium.com
sales@titanium.com

T.I. is the global leader in specialty metals supply for the aerospace, medical, industrial and oil & gas markets. Holding the world’s most complete inventory of specialty metals across a global service center network, T.I. delivers supply solutions at all levels of sophistication and complexity. With a globally experienced and technically driven team, T.I. has been providing dependable, quality driven service to our customers since 1972.

Titanium International Group SRL
+39-051-6814893
www.titanium.it
tig@titanium.it
TITANIUM TODAY

Titanium Buyers Guide (continued)

TIG is an European stockist and distributor of Titanium, Nickel alloys and Steels for Aerospace, Medical, Automotive and other high demanding end use markets.

TIG is EN9100 and EN9120 certified and has several customers approvals. TIG provides cut to size services with more than 30 saw cut machines and 3 dynamic waterjet cut machines.

Contact us for a quotation! Your mission is our priority!

Titanium Processing Center
+1-888-771-9449
www.titaniumprocessingcenter.com

AS 9100 and ISO 9001 certified, Titanium Processing Center is your go to source for quality titanium products. Titanium Processing Center is a stocking distributor of a wide range of titanium mill products. Our standard inventory of titanium bar, sheet, plate, tubing and pipe is complimented with specialty fasteners, fittings, forgings and fabrications. In-house capabilities include waterjet & saw cutting, shearing, turning and drilling.

All material is mill certified and fully traceable to the original manufacturer. Our dedicated staff is committed to providing our customers with the courteous and prompt attention that they deserve. Delivering quality products on-time and in compliance with your requirements remains our priority at Titanium Processing Center.

Titanium Products and Consulting, Inc.
+1-412-779-6358
www.titaniumproductsandconsulting.com

The focus of Titanium Products and Consulting, Inc. is primarily in two areas. The first is a consulting role for titanium and titanium alloy products, processes and applications. The second is to provide manufacturing and conversion capability with value added properties to enhance your applications performance and lower the overall cost. The ultimate goal is to provide enhanced customer service and technical assistance to make it easier and cheaper for new applications to be developed.

TMS Titanium
+1-858-748-8510
www.tms titanium.com
info@tms tittanium.com

TMS Titanium is a leading supplier and stocking distributor of titanium mill products to a variety of industries including, aerospace, medical, racing and commercial. By combining product and industry knowledge, commitment to specialty industries, access to titanium and reliable inventory, TMS is able to consistently provide titanium to its customers in order to keep their production moving forward. TMS works with their trusted network of suppliers, finishers and fabrications to fulfill their customers’ specific titanium needs, while producing the best quality products available.

Toho Titanium Company, Ltd. manufactures titanium metals such as premium quality titanium sponge for aerospace and other applications, titanium ingot (CP and Alloy), high purity titanium ingot/billet for semiconductor industry and electronic materials including high purity titanium dioxide and ultra-fine nickel powder etc.

Trennung Specialties, Inc.
+1-562-633-8110
www.trepanningspec.com

Trennung & machining services. Specializing in hollow bar conversions to pipe, tube, ring and sleeves. Size capacity up to 55” O.D., 21” I.D yielding a 26” core & can saw cut up to 22”. Work with stainless steel to more “exotic” high temperature materials like Titanium, as well as non-metallic materials such as plastic and wood. Full machine shop offering trepanning, gundrilling/BTA, turning, saw-cutting, facing & specialty emergency services. We offer blind shipments. Material can be provided. Family run and Veteran owned since 1973. Contact us via phone (562)633-8110 or email: trepan spec@yahoo.com.

Tricor Metals
330.264.3299
www.tricormetals.com
info@tricormetals.com

Introduction
We are a woman-owned, small business with facilities in Wooster, OH, Conroe, TX, Plymouth, MI and Oxnard, CA with over 25 years’ experience in the supply of titanium mill products, titanium forgings and fabrication of ASME Code equipment for the petrochemical, pharmaceutical, mining, aerospace, and bio-medical served markets.

What we do
We provide quick-ship service center sales and processing of ASTM and AMS grades of titanium mill products and titanium forgings. We also design and build fabricated process equipment built with the most advanced corrosion resistant metals, provide reactive metal and high alloy welding repair services, and supply high performance Astrolite® welding wire.

Where are our facilities
Our fabrication and distribution facilities are in Wooster, Ohio and Conroe, Texas. We process and distribute aerospace grade welding wire from our Astrolite Alloys division in Oxnard, CA. And we operate a technical sales office in Plymouth, MI.

Titanium mill products & custom forgings
We maintain one of the world’s most complete inventories of titanium mill products in ASTM grades for corrosion including sheet, plate, pipe, fittings, bar, billet, wire, tubing, and fasteners. And we maintain staged billets for custom forgings. We offer advanced processing including water jet cutting, saw cutting, and shearing. We provide custom parts manufacturing and just-in-time inventory for ‘blanket’ order processing to meet our customer’s needs. We stock AMS-grades of titanium sheet, plate, bar and billet for aerospace and bio-medical served markets.
Fabrication of advanced corrosion resistant metal
In our ASME code shops in Ohio and Texas we build custom process equipment including: tanks, towers, pressure vessels, piping spools, shell & tube heat exchangers, plate and frame heat exchangers, and custom welded parts. We specialize in advanced metals for solving corrosion such as titanium, tantalum, zirconium, niobium, nickel alloys, duplex stainless and stainless steel.

Field and factory weld repairs
Our repair teams can be mobilized globally for field work. Or we can repair in our facilities. We specialize in welding of advanced corrosion resistant metals like titanium, tantalum, zirconium, niobium, nickel alloys, duplex stainless and stainless steel. Available with 24 hour notice for emergency repairs.

Astrolite® Alloys - Welding wire and titanium for aerospace
We stock, process, clean, process, and package Astrolite® UltraGrade™ high performance welding wires for aerospace, power, and turbine engines.

TZMI, Inc.
+1 281 956 2500
www.tzmi.com
marketing@tzmi.com

TZMI is an independent consulting company that works with a wide range of global clients to provide insight and expert advice on opaque mineral, metal and chemical sectors. Our uniqueness is that TZMI contains technical and operational experience, together with strategic and commercial competency, to provide a full service offering to our clients.

As trusted advisors, our reputation is underpinned by having an experienced cross-section of technical specialists around the globe. TZMI partners with clients from the private and public sectors to provide bespoke solutions across markets and strategic services; and also technical and engineering services. Our clients range from the world’s 500 largest companies through to mid-sized companies and small businesses.

TZMI regularly releases market reports and periodicals on relevant subject matters which support the consulting activities and ensure up-to-date, high quality and comprehensive data, analysis and information is provided. TZMI annually hosts the largest titanium and zircon industry conference. Email: marketing@tzmi.com

United Alloys & Metals, Inc.
+1-562-273-7004
www.uametals.com

United Alloys & Metals is one of the World’s leading processors of all grades and forms of Titanium Scrap for all Titanium applications. Both our Santa Fe Springs, CA and Columbus, OH plants have full processing capabilities and are certified to ISO 9001:2000 standards.

United Performance Metals
888.282.3292
www.upmet.com      www.upmet.uk
sales@upmet.com      sales@upmet.uk

United Performance Metals (UPM), an O’Neal Industries affiliate company, is a global distributor of high-performance metals serving customers in a variety of industries, including aerospace, fastener, medical, power generation, oil and gas, semiconductor and many others.

UPM offers a comprehensive inventory of products, including stainless steel, duplex stainless steel, Prodec®, nickel alloys, cobalt alloys, cobalt chrome moly, titanium, aluminum, and alloy steel in coil, sheet, strip, plate, bar and near net shapes.

FIRSTCUT+® Processing Services include cut-to-length, leveling, slitting, edging, chamfering & facing, shearing, laser cutting, laser gauge measurement, water jet cutting, plasma cutting, sawing, precision cold saw cutting, precision blanks, first stage machining, heat treating, boring, trepanning and deburring.

Our certifications include AS9100, AS91100 Belfast, ISO 9001, ISO 9001 Belfast, ISO 13485, GE S1000, Pratt & Whitney LCS, And Laser Machining/Cutting Approvals NADCAP AC7116, GE-S422 and Pratt PWA 119.

United Performance Metals is headquartered in Cincinnati, OH and maintains sales and stocking locations in Oakland, CA, Los Angeles, CA, Hartford, CT, Chicago, IL, Greenville, SC, Houston, TX, Belfast, Northern Ireland, Budapest, Hungary and Singapore. For more information, visit www.upmet.com.

O’Neal Industries (ONI), the largest family-owned group of metals service centers in the United States, is the parent company of United Performance Metals. With sales of approximately $2.1 billion in 2016, ONI is based in Birmingham, Alabama, and has more than 80 specialized facilities throughout North America, Europe and Asia.

Uniti Titanium
+1-412-424-0440
www.uniti-titanium.com

Uniti Titanium brings together two major global titanium producers with complimentary manufacturing and technical capabilities, Allegheny...
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Vested Metals International is an ISO 9001 and AS9100 certified raw material specialty metals distributor with decades of experience specializing in hard to find alloys, grades, and sizes. We offer various grades of stainless steel, titanium, tool and alloy steels, aluminum, and high temperature nickel and cobalt based alloys. We pride ourselves on helping customers meet and exceed niche requirements.

Universal Technical Resource Services, Inc.
+1-856-667-6770
www.utrs.com

Engineering services company, primarily focused on delivering services to the US Government. UTRS maintains a research and development facility working with material science projects, specifically with titanium and titanium alloys.

UTC Aerospace Systems
+1-216-429-4227
www.utcaerospacesystems.com

Provide, Manufacture and Assemble landing gear for the aerospace industry.

Verder Scientific, Inc
+1-267-757-0351
www.Verder-Scientific.com
Info@Verder-Scientific.us

Verder Scientific Inc., comprised of the Retech, Carbolite Gero, and ELTRA brands sets the standard in high-tech scientific equipment serving research institutions, analytical laboratories as well as manufacturing companies for decades. The company manufactures and supplies instruments for sample preparation, elemental analysis as well as heat treatment of solid materials.

Verichek Technical Services, Inc.
+1-412-854-1800
www.verichek.net
Sales@verichek.net

Verichek Technical Services, Inc. is an ISO/IEC 17025:2005 Accredited Laboratory for PMI Testing and OES Calibration. We provide a value-added service to our customers in the form Training, Preventative Maintenance, Spare Parts, and Calibration of OES Instrumentation. As a third party service and calibration provider to businesses in the metals industry, we also offer the best and highest quality OES instrumentation product line, OBLF. Additional offerings include rental and refurbished instrumentation for cost-effective solutions to our customers. In 2017, Verichek has establish preferred Service Contract pricing to our customers – we offer customized annual calibrations, 24/7 phone and web support, emergency repairs, discounted parts, training, and much more! Visit our site or call us to learn more!

Vested Metals International LLC
904-495-7278
www.vestedmetals.net
info@vestedmetals.net

VSMPO-AVISMA, the world’s largest producer of titanium, holds more than 300 international quality certifications and approvals at major aerospace OEMs and medical device companies. VSMPO-Tirus operations in the US, the UK, Germany and China provide regional sales, distribution and service center processing.

VSMPO - Tirus, US
+1-720-746-1023
www.vsmpo-tirus.com

VSMPO-Tirus, US is the North American sales and distribution division of VSMPO-AVISMA, the world’s largest producer of titanium, holding more than 300 international quality certifications. VSMPO-Tirus US distributes ingot, forgings, slab, sheet, plate, bar, and billet to the aerospace, medical, and consumer products industries. VSMPO-Tirus US also manufactures small diameter bar and coil for medical and aerospace fastener applications.

VSMPO - Tirus China Ltd.
+86 10 8455 4688

VSMPO-Tirus China Ltd. is the Chinese sales and distribution division of VSMPO-AVISMA, the world’s largest producer of titanium, holding more than 300 international quality certifications. VSMPO-Tirus China distributes ingot, slab, sheet, plate, bar, and billet to the aerospace, medical, and consumer products industries.

VSMPO Tirus GmbH
+0049 69 905477-25
www.vsmpo.de

VSMPO TiRus GmbH is responsible for the sales and distribution of VSMPO-AVISMA's products in Germany and the Middle East.
of titanium semi-finished products in Europe (except the UK), Brazil and Israel to the aerospace, medical and automotive industries. The company was established in 1999 in Frankfurt/Main. The German affiliate of the largest vertically integrated international producer VSMPO-AVISMA offers optimum service, including custom-made processing of semi-finished products as well as a comprehensive transport service. We offer cut-to-size material (bars, billets, sheets and plates) to meet our customers’ individual operational needs. TiRus GmbH also distributes electrodes, ingots, rolled rings and different types of forgings.

Webco Industries
+1-918-245-2211
www.webcotube.com
titanium@webcotube.com

Webco delivers North America’s widest range of tubular products, rapidly fulfilling urgent orders and helping customers avoid costly unscheduled shutdowns and production delays. Customers in the aerospace, automotive, chemical processing, industrial, oil & gas, power generation and other industries, rely on Webco’s strength, agility, and innovation to deliver solutions for their most challenging requirements. In fact, Webco manufactures and distributes millions of feet quality tubing made to meet today’s most demanding specifications.

Our welded and seamless titanium tube products are available in variety of grades and sizes, standard/off-the-shelf or tailored to meet customers’ unique requirements.

Webco maintains a culture for relentlessly pursuing process and product excellence, enabling ever-improving productivity/product quality. For a current list of our ISO, TS, PED, and other certifications as well as ASME, ASTM, and other specifications offered, visit webcotube.com.

VSMPO Tirus UK Ltd.
+(0) 1527 514111

VSMPO Tirus UK Ltd. is the UK’s sales and distribution division of VSMPO-AVISMA, the world’s largest producer of titanium, holding more than 300 international quality certifications. Tirus UK distributes ingot, forgings, sheet, plate, bar, and billet to the aerospace, medical, and consumer products industries.

VSMPO Titan Ukraine Ltd.
+380 562 313092
www.tw-vsmpoavisma.com

VSMPO Titan Ukraine Ltd. is fabricator of seamless tubular products from titanium and its alloys. It is a part of the world’s largest producer of semi-products and finished titanium products - JSC Corporation VSMPO-AVISMA (Russia) which supplies billets and bars to the plant. It is guarantee of quality competitiveness of manufactured production for the customers. Annual production capabilities of the enterprise is 700 tons of cold-finished titanium tubes (diameter 3-134 mm and wall thickness 0.2-9 mm), and in cooperation additionally 200 tons of hot-finished titanium tubes (outside diameter 169-325 mm and wall thickness 7-30 mm). Engineers and technical specialists are developing new technologies of titanium tubes production and new types of products. For example, octahedral and ribbed tubes, special kind of thin tubes for silphons, technologies of long-length tubes production, etc. VSMPO Titan Ukraine Ltd. has all equipment necessary for different tests and QA inspections. It allows manufacturing not only according to the international and national standards, but meeting any customer’s requirements.

Weber Metals, Inc.
+1-562-602-0260
www.webermetals.com

Weber Metals, Inc. specializes in Aluminum and Titanium open and closed die forgings for the Commercial and Military Airframe, Air and Land Turbine, Nuclear and Semiconductor industries. Our press sizes range in size from 1200 to 33,000 tons. We have capabilities to perform heat treatment, non-destructive and destructive testing in house. Our forgings range in size from 1 pound to 11,000 pounds. Our aluminum stress relieved forgings are some of the most stable products in the industry for machining.

Wellmet International Inc.
+1-909- 594-9639
www.wellmetusa.com

We supply and distribute Titanium Sponge and Titanium Powder. We represent the largest Titanium sponge and powder producers in China. We can also supply other non-ferrous metals which are of Chinese origin with approved quality. The Titanium Sponge producer is ISO9001:2008 certified and sponge quality is approved by world main consumers.

West Penn Testing Group
+1-724-334-1900
www.westpenntesting.com

West Penn Testing Group is a full-service, independent testing laboratory with diverse inspection and testing capabilities since 1952. They provide an extensive array of non-destructive, chemical, metallographic, failure analysis and mechanical evaluation services, serving customers in these industries: aerospace, medical, power generation, commercial, military, raw materials, refractories, oil and gas, and the automotive industry. They have three locations in New Kensington, Pennsylvania and Richburg, South Carolina and perform testing nationally and internationally. Their 79,000 sq. ft. facilities accommodate parts up to 20,000 lbs. www.westpenntesting.com

Western Superconducting Technologies Co. Ltd.
+86-29-8651-4505
www.wstitanium.com
dxh@c-wst.com

Western Superconducting Technologies Co., Ltd. ( WST ), founded in 2003, is headquartered in Xi’an, China. WST is leading supplier of titanium and its alloys material including Ti6Al4V, Ti6Al4V ELI, Ti6242, Ti6246, Ti662, Ti811, Ti38644, Ti1023, Ti6Al7Nb, NbTi in the forms of ingot, billet, forging, slab, bar, rod, wire and profile in the domestic & overseas market. Our products are mainly used in aerospace, medical, automotive industries and other critical industries.
ZIROM S.A.
+40 246 216666
www.zirom.ro
zirom@zirom.ro

ZIROM came into prominence, over the last decades, as one of the largest producers of titanium and titanium alloys in Central and South-Eastern Europe. Ever since the foundation, a permanent emphasis has been laid on its development, through technological optimization and through development of the technology for melting titanium and zirconium scrap by combining EB and VAR technologies, and further, the development of free forging process.

The products manufactured, ingots and forged semi-finished products, are intended both for cutting edge fields (aviation and nuclear areas) and various fields (metallurgy, chemical industry, medical technique and devices).


Zirom can also provide a series of services like melting the secondary recycle materials, turning/grinding/cutting/milling the surface of products, full chemical and mechanical analyses, LP, US +Eddy testing.

Westmoreland Mechanical Testing & Research Inc.
+1-724-537-3131
www.wmtr.com
us.sales@wmtr.com

Westmoreland Mechanical Testing & Research is a world leader in materials testing. Celebrating our 50th year in business, WMT&R serves a broad range of industries including aerospace, automotive, medical, and power generation. We support our customers with our highly-skilled staff and advanced facilities. Our turnaround time is unrivaled, and with over 300,000 square feet of accredited production and testing space, we have the capacity and equipment to handle any materials testing project. WMT&R’s testing expertise includes: Mechanical Testing, Composites, Fatigue, Stress/Creep Rupture, Fracture Mechanics, Metallography, Chemical, Heat Treat, Thermal Analysis, and Physical Properties Testing. For more information, please visit www.wmtr.com or email us.sales@wmtr.com.

Wyman Gordon
http://www.pccforgedproducts.com/brands/wyman_gordon/

Wyman Gordon is a worldwide supplier to the aerospace and industrial gas turbine markets. We hold quality accreditations for all of the major airframe and engine manufacturers for both civil and military applications. Wyman Gordon creates rotating closed-die forgings which are critical for aerospace and land-based gas turbines. Wyman Gordon also manufactures structural forgings for airframe, nuclear, petrochemical, power generation, and space applications.

Xi’an Metals & Minerals Import & Export Co., Ltd.
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info@tiwmo.com  wxd@tiwmo.com  hj@tiwmo.com

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