Titanium Scrap: Being Responsive, Not Reactive

by James M. Nathan
President Sims Metals Management Aerospace

It is a privilege to address you today. For many years, I have been sitting down there (point at audience), looking up. Now I’m standing up here, looking down. I’d get vertigo if it weren’t for the fact that after so long in this industry I am used to lows and some highs.

As president of Sims Metal Management Aerospace, I have nearly forty years experience in the recycling business, beginning with my family’s scrap company Abe E. Nathan Sons in Utica, New York.

Sims Metal Management Aerospace has been in business since 1899, starting as Suisman and Blumenthal in Hartford, Connecticut, and joining the Sims group of companies in 2008.

I don’t need to tell you that this business is volatile. For a while, business is booming, and then it isn’t -- At all! All the arrows point down. It’s comatose. When the melters stop buying, you can hear the door slam a mile away. Sometimes you can feel it coming. Sometimes you can’t, for example, the drop after 9/11. What I’m not going to do today is spend time reviewing the past decade. Instead, I’m going to look forward, which is obviously a more difficult thing to do, but more helpful.
Let’s start with an indisputable fact: Recycling metals is a huge benefit to the environment. It saves natural resources in a big way and it reduces energy consumption. Sims Metal Management Aerospace is proud to say we have supplied melt-ready feedstock to the specialty steel and titanium industries for over 60 years.

(Slide—scrap.)

Being a titanium recycler may not have the glamour of being a sponge producer or forger—although perhaps glamour is the wrong word. But in fact, it has always been one of the most environmentally essential components of our economy because it returns usable metal to industry to be used for other products—everything from planes to bridges.

(Slide -- bridge design)

Incidentally, this titanium pedestrian bridge was designed by students at the University of Akron as part of a competition run by the Defense Metals Technology Center.

Recycling reduces the cost as well as reducing the stress on the environment that comes first from mining and then from making sponge. Approximately one-half of the ingot production feedstock comes from recycling.

(Slide -- scrap)

There is no doubt that in the future metal recycling will become even more critical. This is particularly true of titanium because for every pound used to manufacture a part at least nine pounds of scrap are machined away, and the ratio can be far higher depending on the part. This is true for nickel and cobalt alloys. However, the percentage that is machined away is less.

(Slide—photo of new MM Aerospace plant)

This year Sims Metal Management Aerospace made a huge commitment to build a new super-alloy processing plant, upgrade technology across the board, and expand. Some people might say it is not a great time to make such a financial commitment. I see it differently.

(Slide—inside of plant)

Our new 425,000 square-foot facility gives us the chance to bring all our operations together under one roof and to install innovative processes for high-tech metal recycling which will in turn enable us to be more responsive to our customers, that is the melters’ needs.
We like to use the phrase “lean and green.” It has a nice ring to it. It also happens to be true. The new plant is much more efficient. It is also significantly greener. And with a 100% water recycling process, our customers don’t have to worry about the water soluble coolants that adhere to the chips.

But for all our new technology, it still comes down to trained people who know how to sort and process scrap to the specifications of our customers. This guarantees that the correct scrap goes to the correct segment. To be successful, we work with our suppliers where the scrap is generated. On the other end of the spectrum, we work with melters to meet their melting requirements.

You will probably be relieved to know that I have only two slides on statistics. And here they are.

The data comes from the USGS. As you can see, in 2008 there was 33,000 tons of new scrap metal recycled by the titanium industry. In 2009, that figure had fallen to 27,000 tons, a drop of 8%.

So also in 2008, 1,200 tons of titanium scrap was used in the superalloy industry. In 2009, that figure had fallen to 1,000 tons, a drop of 12%. According to the USGS, ingot production increased significantly. Receipts of titanium scrap totaled 7,930 tons in the first quarter of 2010. This is a 20 percent increase compared with receipts from the last quarter of 2009. I am not sure who received this. Perhaps someone in the audience can enlighten me later on.

What do we see for the near future? Will it be a titanium scrap mountain so high we need oxygen masks to reach the top?

Or a titanium scrap anthill so small we need a magnifying glass to find it?

Closed loop arrangements, internal recovery programs, and scrap buy-back programs.
Well, let’s look at the ant hill stage. During the last major uptick in 2005-2007, closed loop arrangements, internal recovery programs, and scrap buy-back programs came into existence in an effort to control supply, stabilize raw material costs, reap higher profits, and better use resources. These programs were, and are, an attempt to respond to the lags in scrap generation that occur even when melters and forgers are busy. In 2007-2008 they contributed to a drop in the demand for purchased scrap. Even though the economic environment has changed, these programs are probably here to stay.

(Slide: three bullet points. Less open-market material. More volatility. Need for consistency.)

There is less open-market material for us to buy and sell. The decrease in the material means more volatility because the same number of people are chasing less available units. Long-term melters want to buy from a company that sells on a consistent basis, not just at the high point of the market. We have long-term purchase agreements we honor whether we can sell or not. We toll-process material for companies and there are allocation programs in which we buy, process and sell material for companies. As I told one melter, our goal is to be the path of least resistance.

(Slide – The word “Composites” surrounded by question marks.)

The other question for the future is the recycling of composites. If we are talking about carbon composites in a titanium frame, in which titanium is used because it does not corrode in contact with carbon, then the frame itself could be recycled. But if we are talking titanium in the composite, then recycling is probably not possible, at least not with our present technology and level of knowledge.

(Slide -- CFM engine)

Let’s look at the new turbofans now being designed by CFM International, Pratt & Whitney, and other companies. These new turbofans should begin to enter service in the 2014 to 2016 timeframe. These companies are working hard to achieve greater propulsive and thermal efficiency. Their goals are to lower fuel consumption which lowers operating cost, and also to decrease maintenance costs. To achieve these goals, they are using lighter weight advanced materials for fan blades. Instead of using solid titanium blades, CFM has designed its Leap X engine with a three-dimensional woven resin transfer mould composite fan.

(Slide -- P & W PurePower engine)

Pratt & Whitney is also using a resin transfer mould fan but with a hybrid metallic design. Pratt & Whitney uses the catch phrase “This changes everything” for its PurePower engines. And in a way it does. Eventually the use of composites will decrease the amount of scrap. Both new scrap which is the product of the
production and fabrication. And old scrap, such as from retired aircraft. But that is down the road.

*(Slide – Dynamet Technology titanium powder)*

The same goes for titanium powder that may eliminate scrap generated by machining processes. However, in powder metal manufacturing technology, there is the prospect of using turnings in the feedstock electrodes. This has been achieved by Dynamet Technology, Inc. using processed turnings supplied by Sims Metal Management Aerospace. However, powder is still used mainly for smaller parts. So the effect on the scrap industry is a ways off.

So what is the long-term outlook for scrap? I *predict* that the business environment will remain – *unpredictable* -- for the next ten years. There are many governments around the world, not just the U.S., that have large, destabilizing deficits. If steel production continues to pick up, then there will be stronger demand for titanium units. Certainly, the American automobile industry is doing better.

*(Slide – China steelworker)*

In an article Sims Metal Management Aerospace published earlier this year in *Titanium News*, we stated that China is the wild card. In May of this year, China exported approximately 5 million metric tonnes of finished steel, up approximately 266 percent over the prior year. Since then the exports of finished steel have continued to rise and the imports to decline. The figures defy gravity!

As to titanium, the problem is that data from China is tightly controlled. We don’t know how much rutile and ilmenite is being mined. We don’t know accurately their sponge capacity. Quality has been an issue with some of the material. I can’t give you an educated guess. I can do the guessing part, but I can’t do the educated part.

*(Slide – India beach)*

And there are many other segments of the world economy that we need to pay close attention to, for example, Africa and India, which incidentally just opened a new sponge plant. Built by Kerala Minerals and Metals LTD, it is expected to produce 500 tonnes of sponge per year using local beach sands. The increase in global sponge capacity will have an impact on scrap pricing. So also will global manufacturing, which means that scrap generation is less concentrated.

*(Slide—finished ti product)*

I named this presentation *Titanium Scrap: Being Responsive, Not Reactive*, and I mean it. You can talk about reducing operating costs all you like but belt-tightening can only go so far. At a certain point your business is not just lean – it is anorexic, meaning that quality and customer service decline. Not a good scenario! It is not the
route Sims Metal Management Aerospace is taking as indicated by our new 425,000 square foot facility.

(Slide -- three bullet points. Research and development, staying technologically competitive, and assessing world events.)

What is essential is research and development, staying technologically competitive, and doing the hard work of assessing what is happening around the world. Don’t assume that how you did something yesterday is the best way to do it tomorrow.

(Slide -- NASA Rover Spirit)

I end my talk with an artist’s sketch of NASA’s Rover Spirit, which we have been following in Titanium News since it landed on Mars in 2004.

When Spirit’s right front wheel jammed tight in May 2007, everyone thought its usefulness was at an end. But sometimes problems can lead to revelations. The gimpy little robot kept going. Backwards! It dragged its broken wheel behind it like a small plow, turning over yards of Martian crust, discovering silica and titanium. Then exactly two years later in May 2009, Spirit became mired in a sand trap on the slanting wall of a crater. Again, it looked like the end. But the determined little robot refused to quit. Partially hung up on a rock and unable to move forward, Spirit began digging down with its titanium arm, discovering what scientists have described as a geologic treasure trove.

At the moment Spirit is silent, hopefully charging its solar batteries. It was only expected to last three months. It is now in its seventh year. I doubt the ITA has ever considered choosing a mascot, but perhaps Spirit should be it. Up cycles, down cycles. Figure out what you can do. Always keep quality in mind. And be responsive, not reactive.

Thank you very much.

THE END
TITANIUM SCRAP: BEING RESPONSIVE, NOT REACTIVE

James M. Nathan, President
Sims Metal Management Aerospace
Cautionary Statements Regarding Forward-looking Information

Today’s presentation may contain forward-looking statements, including statements about Sims Metal Management Limited’s financial condition, results of operations, earnings outlook and prospects. Because these forward-looking statements are subject to assumptions and uncertainties, actual results may differ materially from those experienced or implied by these forward-looking statements.

Investors are encouraged to review the filings made by Sims Metal Management Limited with the Securities and Exchange Commission including its Form 20-F/A, which we filed with the SEC on 14 April 2010, which describes some of the factors that may cause actual results to differ from these forward-looking statement.
Seventy five years ago Abe E. Nathan started in the "Junk Business". His was a simple endeavor: to try and be of service to the local industrial community and to the public.

Today these same ideals have transformed the "junk yard" into a multi-faceted, multi-million dollar processing facility capable of meeting the toughest demands. The complexities of our national energy needs as well as the intricacies of today's scrap industry do not lend themselves to easy explanations of our role in the resource reclamation process. As always our primary goal is to be of service to you so that together we might better recycle today's resources for tomorrow's needs.

Jimmie Nathan

As we celebrate our 75th Anniversary the second and third generations of Nathan's are working harder than ever at making the spirit and ideals of Abe E. Nathan meet the ever changing needs of today's society.
The End is near! Repent!
The End is not near! RECYCLE!
Titanium pedestrian bridge design, competition sponsored by the Defense Metals Technology Center
NEW SCRAP METAL RECYCLED BY TI INDUSTRY (USGS)
TI SCRAP IN SUPERALLOY INDUSTRY (USGS)
Changes in Scrap Industry 2005 to 2008

- Closed loop arrangements
- Internal recovery programs
- Scrap buy-back programs
Present Scrap Industry 2010

- Less open market material
- More volatility
- Need for consistency
Full Density Ti Alloy Missile Casing
(Powder Metal Manufacturing Technology)

Ti Powder & Master Alloy Blend

Production Ti-6Al-6V-2Sn Alloy PM Preform & Finish Machined Warhead Casing
Photo credit  China digital times.
Being Responsive, Not Reactive

- Research and development
- Staying technologically competitive
- Assessing world events