IMA Award Recipients Help a Planet in Need of Transportation and Medical Innovation

The 2018 IMA Magnesium Awards of Excellence recognize exceptional achievement in the global advancement of magnesium products and processes. These innovations span the globe, from China to the American heartland, and cover not only elements of motorized and human-powered transportation, but also the future of medical technology as we serve a growing and aging human population. IMA thanks participants for so many fine submissions and congratulates this quartet of winners.

An IMA Whitepaper
August 1, 2018
Support Center Console

GF Casting Solutions AG
GF Casting Solutions Altenmarkt GmbH & Co. KG

PRODUCT INFORMATION

Name of Part or Process: Support Center Console
Product Using Part: Audi A8
Function of Part: The center console is the connecting part between the cockpit and vehicle base frame
Alloy Used: AM50

The IMA Award of Excellence winner in the Automotive Cast Product Design Category is GF Casting Solutions AG and GF Casting Solutions Altenmarkt GmbH & Co. KG of Austria. For use on the Audi A8, the center console is the connecting part between the cockpit and the vehicle base frame. Its benefit is the high stability with low weight and in addition with geometric flexibilities to combine many mounting requirements on one center part. This example of magnesium diecasting combines low weight with high stability and geometric flexibility to combine many mounting requirements on one center part. Compared to previously used plastic or alloy components, the magnesium diecasting significantly shortens the finishing process with no machining required. A standard vehicle utilizes a front support console weighing 2.4 kg and a long-version vehicle utilizes a combined console weighing 4.5 kg and almost two meters long.
Bicycle Rim
Guangzhou Magnesium Metal Technology Co

PRODUCT INFORMATION
Name of Part or Process: Bicycle Rim
Product Using Part: Mobike – bicycle sharing
Function of Part: Lightweight, shock-absorbing wheel
Alloy Used: AM60B

The IMA Award of Excellence winner in the Commercial Cast Product Category is Guangzhou Magnesium Metal Technology Co. With the popularity of the bicycle not only in Chinese culture, but worldwide, and the growing use of shared bicycles in urban areas on every continent, their innovative bicycle rim is designed to be lightweight and shock-absorbing. The wheel not only provides an important green transportation element, it has a low carbon life. The technology is in use by Mobike, a short trip bike sharing service available in urban areas around the world. Globally, there are currently more than 10 million of these low maintenance magnesium rims in use on shared bikes.

In April 2012, the product was manufactured at the Shanghai auto show

Magnesium alloy oneness wheel in the global application
Strut Brace for Front Bumpers

ANDREAS STIHL AG & Co. KG
STIHL Magnesium Druckguss

The IMA Award of Excellence winner in the Process Category is ANDREAS STIHL AG & Co. KG and STIHL Magnesium Druckguss. The magnesium strut brace for front bumpers provides a 28 percent weight reduction and higher dimensional stability compared to its predecessor an aluminum component. This large magnesium component (935 mm x 320 mm; 1.24 kg) is produced in a 7 kN hot chamber diecasting machine. The hot chamber process facilitates lower cost through smaller casting tools, longer die life and faster casting rates. The strut brace is a fundamental component for achieving global vehicle stiffness at the front end, for transverse support of the forces between the bumpers and for representing the high local dynamic stiffness requirements (LDS) at the force application points of the strut mounts (damper and steering forces).

PRODUCT INFORMATION

Name of Part or Process: Strut Brace for Front Bumpers
Product Using Part: Audi A8
Function of Part: Provides transverse support between the front bumpers and stiffness at the front end of the vehicle
Alloy Used: AZ91 HP
Medical Grade Magnesium Wire
Fort Wayne Metals Research Products Corp

The IMA Award of Excellence winner in the Wrought Product Category is Fort Wayne Metals Research Products Corp of Indiana. This medical grade magnesium wire was developed because absorbable implants made of magnesium alloys may revolutionize surgical intervention, and fine magnesium wire will be critical to many applications. Alloy chemistry and thermomechanical processing conditions will significantly impact a material’s functional performance. For medical devices, fine diameters and precise tolerances are critical, and, in many cases, can only be achieved through cold wire drawing. Fort Wayne Metals has conducted significant research regarding cold wire drawing of WE43 and other magnesium alloys in development of this product.

PRODUCT INFORMATION
Name of Part or Process: Scalable Medical-Grade Magnesium Wire
Product Using Part: Biomedical implants such as sutures, staples and cardiovascular stents
Function of Part: Absorbable magnesium wire provides necessary mechanical support, tissue tolerance and biodegradability for certain biomedical implants
Alloy Used: WE43
IMA congratulates all Awards of Excellence Winners who dedicate their efforts to magnesium process and product innovations, setting ever-higher standards for making more efficient and environmentally responsible operations. These award-winning companies have found ingenious ways to produce, process, design, and build the global magnesium industry. They are demonstrating what is possible, and inspiring others to achieve even greater goals with magnesium innovations.