



technology & market development

TMD Newsletter

April 2017

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New TMD Committee Chair

Eugene Lee - New Chair of TMD Committee

Eugene Lee, Director Marketing, Hudbay Metal Marketing Inc. has been appointed Chair of IZA's Technology & Market Development Committee. "Due to the advance of competing materials it is ever more important to protect the current markets for zinc and develop new market opportunities to ensure a successful future for zinc and our industry. I am pleased to help champion IZA's high impact market development activities", commented Mr. Lee.



Eugene Lee is a mining finance and metals marketing professional with a vast experience in the base metals sector. At Hudbay he leads the team responsible for the sales and marketing of zinc, copper and molybdenum production from Hudbay's Flin Flon and Lalor mines in Canada and the Constanca Mine in Peru. He also sits on the Board of several public companies.

Zinc Die Casting

Zinc Die Casting Conference 2016 an overwhelming Success



In September 2016 IZA held a very successful zinc die casting conference in Brescia, Italy which was attended by more than 150 delegates from 20 different countries. The two-day conference "Zinc Die Castings Always Surprising" focused on technical advances including technology improvements, process optimization, alloy developments, simulation technology, design and surface finishes. Energy efficiency, weight reduction, circular zinc economy and recycling were also discussed. In addition delegates

received an update on the regional zinc die casting markets.

Organized by IZA, the conference was held at the Department of Mechanical and Industrial Engineering of the University of Brescia and was supported by fifteen companies and six European zinc die casting associations.

The November 2016 issue of the Italian die casting magazine *Fonderia Pressofusione*, dedicated a comprehensive report to the conference and praised IZA's newly launched zinc die casting website.

European Zinc Die Casting Competition

In conjunction with the conference, IZA held the European Zinc Die Casting Competition. Zinc die casters were asked to submit a zinc die cast part that would be judged for its design, quality, cost savings, ingenuity and innovation. Four winners were identified in four categories: design; high precision; innovative properties; and substitution of competing material. The winning entries had the opportunity to present their work during the conference to an international audience.



Award Winner:
Design

KitchenAid Coffee Machine
Bruschi S.p.A.



Award Winner:
High Precision

Subassembly for ophthalmic lens measurement instrument
ID Casting Group



Award Winner:

Innovative Properties
Tactile Control Panel
Havelländische Zink-Druckguss GmbH & Co. KG



Award Winner:

Substitution of Competing Material
Automotive Shift Lever
Adolf Föhl GmbH + Co. KG

Growing the European Zinc Die Casting Market

The current market for zinc die castings in Europe is estimated to be 320,000 tpy. IZA, in partnership with Initiative Zinc, has outlined a number of activities with potential to add up to another 30,000 tpy to this figure. The German die casting market has the biggest growth potential and a draft market development plan was proposed to the German die casting industry in early April. Follow-on activities will be expanded to other European countries such as France and Italy.

New IZA Website on Zinc Die Casting

A new website on zinc die casting has been launched; featuring the advantages of zinc die castings, an overview of alloys and surface finishes, case studies and a revamped engineering database. The site is available in English, German and Italian, and features the latest IZA publications on zinc die castings.

To view the site, go to: <http://diecasting.zinc.org/>



“Engineering in Zinc, today’s answer” now also in French and German

The IZA brochure “Engineering in zinc, today’s answer” previously available in English, has been translated into French and German (in process) to support the market development activities for zinc die casting in Europe.



Zinc Coatings

New GAP 2017-2019 Program Phase started



Zinc consumption in automotive steels is estimated to be 600,000 tpy. Aluminum was successful in the Ford F-150 truck and continues to expend resources to grow this market at the expense of galvanized steel.

The Galvanized Autobody Partnership (GAP), a joint program of the zinc, steel and automotive industries embarked on its new three-year program which continues to reflect the highest technical priorities of galvanized high-strength steels for the automotive industry. Among the 12 projects of the 2017-2019 program there are six new ones, including:

- Hydrogen Behavior and Effects in Advanced High Strength Steels
- Nature of Galvanizing Wettability on Advanced High Strength Steels
- Dross Minimization in Galvanizing Baths » including a focus on new ZnAlMg coatings
- Influence of Substrate Oxides, Texture and Microstructure on Quality of Galvanneal Surface Appearance
- Internal Oxidation Effects on Forming and Welding Behavior of Advanced High Strength Steel
- Zinc Effects on Mechanical Behavior of AHSS Welds

With ever stricter environmental regulations in Europe and the US forcing automakers to produce fuel-efficient, low-emission and lightweight vehicles, GAP research plays a key role in enabling a future for zinc-coated new generation steels in vehicle production. Over 90% of GAP funding comes from sponsors outside the zinc industry.

The next GAP Program Review Meetings will be held in conjunction with AISTech 2017 in Nashville, TN, USA, May 11-12 and at Adam Opel in Ruesselsheim, Germany, May 16-17.

Galvanized Rebar

IZA continued promotion activities for hot dip galvanized rebar including continuous galvanized rebar (CGR) by highlighting the excellent attributes at 18 conferences in North America in 2016. The focus was primarily on road and bridge, construction and precast and general construction applications.

Although some states and provinces in the US and Canada have banned epoxy coated rebar, stainless steel, MMFX and resins have been more aggressive promoting their products. Accordingly, three major projects – the Gardener Expressway in Toronto, Canada; the Ambassador Bridge connecting Detroit, Michigan and Windsor, Ontario; and the Champlain Bridge in Quebec specified stainless steel. As a result, rebar manufacturers are now much more interested in galvanized rebar.



New Coating Specifications

ASTM Specification for Duplex Coating Rebar:

A new ASTM specification has been published for zinc and epoxy dual-coated steel reinforcing bars. ASTM-A1055: Standard Specification for Zinc and Epoxy Dual-Coated Steel Reinforcing Bars covers deformed and plain steel reinforcing bars with a



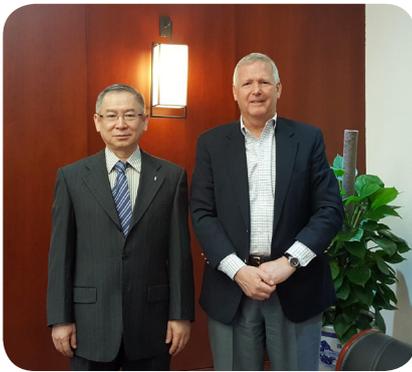
dual coating of zinc alloy and an epoxy coating. This provides specifiers with an additional product option where additional corrosion protection is required.

Chinese Standard Specification for CGR:

The Standardization administration of China has issued a new standard specification for CGR, effective July 1, 2017. The new standard, GB/T – 32968-2016, Zinc aluminium alloy coated steel bars for the reinforcement of concrete, allows coating thickness between 20-84 microns. Xiamen New Steel, the CGR producer in China, was instrumental in the development of this national standard.



Galvanized Rebar in China



Luo Tiejue and Dr. Frank Goodwin

In March 2017 IZA's Dr. Frank Goodwin and IZA China Representative Annette Huang met with Luo Tiejue, Inspector of Raw Materials Division, Ministry of Industry and Information Technology of the People's Republic of China, to discuss galvanized rebar. Many major infrastructure projects use stainless steel. The use of galvanized rebar could improve significantly the quality and service life of Chinese infrastructure and help reduce expensive imports of nickel concentrates for stainless. In addition, it would increase the profit margin of the Chinese steel industry by giving them a value-added product. These powerful arguments and the two new Chinese galvanized rebar standards induced Mr. Luo Tiejue to propose the use of galvanized rebar in all future civil structures.

"Galvanized Rebar – It Works!" now in Chinese

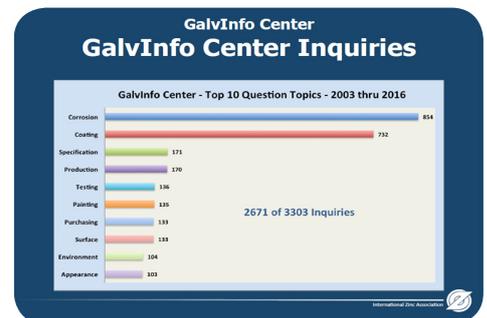
In support of IZA's market development activities the brochure "Galvanized Rebar – It works!" has been translated into Chinese and is being distributed to the key decision makers in government and industry.

IZA's GalvInfo Center: Activity Update

A new GalvInfo note on white rust has been updated with new information. White rust is the number one subject of questions received by the GalvInfo Center.

On average the GalvInfo Center receives nine technical inquiries per month. The most frequently asked questions relate to corrosion, namely white rust followed by questions on coatings.

The GalvInfo Center provides technical information to support users of zinc and zinc alloy coated steel sheet.



Zinc Thermal Spraying

Zinc Thermal Spray specified for Projects in UK and France

Zinc thermal sprayed rail in 108m lengths is now produced by British Steel under its trademark “Zinoco” for use in extremely corrosive environments. The first installation is by Network Rail (UK) in its Patchway tunnels near Bristol. The zinc-coated rail has also been approved for use by London Underground and RATP, France.



For more information, please go to: <http://britishsteel.co.uk/news-events/british-steel-delivers-worlds-first-long-length-coated-rail/>

Field Test with Ship underway

In June 2016, IZA initiated a project for zinc thermal spraying for corrosion prevention on ships. The port side of the operating deck of the transport ship Rasmus, operated by Väst kustens Brygg och Transport, was zinc thermal sprayed by Henry Allt I Allt while in drydock at the Swede Ship Marine. The whole ship was then painted with a three-coat paint system. The first year inspection of the deck is being scheduled for Q2.



Rasmus



Deck of incoming ship before thermal spraying



Thermal spraying of ramp of ship

Excellent long-term Results of Zinc Thermal Spray + Paint in Offshore Wind Farms

Two of the oldest Danish wind farms, 15 and 22 years old respectively, were recently given a thorough inspection by paint supplier Hempel. The Horns Rev 1 windfarm was installed in 2002, its towers are protected by 60 microns of thermal sprayed zinc followed by a 4-part Hempel paint system. The Thunoe Knob windfarm was installed in 1995 using 80 microns of zinc followed by a 4-part paint system. The exterior and interior surfaces were judged to be in prime condition. The zinc coating prevented the spread of corrosion away from areas of mechanical damage. The Thunoe Knob system is predicted to provide at least 25 years of complete protection with a residual durability of 5-10 years. The Horns Rev 1 system is also predicted to provide 25 years of complete protection with a residual durability of 15 years. Incidentally, the hot dip galvanized items used in these windfarms were also in very good condition, including platforms and stairs that received the same paint systems.



Since 2015, IZA has been conducting a program in thermal spraying for offshore windmills. For more information, please go to <http://www.zinc.org/coatings/> and scroll down to “metalizing”.

Regional Focus: Latin America

LATINGALVA 2016

The fifth LATINGALVA conference was organized by IZA in association with the General Galvanizers Association of Argentina (AAGIC) in Buenos Aires, Argentina in November 2016. There were 140 participants from 21 countries. LATINGALVA is the most important conference on hot-dip galvanizing in Latin America. The conference provided an update on the zinc and galvanizing markets and trends and discussed the latest developments in the galvanizing process spanning from kettle management to post-treatments. Specification requirements, environmental controls and plant engineering were also covered. The conference was complemented by an exhibition and technical plant visits of GALVASA and Ternium.

Conference delegates and exhibitors were highly satisfied with the event and enjoyed the memorable social program sponsored by Votorantim Metais and Industrias Peñoles.

The next LATINGALVA will take place in Lima, Peru in October or November 2018.



Galvanized Rebar Brochure now available in Spanish



The brochure “Galvanized Rebar: It works!” was translated into Spanish to support efforts of raising awareness of the unique advantages of galvanizing steel reinforcement in concrete in large infrastructure projects in Latin America. The aim is to double the market for galvanized rebar in Latin America every year over the next five years.

The brochure was distributed at the LATINGALVA conference and will be available on the Latiza website.

Galvanized Rebar for New Mexico City International Airport

A joint Penoles-IZA seminar was given to the Instituto Mexicano del Transporte in February 2017 on the advantages of using galvanized rebar in the 9000+ concrete pilings that will be needed to support the new Mexico City International Airport, a mega-project for which planning is well underway. This airport will be sited in the ancient bed of Lake Texcoco, a highly corrosive environment. The zinc industry has agreed to cooperate with this Institute as more site data is produced that will influence details of the concrete to be used and the placement of the galvanized rebar.



Promotion of Zinc in Architecture in Mexico

Industrias Peñoles and IZA have published a brochure on zinc in architecture highlighting five prominent projects in Mexico using zinc cladding. The 20-page publication features the projects’ characteristics and



provides technical performance data of zinc versus competing metals and materials.

The brochure will help to raise awareness and demand of zinc as an aesthetic, modern and sustainable material in architecture and design in Mexico.

Galvanized Rebar put to the Test in Brazil

Three projects in Brazil are testing the performance, durability and sustainability of galvanized rebar in different applications.



The first project is being conducted by Petrobras and the Institute of Nonferrous Metals (ICZ) and involves a two-year (2014-2016) field test examining galvanized rebar in concrete structures in a marine coastal environment in the Northeast of Brazil. The first-year report will be issued in May 2017. The preliminary results are very positive showing the beneficial effects of galvanized rebar on the durability of the concrete structures.

The Center for Innovation and Sustainable Construction (CICS) will embark on an innovative construction project testing new technologies and materials that have the potential of contributing to sustainable building. ICZ succeeded in promoting galvanized rebar and light steel frame structures as sustainable materials for this project.

The third project is being conducted in conjunction with the Brazilian Agency for Industrial Research and Innovation. The program studies the durability of galvanized rebar in concrete structures using a lower than normal concrete thickness.

2017 IZA Events

Upcoming Conferences, Seminars & Meetings

Indonesian National Galvanizing Seminar, Jakarta, Indonesia, April 20, 2017
A similar event is planned for Malaysia in May.

International Zinc Conference – Europe, Brussels, Belgium, May 8-10, 2017

GAP Review Meeting - North America, Nashville, Tennessee, May 11-12, 2017

GAP Review Meeting – Europe, Ruesselsheim, Germany, May 16-17, 2017

China General Galvanizing Conference, August 30 – September 1, 2017

China Zinc Production Technology Conference, Fall 2017

Zinc Metal Roundtable, Chicago, Illinois, Fall 2017

TMD Committee Meeting, 24 October 2017

For further information, please check the IZA events calendar at <http://www.zinc.org/iza-events/> or contact us by email contact@zinc.org.

