

EGGA Assembly 2017 in Prauge

This summer EGGA Assembly was arranged in Prague in the Czech republic. The conference started with information about the galvanizing business in Czech Republic and Slovakia, and after that a followed a series of presentations in both market, environment and technology area. Below is a summary of the presentations given.

The Galvanizing Business in Czech Republic and Slovakia

Michal Lesay, presiden of he Czech and Slovak Galvanizers Association, Asociace českých a slovenských zinkoven (ACSZ) started with a presentation about their association. ACSC was established in 1995, and have been member of EGGA since 1996, as the first member from former Eastern block. The annual budget for ACSZ is about 120,000 EUR. Michal Lesay is the president of ACSZ since 2014 and have been member of EGGA Board since 2013. ACSZ works as most of the other national associations with annual conferences for members, presentations and promotion of galvanized steel to architects, local authorities, university students, members' customers and partners. Nordic Galvanizers "Galvanizing Handbook" is translated to Czech language, because Hans Eriksson, former managing director of NG, was active as support when ACSZ started. The number of plants and annual tonnage is shown in the picture below.



UNIFE - the European rail supply industry

Since infrastructure is an important market segment for the galvanizing industry it was interesting to listen to Jean-Philippe Peuziat from UNIFE, representing the European rail supply industry (train-builders and rolling stock, signalling and infrastructure equipment suppliers) The association has 100 member companies from all over Europe and of all sizes, and 14 National Associations. To get a grip on the future in this bransch UNIFE has performed studies which ihas been published as the new World Rail Market Study with forecast for the period 2016-2021. The trends are growing urbanisation, energy scarcity, climate change and digitalisation. A growing challenge for companies in Europe is international market access. Only 63% of the total market is truly accessible to European suppliers and it is increasing difficulties on markets like China and Japan.

The competition with Chinese, Japanese and South-Korean rail manufacturers is tough. The Chinese manufacturer CRRC is by far the world's largest train builder with total sales amounting to \$ 35.4 billion in 2015, and the target is to increase on the European market the comming years.

Launch of a new graphic symbol for promotion of batch galvanizing to ISO 1461

Holger Glinde from the German galvanizing association Industrieverband Feuerverzinken, who also is chair of EGGA Marketing Committee, had a presentation about a work that have been ongoing in the Marketing Committee for some years; creation of a graphic symbol for batch galvanizing.

The goal has been to create a symbol that can be used worldwide to show that a product is hot dip galvanized.

The model has been the Woolmark, which was developed to promote wool when the synthetic materials came into the market. Key objectives has been early distinguish between batch HDG and other (inferior) types of zinc coating. Since many large galvanizing companies have their own symbols and brands, it has been important to avoid the use of strong and specific colours that may 'clash' with existing branding. Focus has been on the unique features of galvanizing. The symbol should be global, 'cultural applicability' and not constrained by language.

The unigue features to be communicated in the symbol has been *complete coverage, thick coating and coating bonded to the steel.*

The main values to associate with the symbol has been the following:

- Durable protection for steel
- Tough / Strong
- Reliable / Trusted
- Lifetime protection

The symbol does not communicate quality of application of the coating or membership of an association. It should be possible to use the symbol with and without reference to 'EN ISO 1461'. After many discussions consensus was reached on the simplest approach. We now have our "Woolmark" for batch galvanizing. We are sure, that the symbol meets its objectives and helps to establish a clearer identity and avoids the existing confusion. The success of the symbol depends on the European galvanizers, Holger Glinde ended his presentation.



The symbol - possible to use with or without the reference to EN ISO 1461.

An innovative marketing strategy for hot dip galvanizing

Bruno Dursin, managing director for Zink Info Benelux, the galvanizing association for Holland and Belgium, had a presentation about their new marketing strategy. Zink Info Benelux has made a customer survey to find out what is the strongest argument for a customer to choose galvanizing. According to the survey, *certainty* is most important for the customers:

- reduction of risks through their choice of reliable suppliers
- the certainty that they can truly count on their supplier

With galvanizing there is no maintenance cost, no after care, no risk....so it is really important to fulfil that expectation. When the end product does not fulfil clients' expectation it is a problem!

Traditionally in the galvanizing business the perception of the galvanizers has been "one size fits all", i.e. we deliver one quality, and the customer has to accept it. Rough treatment of goods, which create damages, occasional loss of pieces, 'uneven' quality, 'ugly' post-treatment of uncoated areas...

Bruno means that galvanizers need to match the expectations of the market with the end product and analyse the specific needs of end clients and tailoring the possibilities and restrictions of the HDG process. Important questions:"Are there any (aesthetic) requirements for significant surfaces? The visible sides are jointly identified before HDG. What is the intended use of the galvanized pieces? What is the composition of the basis metal (material certificate)?"

Zink Info Benelux have created the system Q-ZIB – a classification system for hot-dip galvanizing, with different quality classes depending on the customers requirements.

Class A means galvanizing according to EN ISO 1461. This standard describes the functional requirements for the coating. The design requirements are specified in EN 14713-1 and 2. The zinc melt contains not more than 2 % other metals, and adhesion tests are only performed if agreed commonly between both parties. EN ISO 1461 does not define aesthetic requirements.

Class B is "Aesthetic Galvanizing". The entire HDG article will be checked for and cleaned of sharp points, zinc ashes and unevennesses. The storage is dry, (to avoid white storage stain). If uncoated areas exist, the renovation is performed aesthetically. Visible sides could be post-treated for a smoother surface. A 10-year guarantee is given. Optional: if required by customer, specific packaging to avoid white storage stain during transportation.

Class C - includes extras (in agreement with customer) HDG in accordance with DAST-022, quality control by ZIB, customer-specific guarantees, report on coating thickness, passivation, extra logistic services (storage, labelling, transportation...)

The system is new, but seems promising. Of course the galvanizer needs to charge a higher price for class B and C than for class A, but with the system it is more clear to the customer what they get, and they have the possibility to get a higher aesthetic quality, if they are willing to pay for it. Bruno Bursin told us that Zink Info Benelux is willing to share the system with other national associations, and think it should be good if it is spread around Europe.

Inspection of galvanised structures and adhesion testing

Hana Geiplova from SVUOM Ltd., Prague/Czech Republic, had a presentation about a study they have performed for the qualitative parameters in EN ISO 1461; appearance of coating, coating thickness, continuity, adhesion. The material in the study has been components from the Czech power transmission system.

Where adhesion tests are required by the purchaser, any such test should be agreed by the galvanizer and the purchaser prior to the work being galvanized. Should it be necessary to test the adhesion, e.g. in the case of work pieces that are to be subject to high mechanical stresses, any test shall only be on significant surfaces, i.e. in areas in which good adhesion is important for the proposed application. There are some different techniques for adherence testing:

A cross-hatch test will give some guidance on the mechanical properties of the coating, but in some cases it may be more demanding than the application requires. Another possible method is the ASTM A123 Hammer Test. The most well known method in Europe is probably the DIN 50978 impact test. Both methods are restricted to a maximum coat thickness of approximately 150 µm. The impact testing gives information about what amount of energy a zinc coating can absorb before delamination.

The study has shown that there is a good correlation between appearance of zinc coating and coating thickness. It is also a good correlation between results of impact test to appearance, thickness and phase structure of zinc coating. It is sometimes a problem with the chemical composition of the steel, and there have been cases where the producer's attestations are not correct.

Fire resistance of hot dip galvanized steel members

High costs of passive fire precautions are a huge economic disadvantage of steel and steel concrete composite structures, compared to simple concrete constructions. If hot dip galvanizing except corrosion protection additionally could contribute beneficially to the fire resistance of unprotected steel members, it would be a huge economic advantage. In Germany the galvanizing association has made some studies in this area, and found out that galvanizing has a positive effect on the heat emission, an important parameter when it comes to fire protection.



EGGA has also performed research in that area and received varying results. It has been full-scale fire tests in lab, with an ambitious program – with the aim to receive 30 minutes fire resistance with relatively thick coatings. The main results have been a bit disappointing, but one sample set achieved 30 minutes fire resistance. Thus, most samples achieved 15 minutes fire resistance, which is an improvement in comparison with uncoated steel. The treatment of the metal sections would therefore constitute an alternative solution to the application of fireproof protection materials such as flocking, chamber or intumescent paint, the implementation of which may entail a considerable cost.

Recovery of pickling acid solutions by membrane technology

Lello Pernize from the Italian galvanizers association, Associazione Italiana Zincatura (AIZ) had a presentation about a joint research project between Italian and German companies, a research institute and a university. The project idea was to recover valuable resources, such as acids and metals, from wastewater, using an integrated system of two highly innovative membrane technologies. The targets have been to reduce the use of water, energy and chemicals, and also reduce wastewater production. The studied technologies have been Diffusion Dialysis (DD) and Membrane Distillation (MD).

The main advantages with DD is high efficiency in wastewater treatment, low energy consumption, low installation and executive costs and that the process is environment friendly. The MD technique has the following advantages: low working temperature and pressure, low energy cost, easy to operate.

The innovation in this project is to combine both technologies which allows the separation of metallic ions from the acid molecules (DD) and the recovery of acid solution to be reused after a concentration step (MD). There are now 4 pilot plants based on an integrated system of DD and MD in 4 countries, Germany, Austria, Italy and Spain. AIZ supports the adaptation of the technology to the sector as well as the data mining and will take care of the dissemination of the final results.

