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Protest March in Brussels

Employers and employees from the European steel industry were attending a march in Brussels on 15th February 2016 to show support for fair trade, growth and jobs in Europe, as well as to protest against Chinese dumping on the EU market and the granting of Market Economy Status (MES) for China. Over 5000 people attended this march, also the Steel Institute VDEh was with 10 people at Brussels. The march and accompanying manifesto strike at the heart of the challenges facing the European steel industry. The dumped steel imports from China, volumes of which have doubled in 18 months, are flooding the EU market and directly causing irreversible closures and job losses across the EU steel sector. Also the dumped products from China have much larger CO₂ environmental footprint – about 40 % higher – than equivalents produced in the EU.

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International Society of Steel Institutes (ISSI)

On 11th November 2015, one day before the annual meeting STAHL 2015, the meeting of the “International Society of Steel Institutes (ISSI)” took place under chairmanship of Dr.-Ing. Peter Dahlmann, Executive Member of the Managing Board of Steel Institute VDEh, at Stahl-Zentrum in Düsseldorf. Directors of technical institutes from Austria, Brazil, China, Czech Republic, Germany, Hungary, Italy, Japan, Spain, Sweden, United Kingdom and United States participated. During this meeting the results of the worldwide organized steel conferences and congresses in 2015 were presented and discussed and the future places and dates for 20 steel related conferences for the next six years agreed.

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Metallurgy

Main topic discussed in the Blast Furnace Committee in December 2015 were considerations of HBI charge to the blast furnace and injection of hydrogen into the blast furnace. This is an ongoing discussion about ways and measures to decrease CO₂ emissions of the blast furnace process accompanied by metallurgic, economic and CO₂ comprehensive evaluations.

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Metals Additive Manufacturing – Relevant for the Steel Industry? The 2nd European Scientific Steel Panel addressed this question during its meeting in Düsseldorf on 23rd November 2015.

Decentralization of industrial processes is one of the issues of our time. „Metals Additive Manufacturing“ also known as 3-D printing of metals, means decentralized production of steel and other alloys. The turnover of the 3d-printing sector is estimated to rise about 30 % to more than 2 Billion Dollar in 2016. An increase of once more 30 % is expected till 2018 to then 12.5 Billion Dollar from economic studies. Already today, huge companies like Ferrari, Airbus, BMW, Ducati, Logitech use Additive Manufacturing. Typical applications are rapid tooling, prototyping and production of special parts.

Is Metals Additive Manufacturing an issue for the steel industry? What is feasible today and what can be expected in the future? The 2nd European Scientific Steel Panel in Düsseldorf discussed these questions among experts from strategic steel research and key players from R&D organizations. Therefore Prof. Bruno Buchmayer, Chair of Metal Forming, Department Product Engineering, University, Leoben, Austria presented the “Prospects und Potentials of Metal Additive Manufacturing”, Dipl.-Wirtsch.-Ing. Sebastian Bremen, Fraunhofer-Institut für Lasertechnik (ILT), Aachen, reported about “Selective Laser Melting on the Way to Production” and Dr. Eric Jäggle, Max-Planck-Institut für Eisenforschung, Düsseldorf, Germany, added the basic research perspective to the topic in his lecture on “Alloys for and by Additive Manufacturing”.

As the technology aims at lot sizes between 1 and 50 no direct impact of Metal Additive Manufacturing is to be expected on the mass steel production in the near future. But targets for steel industry might be to reach deeper integration into the customers value chain. Therefore several strategic investments are on its way like the installation of a new chair for Additive Manufacturing at RWTH Aachen University in 2016. Furthermore a new development and test center for Metal Additive Manufacturing will arise in cooperation between voestalpine Edelmetall, Böhler Edelmetall and Böhler Uddeholm in Düsseldorf in 2016.

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New Standard for LCA of steel products on the way

One of the unique characteristics of steel products is its recyclability without change in the inherent properties as steel. At the end of life of manufactured products, steel is collected as scrap and is used as a raw material for production of new steel products. This is referred to as the end-of-life recycling and, as the steel can be recycled infinitely to produce new steel products without losing its inherent properties, the nature of recycling is described as closed loop recycling. By being reused as raw material, steel scrap contributes to the reduction in the use of natural resources as well as the environmental impacts. To evaluate properly the life cycle impacts of steel production to the Earth, it is essential to capture the effect of the end-of-recycling in addition to evaluating the effects from raw material mining to material manufacturing (cradle-to-gate). The methodology for evaluating those effects will be specified in the proposed standard. The methodological details included in this standard proposal are adapted from the most up to date World Steel Association LCI methodology, which has gone through multiple improvements over the past decades and are accepted as the common methodology by the World Steel Association members, consisting of more than 170 steel companies, representing around 85 % of world steel production.

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Two energy efficiency Networks were launched in the steel Industry

In the context of the Energy Efficiency Networking Initiative, based on an agreement between the federal government and the industry associations, two networks were launched. One network was established by thyssenkrupp Steel Europe company internal. Another one was launched by the Steel Institute VDEh with eleven electrical steel producers whole over Germany. As a qualified energy consultant the VDEh-Betriebsforschungsinstitut, the research institute for applied research, was engaged.

Together with the companies the Steel Institute VDEh and the German Steel Federation inform about the initiative and examples on successful projects of energy efficiency in the process on www.effizienz-mit-stahl.de.

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Materials technology

Young Academic Steel Award

The Young Academic Steel Award has been granted for the first time on the 12th of November 2015 during the Annual Meeting STAHL 2015. This award honors the scientific work of young academics in the field of metallurgy and material science of steel across Europe. In order to show the sustainability of the material steel this award was given to extraordinary scientific theses that are relevant for the steel industry. In 2015 two women received this award. In the category "Best Master Thesis" Irina Gospodinov (29) from the RWTH Aachen University received 2.500 € for her investigations on the bake-hardening behavior of high manganese alloyed steels in comparison to a modern high-strength multi-phase steel. The Award for the best phd thesis (price money 5.000 €) was given to Dr. Irene de Diego-Calderón (30) from the IMDEA Materials Institute der University Carlos III of Madrid, Spain. Her thesis "Mechanical properties of advanced high-strength steels produced via Quenching and Partitioning" had been undertaken in cooperation with ArcelorMittal und thyssenkrupp Steel Europe. In the future the Young Academic Steel Award will be granted yearly during the annual meeting for promising young scientists.

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Material Technology Committee

38th Conference of the German Creep Group on the 27nd of Nov. 2015

On the 27th of November 2015 the 38th Conference of the German Creep Group (www.langzeitverhalten.de) took place in the Stahl-Zentrum in Düsseldorf. 107 experts on creep and heat resistant steels from inside and outside Germany visited this venue. New ferritic steel grades were presented, also investigations on the creep behavior of welded steels and nickel-based alloys were discussed. Studies concerning the lifetime assessment become also more and more important in this yearly event due to fact that the energy mix resulting from the use of renewable energy leads to flexible operation of fossil power plants. New challenges for high temperature materials therefore arise. The 39th conference will take place on 25th November 2016.

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33rd conference "Tagung Werkstoffprüfung 2015"

The two-day lecture and discussion conference on materials testing hosted by the Steel Institute VDEh was held during December 3-4, 2015 in Bad Neuenahr, Germany with the theme "Progress in Materials Testing for Research and Practice". The event brought together 140 scientists, engineers, researchers, students and leaders from the fields of materials science, failure analysis, design engineering and testing. The presentations of the event are published in a conference volume, which is released by the Stahleisen publishing house.

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ECCC 2017 Conference

The 4th International ECCC Creep & Fracture Conference hosted by the Steel Institute VDEh will take place from the 10th to 14th of September 2017 in Düsseldorf. During ECCC 2017, experts, both from industry and science, will meet to present and discuss the most recent developments and experiences in all aspects of creep behavior of high temperature industrial materials and components for the energy industry. Conference Topics will include high temperature materials development, creep data analysis and methodology recommendations, component design and life assessment, microstructural and damage studies, high temperature damage interaction, effects of flexible operation on high temperature materials, lifetime assessment and determination as well as new creep testing and modeling methods. For more information please check www.eccc2017.com.

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FOSTA – Research Association for Steel Application

Symposium Tower and Mast Construction

The Histwin+ symposium presenting current research projects in the field of tower and mast construction took place on 18th November 2015 in Düsseldorf. Main focus of the program was to show approaches for optimizing wind energy constructions, overhead line and radiophone constructions by using steel. The symposium was fully booked with 180 participants. Several companies from the above mentioned different industry sectors supported the event through its participation at the accompanying exhibition.

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Energy and environment technology

Best available techniques reference document on Ferrous Metal Processing

The European commission has started the revision of the best available techniques reference document on Ferrous Metal Processing (FMP BREF) by reactivating the technical working group in December 2015. The FMP BREF defines the European state of the art of processes in main activities of the iron and steel industry like hot rolling, cold rolling and hot dip galvanizing including pickling and annealing lines. The technical working group is composed by representatives of industry, authorities and non governmental organisations and is exchanging relevant information to update the FMP BREF in an about three year lasting process. It results in the publication of the BREF itself and legal binding conclusions which will provide new requirements the European steel industry has to cope with.

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Standardization

ECISS President

The European Committee for Iron and Steel Standardization (ECISS) elected Mr. Mika Vartiainen (Finland) as ECISS President (in force since the 1st January 2016).

Publication of European Directives in Sectors “Pressure Equipment” and “Simple pressure vessels”

The Directive 2014/68/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment (PED), published on 15th April 2014, will enter into force and application by 19th July 2016 and will replace the Directive 97/23/EG. Due to the publication, the Annex ZA, which gives the presumption of conformity for all harmonised standards under the PED, has to be updated. The most important harmonised European Standards under the PED for steel products EN 10028-1 to -7 “Flat products of steels for pressure purposes”, EN 10272 “Stainless steel bars for pressure purposes”, EN 10273 “Hot rolled weldable steel bars for pressure purposes with specified elevated temperature properties” and EN 10222-1 to -5 “Steel forgings for pressure purposes” are under revision and will give the presumption of conformity with the Directive 2014/68/EU after their publication.

The Directive 2014/29/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of simple pressure vessels (SPVD), published on 26th February 2014, will enter into force and application by 20th April 2016 and will replace the Directive 2009/105/EC. Due to the publication, the Annex ZA, which gives the presumption of conformity for all harmonised standards under the SPVD, has to be updated. The European Standard on steel products EN 10207 "Steels for simple pressure vessels - Technical delivery requirements for plates, strips and bars" harmonised under the SPVD is under revision and will give the presumption of conformity with the Directive 2014/29/EU after its publication.

Annual report of the Iron and Steel Standards Committee (FES)

The annual report of the iron and steel standards committee (FES), edition February 2016, is available. 51 standards and 54 draft-standards have been published in 2015. 170 standardization projects are in progress.

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Safety

Technical measures to increase safety

To increase the occupational safety and minimize the risk of accidents around machinery, especially in noisy production environments, fork lift trucks are equipped with a new optical warning system. A LED light projects a bright blue coloured spot on the floor in front or behind the fork lift, depending on its driving direction. This early warning signal alerts workers about the oncoming traffic.

For the use in overhead crane operations, this type of optical warning is suitable too. A red crane light projected on the floor warns pedestrians and vehicles of oncoming overhead crane traffic. The crane spotlight can be used in different light configurations (leading and tailing spot or danger zone box).

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Research and development

In near future, the results of the RFCS Call 2015 will be published. BFI expects to have 10 successful projects with a funding of nearly 3 million € and project budgets of altogether 5 million €. The success rate of 33% is well above the average of 20 %.

There are a high number of projects dealing with steel applications in the construction sector, with the participation of a high number of universities.

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Steel Academy

Workshop "Industry 4.0 in the steel industry"

Industry 4.0 has become a synonym for the internet based digitisation and connection of industrial productions. In a workshop on the 3rd of February the Steel Institute VDEh presented 4.0-projects within the steel making sector. Representatives of thyssenkrupp Steel Europe AG, Salzgitter AG, Hoesch Hohenlimburg GmbH, Saarlöh AG, thyssenkrupp Rasselstein GmbH and VDEh-Betriebsforschungsinstitut GmbH presented and discussed with more than 100 participants their projects. The subject 4.0 mobilised not only IT and automation staff, but also managers, analysts and the trade union. The conclusion of the workshop shows that there is enormous potential for 4.0 especially in steel making, with its long value added chain and several interfaces.

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