

Topics:

- AISTech Award
- METEC & 2nd ESTAD, 15 to 19 June 2015
- Werkstoffwoche 2015 / Materialsweek 2015
- Joint meeting of the cross-sectorial-topic "Efficiency increase and CO₂ mitigation along the value added chain steel" and the "Committee on metallurgical fundamentals"
- VDI Guideline 4085/1 „Design and Errection of Scrap Yards – Radioactivity Control of Metal Scrap" under preparation
- Educational journey of VDEh Committee on Oxygen Steelmaking to South Korea and Japan under preparation for 2015
- Draft Proposal of the EN 15061
- Future of the steel production with "Industrie 4.0"
- The cross sectorial theme „Steel in comparison with other materials" has been finished.
- Initiative Lightweight Forging (Massiver Leichtbau)
- Metallurgy Europe
- New Standard for the performance assessment of the steel industry
- ÜMet – Performance in 2014
- ISO President
- Chairmanship in European standard committees
- Annual report the Iron and Steel Standards Committee (FES)
- BFI is a founding member of the "Association Zuse"
- BFI received KlimaExpo NRW award
- Successful results for BFI within RFCS 2014
- BFI: further European projects in the horizon
- FOSTA research project wins the Otto-von-Guericke-Award 2014 of the German Federation of Industrial Research Associations
- Burst test of unfired pressure vessels made of P690Q

Award

During the AISTech in Cleveland, USA, on 4 May 2015, the Boston Consulting Group and Steel Institute VDEh will receive the Environmental Technology Best Paper Award for the presentation "Steel's contribution to a Low-Carbon Europe 2050 – Technical and Economic Analysis of the steel sector's CO₂ Abatement Potential". The paper was presented by **Dr. Hans Bodo Lungen**, Phone: +49 (0) 211 6707-444 or e-mail: hans-bodo.luengen@stahl-zentrum.de, during AISTech in May 2014 in Indianapolis, USA.

Conferences

Pre-view METEC & 2nd ESTAD, 15 to 19 June 2015. The final programme with registration forms is under preparation. It includes an opening and two plenary sessions with invited keynote speakers, 135 technical sessions with 670 technical presentations in the field of ironmaking, steelmaking, rolling, surface technologies, steel materials and their application as well as environmental protection, CO₂ mitigation and efficiency increase. The event will be closed by a round table discussion on steel technology trends and steel material grades. After the technical presentation days participants have the opportunity to choose between 8 offered works visits, for which tickets are limited. Visit the homepage under www.metec-estad2015.com.

Contact: Dr. Hans Bodo Lungen, Phone: +49 (0) 211 6707-444 or e-mail: hans-bodo.luengen@stahl-zentrum.de

From 14 to 17 September 2015 the Steel Institute VDEh will hold the **Werkstoffwoche 2015 / Materialsweek 2015**, a congress and exhibition for materials and applications, in cooperation with the Deutsche Gesellschaft für Materialkunde (DGM).

The Steel Institute VDEh will represent the material steel, the DGM non-ferrous metals, ceramics, polymers and glass materials. The aim is to establish the Werkstoffwoche 2015 as a central meeting point for material production, development and application. Offering a wide range of topics, the Werkstoffwoche provides an ideal forum for the exchange of information, networking opportunities and the transfer of new materials into applications.

The Steel Institute VDEh will participate in the Werkstoffwoche 2015 through lectures and Steel Academy seminars. In addition, the VDEh-Betriebsforschungsinstitut (BFI) and also the Max-Planck-Institut für Eisenforschung (MPIE) will hold lectures.

Contact: Peter Schmieding, Phone: +49 (0)211 6707-478 or e-mail: schmieding@stahl-akademie.de

Metallurgy

In a joint meeting of the cross-sectorial-topic "Efficiency increase and CO₂ mitigation along the value added chain steel" and the "Committee on metallurgical fundamentals" the main topic "Solutions to low CO₂ emissions in steelmaking" was discussed, considering programmes and measures in Europe (Tata Steel), South Korea (POSCO) and an overview (worldsteel) on Australia, China, Japan, Taiwan and USA. As a result it can be pointed out that the quantum leap in massive CO₂ mitigations has not yet been found. The development of the HIsarna smelting reduction process as part of the European ULCOS project aims to reduce CO₂ emissions by 20 % compared to the conventional coke plant – sinter plant – blast furnace route and by 80 % including CCS per tone of hot rolled sheet. A pilot plant is operated at Tata Steel in IJmuiden, which achieved in its fourth campaign approx. 90 % of designed capacity and a coal consumption of approx. 750 kg/t hot metal.

Contact: Dr. Hans Bodo Lungen, Phone: +49 (0) 211 6707-444 or e-mail: hans-bodo.luengen@stahl-zentrum.de

VDI Guideline 4085/1 „Design and Errection of Scrap Yards – Radioactivity Control of Metal Scrap“ under preparation. During its meeting on 12 November 2014, the correspondent working group announced the draft version of this German guideline to be available starting end of March 2015. After publication there will be a 3 weeks period for objections to German VDI.

Educational journey of VDEh Technical Committee on Oxygen Steelmaking to South Korea and Japan under preparation for 2015. TC Oxygen Steelmaking is preparing a study trip to South Korea and Japan in October 2015. It is intended to visit following steelworks: POSCO, Pohang, POSCO, Gwanyang, Hyundai Steel Dangjin, Nippon Sumitomo Steel Kimitsu and JFE Chiba. A special focus of the journey will be laid on the differences between hot metal treatment in Asia and Europe.

Contact: Dr. Reinhard Fandrich, Phone: +49 (0) 211 6707-304 or e-mail: reinhard.fandrich@stahl-zentrum.de

Metal forming

The **Draft Proposal of the EN 15061** „Safety of machinery — Safety requirements for strip processing line machinery and equipment“ was released by the NA 060 DIN Standards Committee Mechanical Engineering and forwarded to CEN/TC 322 WG4 „Strip Processing Lines“ to finalise the draft.

Contact: Ulrike Stellmacher, Phone: +49 (0) 211 6707-415 or e-mail: ulrike.stellmacher@stahl-zentrum.de

Plant engineering

Future of the steel production with "Industrie 4.0"

The catchword "Industrie 4.0" describes the convergence of industrial production and information technology. After steam engine, the assembly line and the computer, it is the fourth stage of industrial development - the fully digitalized enterprise. Terms like Internet of Things, Smart Manufacturing and Smart Grids characterize the discussion about the production of the future. All industries will be affected by dramatic changes in production, organization and processes. In many companies of steel industry the conditions for Industrie 4.0 are currently being created. Therefore, the Committee for Plant Engineering has founded a working group. It was

instructed to describe the objectives of Industrie 4.0 and developing recommendations for implementation. The work will be continued as a cross sectorial topic.

Contact: Karsten Letz, Phone: +49 (0)211 6707-470 or e-mail: karsten.letz@stahl-zentrum.de

Materials technology

The cross sectorial theme „Steel in comparison with other materials“ has been finished.

Substitution materials such as aluminium, plastics and fibre reinforced plastics arise by the actual activities of the OEMs in a positive light (low density and weight) while steel is strong on the defensive and is used as a rather negative demarcation. Steel is not perceived by the public as a material with a high potential for lightweight construction. The aim of the work was to collect facts and arguments, which could be used in the public debate to improve the image of the steel material.

The collected data, available through publications and from the free press, are focused on the comparison of materials used in the automotive industry and were summarized as statements in a brochure. Drawing conclusions from this summary: Steel is and remains on environmental and economic point of view an essential material for the further development of the societies in the world.

Initiative Lightweight Forging (Massiver Leichtbau)

The Initiative Lightweight Forging (Initiative Massiver Leichtbau) has started its second phase by analysing the lightweight potential of a light commercial vehicle. The experts of 17 forging companies and 10 companies from the steel industry (manufacturers of wire and bar) will compile lightweight ideas due to material, structural and conceptual lightweight design in collaboration with fka Forschungsgesellschaft Kraftfahrwesen mbH Aachen and IPEK Institute of Product Engineering, Karlsruhe Institute of Technology. The results of the first phase "Passenger Car", where a weight reduction of 42 kg has been pointed out, were presented in the customer conference „Massiver Leichtbau im Automobil: Werkstoffe & Bauteile, Potentiale & Lösungen“ on the 18th/19th November 2014 in Stuttgart with 180 attendees. More information is available under www.massiverLEICHTBAU.de.

Contact: Dr. Hans-Joachim Wieland, Phone: +49 (0)211 6707-426 or e-mail: hans-joachim.wieland@stahl-zentrum.de

Energy and environment technology

Metallurgy Europe

The European Space Agency (ESA) started an initiative called Metallurgy Europe. Within this initiative, it is appropriate to gather all research institutes and companies, which have a great expertise in Metallurgy. At the beginning of January, all of them find the way to Ulm (Germany) to have the technical meeting with the aim to create 15 front-runner projects. For the steel industry the topics structural steel, thermoelectrics for waste heat recovery in the industry and hard & wear resistant coatings are the important ones. Next step will be to form the consortia and the projects. Project start could be in the first half of 2016.

Contact: D.-Ing. Peter Dahlmann, Phone: +49 (0)211 6707-405 or e-mail: peter.dahlmann@vdeh.de and Marten Sprecher, Phone: +49 (0)211 6707-417 or e-mail: marten.sprecher@stahl-zentrum.de

New Standard for the performance assessment of the steel industry

The new European Standard prEN ISO 19694-2 faces the performance assessment of different plants regarding their CO₂-Emissions. Since many years the steel industry looked for solutions allowing for delivering a level playing field of CO₂-Performance taking into account the identified problems of facility structure and giving a way to estimate the potential for improvement for a given site. This proposal aims a setting of methodologies for the assessment of CO₂ performance of processes and their consolidation at facility or group level. The standard will be available in 2016.

Contact: Marten Sprecher, Phone: +49 (0)211 6707-417 or e-mail: marten.sprecher@stahl-zentrum.de

ÜMet – Performance in 2014

In the past year ÜMet - Überwachungsgemeinschaft von Betreibern von Anlagen zur Erzeugung, Be- und Verarbeitung von Metallen (Metallanlagenbetreiber) e.V. (a technical organization which certifies facilities which handle substances hazardous to water) - has performed a total of 87 certifications of facilities and companies. Additionally approx. 700 employees in specialized companies have been trained. Thus, the high level of the previous years was maintained.

As a non-profit organization ÜMet offers member companies the opportunity to have their water pollution prevention equipment and specialized companies certified cost effectively and efficiently by experienced experts.

The Technical Committee, which gives specialists from the member companies the opportunity of sharing experiences, has met twice.

Contact: Norbert Hatscher, Phone: +49 (0)211 6707-433 or e-mail: norbert.hatscher@stahl-zentrum.de

Standardization

ISO President

The International Organisation for Standardization (ISO) elected Dr. ZHANG Xiaogang (Anshan Steel, China) as ISO President (in force since the 1st of January 2015).

Chairmanship in European standard committees

Based on decision 8/2014 taken by ECISS/TC 106 on 10 November 2014, Mr. Jean-Pascal Leloire (ArcelorMittal - Wire Solutions) has been appointed as chairman of the Technical Committee ECISS/TC 106 "Wire rod and wire" for a period of 6 years.

Annual report the Iron and Steel Standards Committee (FES)

The annual report of the iron and steel standards committee (FES), edition February 2015, is available. 34 standards and 51 draft-standards have been published in 2014. 182 standardization projects are in progress.

Contact: Eberhard Barthel, Phone: +49 (0)211 6707-433 or e-mail: eberhard.barthel@stahl-zentrum.de

Research and development

BFI is a founding member of the "Association Zuse"

The most important German private non-profit institutions for industrial research (IFE), including BFI, have decided to join their efforts within an association to represent their common interests. This association will be named after the German inventor and entrepreneur Konrad Zuse.

Preserving the scientific, juridical and economic independence of its members, the Association Zuse will encourage and promote science, research and transfer activities to support market-related innovation, especially for SMEs. Cooperation between the IFEs in the frame of clusters and international activity will also be in the focus of the Association Zuse.

BFI received KlimaExpo NRW award

In a recently completed research project of the VDEh-Betriebsforschungsinstitut GmbH together with the Gustav Grimm Edelstahlwerk GmbH & Co. KG the power production from the waste heat of forging furnaces through Organic Ranking Cycle (ORC) was successfully implemented for the first time. During the project period over 120 t of CO₂ were saved by the waste heat power generation. For the future cost savings of up to 200,000 € and CO₂ savings of up to 600 tons per year are expected. Due to its innovative nature the project was included into the initiative of the KlimaExpo.NRW.

Successful results for BFI within RFCS 2014

BFI has been particularly successful in the frame of the last call from the Research Fund for Coal and Steel (RFCS), reaching again a success rate (25 %) significantly above the average (19 %). Eleven projects involving BFI will be funded. The overall budget of these projects is around 24M€, a performance stable from year to year.

BFI: further European projects in the horizon

The European Union wants to support innovation and reinforce the dialog with the industry with its framework program "Horizon 2020". An important focus of the program is the trans-sectoriality: the results of the projects must be adaptable to different industry sectors and be scientifically excellent. BFI was successful during the first call for proposals dedicated specifically to the process industries, and seven further proposals are in preparation: BFI demonstrates its capacities as a professional research partner.

Contact: Prof. Dr. Ralph Sievering, Phone: +49 (0)211 6707-200 or e-mail: ralph.sievering@bfi.de

Research Association of Steel Application – FOSTA

FOSTA research project wins the Otto-von-Guericke-Award 2014 of the German Federation of Industrial Research Associations

The project aim was to develop the elementary scientific and technical knowledge necessary for the use of hot-dip-galvanized steel products in bridge construction. Therefore the influence of the hot-dip galvanizing process on the fatigue strength of steel construction components under cyclical action of traffic loads has been analysed. The results show an influence on the fatigue strength that leads to a reduction of the detail categories for the proof against fatigue. But comparative calculations for small and medium span-width bridges show only a slight change in the construction weight. Against this background it is now possible to protect bridges against corrosion nearly for their whole service life. The holistic view of the construction and maintenance costs shows further advantages in the life cycle of bridge structures. The project wins the Otto-von-Guericke-Award. The results were used for the first time in a highway bridge project that wins the Innovation Award of the German Industrial Association for hot dip galvanizing.

Burst test of unfired pressure vessels made of P690Q

On 30.01.2015, a burst test on a pressure vessel made of high strength carbon steel P690Q plate (HSLA steel) was carried out at Salzgitter Mannesmann Forschung GmbH in Duisburg. That test was part of the FOSTA research project P 950 "strain-based design criteria for unfired pressure vessels: Demonstration of an extended DBF method (DBF = Design by Formulae)".

The vessel was designed and manufactured by the companies Evonik AG and Linde AG. The dimensions of the vessel: Ø 1200 mm, wall thickness 50 mm; pressure medium: water. The vessel is designed for 300 bar internal pressure; that results in a test pressure of approx. 400 bar. The vessel burst at nearly 700 bar.

Contact:

Sohnstraße 65 • 40237 Düsseldorf • Phone: 0211-6707-444 • Fax: 0211-6707-440
e-mail: hans-bodo.luengen@stahl-zentrum.de • Web: www.stahl-online.de