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## 4<sup>th</sup> European Scientific Steel Panel

On 3<sup>rd</sup> February 2017 the 4<sup>th</sup> European Scientific Steel Panel dedicated to “**Electric Mobility – Chances and Risks for the European Steel Industry**” took place in Düsseldorf. Two impulse lectures focussed the technological impact on future automobile construction but also on future steel mix needed for automotive. Main speakers were Dr. H. Davies, Senior Lecturer in Automotive Systems Engineering, Centre for Mobility & Transport Research, Coventry University, UK and Ir. N. Langerak, Department Manager Applications & Engineering, Research & Development, Tata Steel IJmuiden, the Netherlands. With 25 attendees from steel industries research departments, Universities but also technical directors the event was well attended.

The automotive industry, driven by European climate policy, expects, that the usage of conventional combustion engine will drop down to some 40 % until 2030. By then, 60 % of the vehicles shall consist of hybrid electric vehicles (HEV), battery electric vehicles (BEV), fuel Cell electric vehicles (FCEV) and range extended electric vehicles (REEV). Steel for conventional combustion engines will then be needed to a far less extend. LCM Automotive, UK, expects a halving of steel usage in automotive till 2035 compared to 2010 caused by increased application of light weight construction materials like aluminium, magnesia or reinforced polymers. On the other hand, there is a doubling expected for usage of high and medium strength steels.

Steel offers today serious advantage with regard to life cycle assessment compared to competing materials because of less greenhouse gas emissions during production. In contrast to polymers based composites, steel can be recycled and reused completely. In order to increase the light-weight construction potential, new advanced high strength steels are under development with improved characteristics. However, the way of energy production is decisive for materials comparison. If regenerative technologies will be used for energy production increasingly in future, aluminium and magnesium might gain importance for automobile construction. This remains a challenge for steel.

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# Newsletter

## Industry 4.0

### Steel 4.0 - Interpretation of industry 4.0 for the steel industry

The term industry 4.0 is used for several years in the public. It describes the consistent and comprehensive penetration of production technology and information technology across the entire supply chain. The aim are intelligent factories with flexible and effective production. The basis is the internet of things and the complex networking of all involved systems and components.

The plant engineering committee has commissioned a working group to examine the potential of industry 4.0 in the steel industry. This working group has developed a guide for the steel industry. According to a general description, the characteristics of the steel industry are presented. The report is supplemented by recommendations for action and current practical examples.

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## Steel materials

### SCT 2017 Conference

The 5<sup>th</sup> International Conference on Steels in Cars and Trucks hosted by the Steel Institute VDEh will take place from the 18<sup>th</sup> to 22<sup>nd</sup> of June 2017 in Amsterdam-Schiphol. 'Bringing the automotive, supplier and steel industries together' is one of the two goals behind this year's SCT 2017. This motto reinforces what the modern steel industry is all about: partnerships across value chains being made up of industry, research and development professionals. The second motto of SCT 2017 is: 'Future trends in steel development, processing technologies and applications'. The ability to steadily innovate one of the traditional and most innovative materials for industrial use is reflected in the increasing amount of steel being consumed across the world. The program is now available under [www.sct2017.com](http://www.sct2017.com). More than 140 lectures will be given at the conference.



### ECCC 2017 Conference

The 4<sup>th</sup> International ECCC Creep & Fracture Conference hosted by the Steel Institute VDEh will take place from the 10<sup>th</sup> to 14<sup>th</sup> 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](http://www.eccc2017.com).



**Steel and Iron Test Sheet – SEP 1928 “Non-destructive surface hardness testing on ferromagnetic steel products with electromagnetic methods” 1<sup>st</sup> Edition, date of issue 06/2016, is published.**

This test specification sheet treats the non-destructive surface hardness testing on ferromagnetic steel products by means of quantitative electromagnetic methods. The objective of the testing is to identify discrete hardness values for the tested product. The specification is applicable for the testing of uncoated ferromagnetic steel products, i.e. rolled semi-finished, heavy plates, strips, pipes and forgings made of ferromagnetic steel and steel products which have been formed from it.

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# Newsletter

## VDEh-Workshop "Steels in Additive Manufacturing"

For particular sectors of the industry "Additive Manufacturing" seems to be the production technology of the future. But is this also the case for parts of the steel industry? To discuss this question the Steel Academy held the VDEh-workshop "Steels in Additive Manufacturing" on the 21<sup>st</sup> of February. Representatives of voestalpine, VDM Metals, DEW Specialty Steel and Max-Planck-Institut für Eisenforschung presented and discussed their activities and projects in Additive Manufacturing with more than 100 participants in Duesseldorf. The subject mobilised not only steel companies and plant engineers, but also the car industry and their suppliers, universities and consultants. The conclusion of the workshop was that there is potential for AM also in parts of the steel sector, with its long value chain.

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## 2<sup>nd</sup> Werkstoffwoche of Steel Institute VDEh and DGM

From 27<sup>th</sup> to 29<sup>th</sup> September 2017 the Steel Institute VDEh will hold the Werkstoffwoche 2017/Materialsweek 2017, 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 as a central meeting point for material production, development and application. The Steel Institute VDEh will organize an exhibition booth on steel and a workshop "Trends in material technology of steel".

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## Energy

### DIN EN ISO 50001 is in revision

The ISO 50001 is a globally valid standard, which intended to assist organizations and companies in the development of their energy management. The steel industry in Germany is completely certified regarding the ISO 50001, because it is the requirement for the partial exemption of particularly energy-intensive companies from the EEG (Renewable Energy Law; Erneuerbare Energien Gesetz) and also in the manufacturing sector from the electricity and energy tax. The new ISO 50001 will be probably published by the end of 2018.

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### SET Plan Action 6

The European Strategic Energy Technology Plan (SET-Plan) aims to accelerate the development and deployment of low-carbon technologies. It seeks to improve new technologies and bring down costs by coordinating national research efforts and helping to finance projects.

In Action Point 6 the steel industry is involved to set increased deployment of energy-efficiency solutions for European industry sector. The relevant R&I (Research & Innovation) priorities that have been set in this area are both sectorial – Iron & Steel and Chemical & Pharmaceutical – and cross-cutting. In such a way, all industrial sectors could benefit from them. Another objective is to reduce the energy consumption of industries and to recover the industrial excess heat/cold for industrial process or district networks in a cost-efficient manner, by developing and demonstrating efficient components and solutions that can lead to better system integration and intelligent operation.

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### Research field iron and steel on energy topics

In October 2016 a workshop was held together with the federal government on economic affairs and Energy (BMWi), Project Management Jülich (PTJ) and the steel industry. The aim was to define a common research field specially for energy topics in the iron and steel industry. In 2017 the 7<sup>th</sup> National Energy Research Program will start. The discussed topics shall be included in this program.

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# Newsletter

## Environment

### Basis for drafting VDI Standards reviewed

The basis for drafting VDI Standards is the one named "VDI 1000". As a guideline, it specifies terms, definitions and procedures required for the standardization work. Main targets of the review were to ensure and improve quality, but also to increase transparency, especially towards interested parties, users and objectors. As such the initial steps in front of a standardization work and the participation rules have been updated. The public enquiry procedure has been revised, including a new appeal procedure, which has been installed for the case where no agreement is possible with a person passing a comment.

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### Review of TA Luft

The revision of the Technical Instructions for Air Quality Control (TA Luft) is in an advanced stage. The stakeholders have been consulted to the current draft of the TA Luft by the environmental ministry. The TA Luft provides binding provisions for authorities in permit giving and permit renewal processes of industrial installations. Stricter permitting conditions with higher regard to air quality are some of many new requirements. This means the impact of a plant will be evaluated higher with a more critical influence on the permitting situation. In addition requirements for monitoring shall be made more ambitious by setting higher frequencies for periodic measurements of the emissions and by obligating operators to more continuous measurements. Especially for the plants of the iron and steel industry the standards of the best available techniques conclusions for iron and steel production have been implemented. Beside of this, the flares of the steel industry have to cope with new needs, heating furnaces of rolling mills are requested to emit lesser amounts of nitrogen dioxide and common emission values for dust and mercury will become much stricter than before.

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### Packing legislation

On 22<sup>nd</sup> February 2017, the Cabinet of the German Government has rejected the decision of the Bundesrat (Federal Council) regarding the Packaging Law. The Federal Government rejects all critical demands of the Federal Council. In the next step, the Packaging Law is expected to be dealt with on 10<sup>th</sup> March 2017 at first reading in the Bundestag. The Bundestag will presumably refer the draft law to the relevant committees; In addition, a public hearing will be held. In the Packaging Law a recycling quota of 80% for steel packaging is demanded (90 % in 2021). For packaging steel the quotas are no problem since the recycling rate has already been above 90 % since 2006.

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### Current status of Überwachungsgemeinschaft von Betreibern von Anlagen zur Erzeugung, Be- und Verarbeitung von Metallen (Metallanlagenbetreiber) e.V. - ÜMet

In the year 2016, 108 VAWS plants (plants according to the ordinance on installations handling materials hazardous to water) and 27 Fachbetriebe (Companies with special competence for VAWS plants) were certified. There was a significant increase of certifications compared to 2015. Concerning the training of the employees of specialists, a two-day training course was held for specialist operators (38 participants) as well as 49 training courses for management and supervisory staff (702 participants).

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### Best available techniques reference documents

The European Commission has presented its new working programme to revise the best available techniques reference documents (BREF). These BREFs will define the state of the art of relevant techniques applied in industrial installations and will become the basis for authorities in permit giving processes.

Most relevant for iron and steel industry in the current revision processes is the ferrous metal processing BREF (FMP BREF) which describes the applied techniques of hot rolling, cold rolling and hot dip galvanizing including pickling and annealing lines.

The revision process is on the stage of preparing a huge data collection of environmental relevant data of European plants in the scope of the FMP BREF. More than 40 plants of the members of VDEh in Germany will participate to this data collection. Further work on this BREF goes into 2019.

The BREF on Surface Treatment Using Organic Solvents (STS BREF) is the second BREF in the current revision processes iron and steel industry is involved in. The coil coating plants of the VDEh members besides other European plants have provided their environmental relevant data. After evaluation of these data a first draft of the STS BREF will be published this summer. The final draft of the STS BREF is planned for 2018.

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### Seminar „Technical qualification according to the German Landfill Regulation“

For the seventh time, the experts committee on Material Cycle in the common Environment Committee of VDEh and WV Stahl organizes from June 12<sup>th</sup> to 13<sup>th</sup>, 2017 a technical qualification seminar according to the requirements of § 4 No 2 of the German landfill regulation. The seminar is accepted by competent authority. It is open to member companies who operate landfills in Germany [Language: German].

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