The Research Association for Steel Application (FOSTA) presents at SCT 2017 results of actual research projects and itself on some exhibition booths.

**FOSTA’s main characteristics and tasks**

FOSTA is a Network-Partner for funding and management of collective research activities focused on steel application. The Association is financed by the steel industry and supported by members from steel application industry and research institutes.

FOSTA’s research project targets for steel are:
- Improving and saving the competitiveness
- Optimising processing technologies
- Opening/Developing new fields of application
- Substitution of competing materials
- Finding new solutions with hybrid materials

FOSTA is a non-profit association, that has been established in 1968.
Monday, 19th of June 2017

Session: Properties of hot stamping steel grades
11:05, Room Salzburg

Tribological behavior of Zn coated 22MnB5 in hot stamping (P 871)
Patrik Schwingschlägl, Jennifer Steiner, Kolja Andreas, Marion Merklein, Institute of Manufacturing Technology (LFT), University Erlangen-Nürnberg, Germany

Session: Required Data for the design of components
14:50, Room Amsterdam

Fatigue design and material qualification for vehicle components during early product development stages (P 1061)
Matthias Hell, Research Group of System Reliability and Machine Acoustics (SAM), TU Darmstadt, Germany, Rainer Wagener, Tobias Melz, Fraunhofer Institute for Structural Durability and System Reliability (LBF), Germany

Session: Simulation of sheet metal forming 2
14:50, Room Braunschweig

Material characterization and parameter optimization for a damage model (P 1039)
Maria Doig, inpro, Germany, A. Erman Tekkaya, Kerim Isik, Till Clausmeyer, Institute of Forming Technology and Lightweight Construction (IUL), TU Dortmund University, Germany, Helmut Richter, thyssenkrupp Steel Europe AG, Germany, Sebastian Heibel, Mercedes Benz Cars, Germany

Session: Set the properties by heat treatment
14:50, Room Salzburg

Investigation of geometrical discontinuities in blanks for hot sheet metal forming process under the influence of induction heating (P 1057)
André Dietrich, Holger Schülbe, Bernard Nacke, Institute for Electrotechnology (ETP), University Hannover, Germany, Florian Pfeifer, Thorsten Marten, Thomas Tröster, Automotive Lightweight Design (LiA), University Paderborn, Germany

Session: Joining technologies: Adhesive bonding
16:10, Room Braunschweig

Manufacturing of lightweight parts in bonded blanks technique by a combined deep drawing and structural adhesive bonding process (P 944)
André Spiekermeier, Institute of Forming Technology and Machines (IFUM), University Hannover, Germany

Session: Joining technologies: Adhesive bonding
16:35, Room Braunschweig

Electrochemical rapid test of adhesive joints (P 1088)
Michael Ditz, Gerson Meschut, Laboratory for Materials and Joining Technology (LWF), University of Paderborn, Germany, Gerhard Kötting, Marcel Windoffer, FH Münster, Germany, Richard Grothe, Guido Grundmeier, Technical and Macromolecular Chemistry, University of Paderborn, Germany

Session: Simulation of sheet metal forming 2
15:15, Room Braunschweig

Material science-based simulation strategies for the adiabatic cutting process (P 1127)
Fabian Schmitz, Till Clausmeyer, A. Erman Tekkaya, Institute of Forming Technology and Lightweight Construction (IUL), TU Dortmund University, Germany, Sven Winter, Martin Wagner, Chair of Material Science (LWW), TU Chemnitz, Germany

Session: Testing and simulation
16:35, Room Salzburg

Characterisation of load-bearing capacity and failure behaviour of different mechanical joints under crash load of steel intensive structures (P 1032)
Patrick Giese, Gerson Meschut, Laboratory for Materials and Joining Technology (LWF), University of Paderborn, Germany, Silke Sommer, Philip Rochel, Fraunhofer Institute for Mechanics of Materials (IWM), Germany

Session: Simulation of sheet metal forming 2
16:35, Room Braunschweig

Flexible properties in open and closed steel profiles manufactured by roll forming with integrated induction heating (P 1183)
Martin Kroll, Andreas Kunke, Alexander Fröhlich, Jonas Kimme, Verena Kräusel, Dirk Landgrebe, Institute for Machine Tools and Production Processes (IWP), TU Chemnitz, Germany

Session: Testing and simulation
16:35, Room Salzburg

Simulation of deformation and failure behavior of high strength steels for crash-loading scenarios (P 979)
Andreas Trondl, Dong-Zhi Sun, Florence Andrieux, Fraunhofer Institute for Mechanics of Materials (IWM), Germany
Tuesday, 20th of June 2017

Session: Forming technologies + testing of properties
09:45, Room Salzburg

Internal flow-turning-efficient manufacture of load-adapted tubes with a constant external diameter (P 948)
Eugen Wiens, Department of Forming and Machining Technology (LUF), University of Paderborn, Germany

Session: Steel grades in multi-material-design
11:55, Room Salzburg

Development of an arc process technique for thermal similar and dissimilar joining of steel / polymer / steel composite materials (P 1073)
Khaled Alaluss, Oleg Nuss, Gunnar Bürkner, Steinbeis Innovation Center Intelligent Functional Materials, Welding and Joining Techniques, Implementation, Germany

Wednesday, 21st of June 2017

Session: Joining technologies: Laser welding
08:55, Room Braunschweig

Comparative study of hot cracking susceptibility for laser welded joints by means of a self-restraint and an externally loaded hot cracking tests (P 991)
Nasim Bakir, Andrey Gumenyuk, Michael Rethmeier, Federal Institute for Material Research and Testing (BAM), Germany

Session: New steel grades for truck applications
08:55, Room Salzburg

Fatigue life assessment of welded joints by the notch strain concept considering transient effects of the cyclic material behaviour (P 900)
Benjamin Möller, Rainer Wagener, Jörg Baumgartner, Heinz Kaufmann, Fraunhofer Institute for Structural Durability and System Reliability (LBF), Germany, Tobias Melz, TU Darmstadt / Fraunhofer LBF, Germany

Session: Testing of materials properties 1
14:50, Room Salzburg

Survey of the ongoing developments of bulge testing at elevated temperatures (P 947)
Alexander Braun, Gerhard Hirt, Institute for Metal Forming (IBF), RWTH Aachen University, Germany, Gunnar Matthiesen, Institute for Fluid Power Drives and Controls (IFAS), RWTH Aachen University, Germany

Session: Testing of materials properties 2
14:50, Room Salzburg

A new testing procedure for the toughness characterisation of sheet materials under dynamic loading conditions (P 1158)
Markus Könemann, Sebastian Münstermann, Steel Institute (IEHK), RWTH Aachen University, Germany

Session: Testing of materials properties 2
17:00, Room Salzburg

Strain rate-dependent characterization of advanced high strength steels under various multiaxial stress states for the determination of forming and failure limits (P 1141)
Silke Klitschke, Frank Huberth, Fraunhofer Institute for Mechanics of Materials (IWM), Germany

Session: Joining technologies: Spot welding 1
14:50, Room Braunschweig

Overview and new developments in research on resistance spot welding of advanced high strength steels (P 921)
Julian Frei, Michael Rethmeier, Fraunhofer Institute for Production Systems and Design Technology (IPK), Federal Institute for Materials Research and Testing (BAM), Germany

Session: Joining technologies: Spot welding 1
14:00, Room Braunschweig

Characterization and modelling of soft zones around spot welds in high strength steels (P 1018)
Silke Sommer, Lilia Schuster, Fraunhofer Institute for Mechanics of Materials (IWM), Germany, Sebastian Burget, Dr. Ing. h.c. F. Porsche AG, Germany

Session: Joining technologies: Welding and testing of welded joints
11:55, Room Braunschweig

Procedure for developing a constitution diagram for dissimilar metal welds of high manganese steels (P 1108)
Benjamin Wittig, Manuela Zinke, Sven Jüttern, Otto von Guericke University Magdeburg, Germany, Daniel Keil, Volkswagen AG, Germany
**Session: Joining technologies: Welding and testing of welded joints**

10:40, Room Braunschweig

**Joining process optimization of the resistance element welding for continually changing steel material properties (P 1010)**

Vitalij Janzen, Gerson Meschut, Laboratory for material and joining technology (LWF), University of Paderborn, Germany

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**Wednesday, 21th of June 2017**

**Special reports to “Research Network massive lightweight forging”**

11:05, Room Wiesbaden

**Development of new steels for lightweight construction (P 1055)**

Clemens Neipp, Wolfgang Bleck, Steel Institute (IEHK), RWTH Aachen University, Germany, Holger Surm, Hans-Werner Zoch, Foundation Institute of Materials Science (IWT), Bremen, Germany, Christian Weber, Karsten Stahl, Gear Research Centre (FZG), TU Munich, Germany

11:30, Room Wiesbaden

**Lightweight gear wheel design using separate gear rim and wheel body – 1 (P 1056)**

Christoph Leonhardt, Michael Otto, Karsten Stahl, Gear Research Centre (FZG), TU Munich, Dawid Nadolski, Holger Surm, Matthias Steinbacher, Hans-Werner Zoch, Foundation Institute of Materials Science (IWT) Bremen, Germany

11:55, Room Wiesbaden

**Lightweight gear wheel design using separate gear rim and wheel body – 2 (P 1056)**

Robert Meissner, M. Liewald, Institute for Metal Forming Technology (IFU), University of Stuttgart, Germany, Michael Otto, Tim Benkert, W. Volk, Gear Research Centre (FZG), TU Munich, Germany

14:00, Room Wiesbaden

**Improved property prediction of cold forged components by means of enhanced material models (P 1057)**

Felix Kolpak, Martin Schwane, Christoph Dahnke, A. Erman Tekkaya, Institute of Forming Technology and Lightweight Construction (IUL), TU Dortmund University, Germany

14:25, Room Wiesbaden

**Numerical Analysis of Manufacturing Load-Tailored Components by Cold Forging A Subproject of Research Network massiverLeichtbau (P 1058)**

Oliver Napierala, Nooman Ben Khalifa, A. Erman Tekkaya, Institute of Forming Technology and Lightweight Construction (IUL) – TU Dortmund University, Germany, Nadja Missal, Alexander Felde, Mathias Liewald, Institut for Metal Forming Technology (IFU), University of Stuttgart, Germany

14:50, Room Wiesbaden

**Innovation transfer of lightweight forging solutions in the automobile value added chain (P 1059)**

Michael Rothgang, Jochen Dehio, Wolfgang Dürig, Rheinisch-Westfälisches Institut für Wirtschaftsforschung, Germany

15:15, Room Wiesbaden

**Holistic evaluation of lightweight design in drivetrain and chassis (P 1059)**

Alexander Busse, Bruno Gnörich, Julia Braeutigam, Leif Hagebeuker, Institute for Automotive Engineering (ika), RWTH Aachen University, Germany

(Lightweight forging)

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Visit FOSTA’s presentations on two special booths in the exhibition hall:

⇒ Research Network massive lightweight forging

⇒ Collaborative Research in Adhesive Bonding Technologies
FOSTA’s management tasks in the research projects

Support of idea initiatives
⇒ Active idea finding with different sources:
  • technical, politically, socially driven topics
  • branche & technology driven topics
⇒ Contact point for collective research ideas from science and industry

Support in proposal development
⇒ support in selecting suitable industry partners for the project
⇒ realization of a partner mix with large companies and SMEs from the supply chain
⇒ industry driven adjustment of project targets (economic & technical aspects)
⇒ topic related funding possibilities from industry, national & EU organizations

Support in the project phase
⇒ contract management (structure, formal matters, controlling)
⇒ establish project related working groups with active members from industry & science
⇒ implement and support creation and exchange of knowledge in the groups
⇒ support active networking and trust-building between the members
⇒ interlinking of different projects with complementary topics

Dissemination / promotion phase
⇒ promotion of joint journal publications from the project
⇒ publication and distribution of the final research report
⇒ management of events, press releases & Internet reports about the projects

The final research reports could be ordered for a nominal charge at:
Verlag und Vertriebsgesellschaft mbH, Postfach 10 51 27, D-40042 Düsseldorf, Germany;
Fax +49 211 6707-129,
E-Mail: verlagvertrieb@stahl-zentrum.de
and as PDF-version via www.stahldaten.de/de/shop
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2,000 project participants in total

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Upcoming events with the participation of FOSTA; Dates

2017
September 27 to 29 Werkstoffwoche 2017, Dresden www.werkstoffwoche2017.de
November 09 Internationale Jahrestagung Stahl 2017, Düsseldorf www.stahl-online.de
December 12 and 13. 7. Kolloquium: Gemeinsame Forschung in der mechanischen Fügetechnik, Dresden

2018
February 27 and 28 18. Kolloquium: Gemeinsame Forschung in der Klebtechnik, Köln
December 05 and 06 8. Kolloquium: Gemeinsame Forschung in der mechanischen Fügetechnik, Paderborn