

Editorial

Dear reader,

the diverse ways from iron ore extraction to the many steel applications are always paved by process technology. No matter, which route you choose, whatever application you aim at, it is nothing but process technology which makes you hit your goal! Your products will pay off, because of either economics or added value.

Accordingly, we combined these two focal points in this double issue of

STEEL GRIPS

JOURNAL OF STEEL AND RELATED MATERIALS

to better figure out the interdependence between the process and the product.

All other issues of today's importance, such as sustainability, envirofriendliness etc. seem, on closer inspection, to be already included with both these poles. So, sophisticated and state-of-the-art process technology is an appropriate means to generate value-added products. In this sense, cutting-edge managers continue selling top steel materials into a wide range of applications.

Enjoy it!



Dipl.-Ing. Kerstin Garbracht
Editor in Chief

from TOP Technology and Operational Practice

Michael Peters and Gunnar Still:

328 The new blast-furnace concept for ThyssenKrupp Steel's Duisburg Hamborn site

Hot metal base modernisation, blast furnace relining and construction, capacity increase for crude iron, environmental issues

Renzo Valentini, Valentina Colla, Teresa Annunziata Branca, and Alessandro Osta:

331 An example of sustainable industry: steelmaking through an electric arc furnace

Dusts, environmental impact, electric arc furnace, steel, sustainable development, water consumption

Kerstin Garbracht:

336 Experts from Iran and Germany exchange knowledge

Expert meeting of engineers to cooperate on plantbuilding projects in the iron and steelmaking industry

Michael Büscher and André Kröff:

337 Scalight, the concept for intelligent body-in-white architecture

Space frame, lightweight, atlas, hydro forming, roll forming, steel

Bruno Charles DeCooman:

343 Trends in car body materials

Steels for body-in-white design, strength demands by automotive industry, reactions of the steel industry, suitability of higher strength steels for sheet steel production, acceptance of new steel grades by carmakers

Bernd Meuthen and Stefan Höfling:

347 The manufacture of sectional door elements constructed from pre-painted steel sheet

Further processing of coil coated sheet, sandwich technology, production of sectional door elements, doors for residential and industrial application

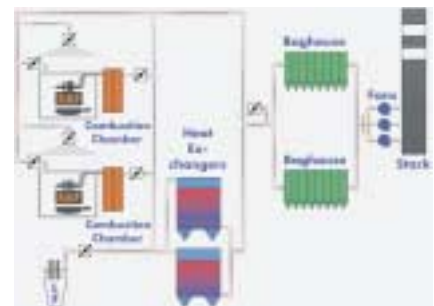
Klaus Niederstein:

350 The heliport high above the rooftops of Kaiserslautern

Hot-dip galvanised steel, application example heliport, steel structural work, demands on design layout, statics and corrosion resistance, corrosion protection, dimensional challenge



Presence is characterised by an enormous market for steel - world-wide. Accordingly, steelmakers are improving their production to comply with the demand. Measures are taken to increase capacities, i. e., ei-



ther to more efficiently exploit the existing line potentials and thus throughput or to invest in modernisation projects and additional plants. Process technology further offers options to improve yield, in adding more value to the steel products. This can be achiev-



ed by switching over to sustainable ways of manufacturing and materials usage.

Various examples for steel application are presented here, from intelligent car body solutions to constructional items, such as heliports and



garage doors. However, isn't it interesting to read that the construction of the new blast furnace site for crude iron production consumes some 10000 t of steel?



The contributions of the R&D section predominantly concentrate on forming the material into the desired shape. Others deal with application



properties and how to obtain them, as well as with manufacturing properties, such as welding.

from R&D Research and Development

Yaowu Wei, Nan Li and Huili Li:

Oxygen transfer mechanism from refractory to molten steel 353

Reoxidation, liquid layer, steel, refractory

Otto Harrer, Stefan Wallner, Volker Wieser, and Christof Sommitsch:

Radial forging of a nickel base alloy at different temperatures 356

Radial forging, forging strategy, different initial conditions, finite element analysis, formability, evolution of temperatures, evolution of microstructure

Akihiro Minami, Yasuo Marumo, Hiroyuki Saiki, Shin-ichi Nakamizo, and Eiji Matsuda:

Evaluation of thermal contact conditions between tool and workpiece in hot forging 361

Hot forging, forward extrusion forging, temperature distribution, thermal contact conductance, die softening, finite element method, inverse problem

Klaus Pöhlandt, Bernd Kröplin and Joachim Schöck:

Friction and anisotropy in cold bulk metal forming 366

Anisotropy, friction, metal forming, ring compression test, forward extrusion of rod

Khaled M. Ibrahim and Ahmed El-Sawy:

Influence of graphite morphology and matrix structure on fatigue strength and wear resistance of ductile cast iron 369

Unalloyed ductile iron, fatigue strength, wear behaviour, forging, austempering heat treatment, metallographic investigations, graphite morphology, fractography, mechanical properties

Liuyi Zhang, Ulrich Lotter and Hans-Peter Schmitz:

Mathematical modelling of AlN-precipitation in hot strip of unalloyed steels during cooling in the coil 375

Hot strip, AlN-precipitation, unalloyed steels, cooling in the coil, modelling of precipitation

Alexandre Birr, Rocco Varano, Abdelbaset Elwazri, François de Mestral, and Stephen Yue:

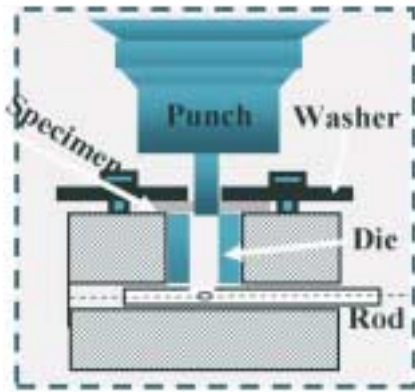
In-situ effect of temperature on the mechanical properties of an Al-TRIP steel using the shear punch test 380

Al-TRIP steels, shear punch, mechanical properties, microstructure

Volker Wesling and Peter Giese:

Experimental and numerical determination of the behaviour of particles during plasma transferred arc welding 385

Plasma transferred arc welding, steel components, protective layers, experimental welding, high-speed camera, particle speed, numeric simulation



Properly educated staff is wanted in the steel industry of the world, however, the demand, here again, is higher than the number of engineers



available. Universities in many countries make allowance for this situation offering special training and upgrading courses. Others form so-called *clusters of excellence* to support cooperation and exchange with companies.



from P&S Plantmakers and Suppliers

Investments into future - Plantbuilding around the world	Steel	390
	Aluminium	408

Juniors' Suite

News from Aachen Technical University:

New excellence cluster: Integrative production technology for high-wage countries	409
--	------------

Development of future strategies and theories for production sciences, technology roadmap, key research fields, creation of a virtual competence centre, cooperation with business partners

Andreas Münch won Willy-Korf-Award	410
---	------------

Dipak Mazumdar:

Steel education and research at the Process & Steel Research Laboratory of IIT Kanpur	411
--	------------

India's demand in steel engineers, education and research activities

Otto Harrer:

XXV. Colloquium on Metal Forming	414
---	------------

Knowledge exchange between university scientists and industry experts, conference on Metal Forming of the Chair of Metal Forming, University of Leoben, Austria

A Bit of Art

Kerstin Garbracht:

Cast iron firebacks - witness of casting techniques and yesteryear life	416
--	------------

Columns

Impressum	396
Scientific Circle	352
Subscriber's information	389
List of advertisers	374

For information on manuscript publishing, author's guide etc., please visit our website
www.steel-grips.com