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# MPT

## INTERNATIONAL

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## Thin slab casting and rolling technology



The evolution from first generation plants to recent applications

**Cover photo:**

Rolling mill of the FTSC plant at OMK, Russia, to produce 1-mm-thin hot strip in API grades for Arctic applications

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INTERNATIONAL

## Editorial

A. Hannewald

- 1** A new chapter in the history of ThyssenKrupp

## Columns

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## Topical themes

C. P. Piemonte, A. Pigani

- 34** The evolution of thin slab casting and rolling – from first generation plants to recent applications

Thin slab casting and rolling technology was originally developed as a low cost alternative to the conventional process route. Since the first pioneering applications in the 1980ies, thin slab casting and rolling plants have largely overcome the original limitations. This article describes the different available solutions for specific market needs and gives an outlook on future potentials.

## Cokemaking

- 26** Camera-based coke oven monitoring with optimized battery-machine positioning

A new pushing management system allows various oven criteria and parameters to be examined during coke pushing. This solution also includes features for precise control, positioning and interlocking of mobile coke oven battery equipment. The result is improved scheduling of coke oven maintenance activities, safer operations and thus higher plant productivity.

## Steelmaking

J. Obitz, D. Brück, R. Kristl

- 28** Renaissance of the VHD (VAD) process technology

Vacuum arc degassing has been an established technology for more than 40 years. Some design improvements have enhanced the competitive status of this secondary metallurgy technology as a useful and modern alternative to a ladle furnace and vacuum degassing facility.

## Hot rolling

C.-P. Reip, C. Klinkenberg, L. Tong, P. Hora

- 40** Thin slab casting and rolling of dualphase steel strip for automotive applications

Direct hot rolling of thin slabs may be followed by a well defined cooling pattern to produce hot strip from high strength multiphase steel. This article highlights the mechanical properties of hot rolled DP steel from CSP® production, i.e. the homogeneous structural and mechanical properties all along the strip.

- 44** New generation of magnesium band

ThyssenKrupp together with a German research group have jointly developed an innovative concept for the production of magnesium coils using a casting-rolling line to manufacture flat strip directly from molten magnesium. With significantly lower costs than the conventional route for flat magnesium, this is an extremely cost-efficient process.



Hot rolled magnesium coils produced at MgF

## 22 ThyssenKrupp opened flat steel production site in Alabama

The new flat steel works of ThyssenKrupp Steel USA and ThyssenKrupp Stainless USA is another cornerstone of the transatlantic growth strategy of ThyssenKrupp, thus complementing the new ironmaking site in Brazil. With the startup of the plant in Alabama in December and the launch of the steel mill in Brazil in the summer 2010, ThyssenKrupp has entered a new dimension of its history.

## Strip processing

J. Epp

### 46 Levelling and cut-to-length line for steel strip up to 25 mm thickness

Hot rolled coils up to 25 mm thick can be effectively processed to customized plate on a special cut-to-length line. Equipped with a leveller, the plant produces up to 600,000 t of plate with highest quality regarding dimensions, flatness and residual stress balance.

H.-G. Hartung, W. Püttgen,  
C. Sasse, J. M. Raick, J. von Schéele,

### 50 Economic benefits of processing line design using advanced heating technology

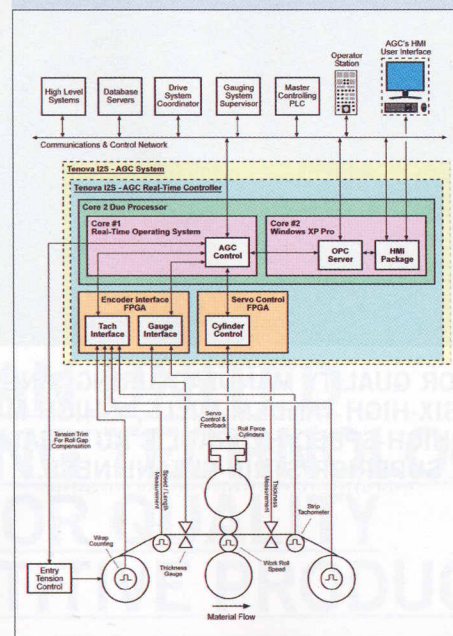
Direct flame impingement burners ensure most rapid heating plus cleaning of the material. Thus, the cleaning and furnace section of a strip processing line can be of much compacter design, leading to significant savings in investment and operating costs. This article explains the DFI Oxyfuel technology and describes a new line concept developed for continuous galvanizing lines.

## Cold rolling – Automation

M. Zipf, D. Wisti, S. Carlson,  
A. Krzewki, C. Godwin

### 54 Contemporary hardware eases concerns over spares and modernizations of control systems

Advanced technology for high performance control systems provides unparalleled performance by implementing the systems with a unified framework of "generic" programmable hardware. The systems' many components and interconnections are each realized by identical hardware components.



Automatic gauge control system architecture

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