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# MPT

INTERNATIONAL

## Editorial

*A. Hannewald*

- 3 Looking for new technologies**

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## Topical themes

*E. Ruscio, A. Martinis, M. Gorza*

- 94 The new DRI-based integrated minimill complex in Abu Dhabi**

The United Arab Emirates' first integrated DRI-based minimill will be constructed in the Mussaffah Industrial Area in Abu Dhabi. The new steel complex, one of the largest of this type ever constructed in the Gulf Region, will be one of the newest generation of integrated minimills conceived to exploit specific local (competitive) energy availability and raw material resources. The minimill is to produce structural steel long products for the construction sector.

## Raw materials – Automation

*J. Blatz*

- 32 Mixing technologies in the steel industry**

The mixing process facilitates the pelletizing of iron ores. For preparing sinter mixes usually so-called mixing drums are used. In modern steel works the waste is fed back to the material cycle after mixing. What all these methods have in common, is a sophisticated mixing process to bring these substances with their widely differing properties together, and enable their successful processing.

*V. Carl, P. Schäfer*

- 40 Innovative drive technology for iron and steel works**

The conveyor systems of the iron-making plants installed at Rogesa in Dillingen, Germany have been constantly optimized. The charging and discharging equipment operates in a reliable and trouble-free manner, requires only little maintenance with longest possible service intervals, and is easy to repair. Maintenance operations can be performed as fast and easy as possible.

## Ironmaking

*P. Diemer, K. Knop, H. B. Lünen, M. Reinke, C.-D. Wuppermann*

- 44 Utilization of coke oven gas for the production of DRI**

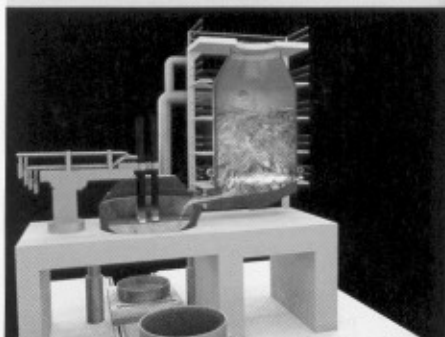
For cokemaking the credits for the coke oven gas are one dictating factor for the economy of this process. An option instead of using the excess coke oven gas (COG) for power generation is its utilization for the production of direct reduced iron (DRI) in a DR shaft furnace.

## Steelmaking

*U. Falkenreck, W. Weischedel*

- 52 New scrap-based steelmaking process predominantly using primary energy**

A recent study shows that a new scrap-based steelmaking process predominantly using primary energy as fuel is an interesting alternative to the electric arc furnace as it considerably reduces CO<sub>2</sub> emissions and saves on energy costs.



Primary energy melter

Interview with Paolo Gaboardi, Senior Vice President Pomini

## 104 Roll shops tailored to meet requirements of newest mill technologies

Sound industrial tradition, constant commitment to product innovation and associated services, integration and active collaboration with the iron and steel reality of the Techint Group: these are the key factors which have led Pomini to achieving worldwide leadership in the roll grinder market. With almost one hundred roll grinders sold in the last two years, a consolidated presence has also been achieved in the high-potential Asian markets.

## Secondary metallurgy

D. Tembergen, R. Teworte, R. Robey

### 56 Vacuum ladle treatment using RH metallurgy

With its achievable high levels of cleanness, accurate composition and temperature control, the RH process is a key instrument in modern steelmaking. Further developments are ongoing to provide an economic tool for decarburisation and hydrogen removal to ever lower levels during increasingly shorter treatment times.

R. Beermann, R. Teworte, C. Priday

### 64 Design and components of tailored RH vacuum treatment facilities

The main components of a RH plant are described with special focus on critical characteristics. Different plant concepts are suited to reflect the specific demand of individual local necessities.

### 71 MPT International interactive CD-ROM

This year's interactive CD-ROM contains an interactive presentation describing state-of-the-art technologies for steelmaking and secondary metallurgy.



## Steelmaking - Special equipment

### 72 Win-Win partnership in plant management

When maintenance and service of production equipment merely involve the replacement of wear parts by identical components, important savings potentials remain untapped. Within the framework of a partnership agreement with ThyssenKrupp Steel, Federal-Mogul DEVA has developed numerous technological solutions which have paid back in a very short time.

A. Prax

### 76 Customized machines and solutions for steel works

With over 40 years of experience in the corporate group and a good deal of innovative spirit, TML Technik creates individual, customized solutions which unite tradition and modernity and are of the high quality level associated with the term "made in Germany".



Ladle hot cleaning

## Continuous casting

R. Gass, R. Kostyo, M. Kendall

### 78 Enhanced caster performance by accurate and reliable continuous temperature measurement

Caster process parameters dictated by tundish steel temperatures have developed over the years through a combination of operating experience and theoretical considerations. This paper reviews the important factors and the state-of-the-art in measuring methods. It also explains the application of an accurate and reliable system for continuous temperature measurement enabling the development of thermal models and improvement in caster productivity and quality.

J. Mörtl

### 86 Automatic feeding of granulated casting fluxes at voestalpine Stahl

During the last few years granulated casting fluxes have won over powdered fluxes due to their advantages in terms of smoothness of operation, economy and environmental friendliness. They can also be more easily handled and conveyed. This property has enabled the development of an automatic mould feeding device – an important contribution to higher process security, better quality of the cast strand and improved work safety.

### 92 Optical product recognition of billets and blooms

Customers demand full accountability, including complete product histories, i.e. where and when each billet or bloom was made and, equally important, where and when it was rolled. Successful product tracking solves this matter even in the rough steel plant environment.

## Hot rolling

*F. Miermans*

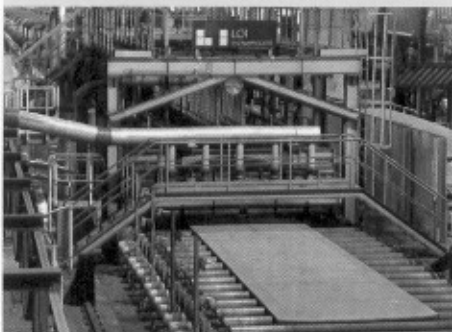
### 102 New clamping system solves production problem during roll turning

When turning and grooving rolls for steel mills, movements of the insert will damage the surface of the roll. Thanks to a new clamping system this problem has now been solved at Davy Roll, a major roll supplier in the UK.

*M. Gierse*

### 108 New quench unit enhances speciality steel plate production at ThyssenKrupp Steel

The Heavy Plate Profit Center of ThyssenKrupp Steel AG has increased its production capacity for high-strength and wear-resistant speciality steels. The newly installed continuous roller quench unit will further improve the surface quality and processing properties of quenched and tempered speciality steel strip.



Continuous roller quench unit

## Cold rolling

*H. G. Bauer, A. Hünne Meyer*

### 114 Reduction of pollutant emissions during cold rolling

Rolling oil vapours can now be removed from the exhaust air by means of the innovative regenerative condensation process with partial exhaust air recirculation. This new process largely reduces the amount of pollutant emissions and especially the share of the gas phase. The new cold rolling mill installed at Vacuumschmelze Hanau is the world's first to use this innovative technology.

## Topical theme

### 158 METEC 2007

In June, a large number of exhibitors and many thousands of visitors from all over the world will flock to Düsseldorf, Germany to attend METEC 2007. The 7th International Metallurgical Technology Trade Fair with congresses will give an encore performance focusing on the latest trends from all areas of metals production. Manufacturers of metallurgical plant equipment expect continued robust economic development.

## Automation

*T. Thompson*

### 118 Software solution to integrate production data and enhance process optimization via portal use

In addition to plant upgrades, Arkansas Steel also made major enhancements to both plant control systems and enterprise computing applications. In 2006 the company adopted Incuity's Business Intelligence for Manufacturing software to expand the ability to gather information from multiple different data sources, to analyze and manipulate it better, and to share the resulting information with any users in the company.

*R. Aubin, E. Vannelle,  
E. Rodriguez, D. Ramelot,  
Y. Bergmann, C. Driesen,  
J.-P. Boonen, M. Ramsey*

### 122 Improved galvanizing line operation using innovative ridge detection feature

A coating weight gauge was installed at the galvanizing line of Myriad (Corus group) located in Louvroil, France to detect the occurrence and locations of narrow excess coating ridges along the coated strip. Since commissioning in January 2005 the gauge has completely met all expectations and operated with 100% availability. The gauge utilization by Myriad reduced the amount of rejected strip by 70%.

## Heat treatment

*D. Delaunay*

### 128 Direct fired pre-heating furnace design and control of strip annealing lines

During the last few years, processing lines such as annealing lines and above all galvanizing lines have developed towards more diversity and flexibility. They must meet the requirements posed by a wider range of steel grades, in particular hot rolled and full hard steels. The article features the characteristics of burners and other direct fired pre-heating furnace equipment aimed at achieving significant process improvements.

## Industrial service provision

### 136 Reconditioning service with fast-track capability

The English engineering company DavyMarkham has introduced a dedicated reconditioning service for rolling mill equipment. It includes a fast-track capacity able to respond within 24 hours to emergency breakdowns and factory shutdowns, working round-the-clock to inspect, repair and test mechanical equipment.



## Special equipment

F. Kolbe

### 138 Extension of useful life through repair and optimization of fan impellers

The refurbishment and upgrading of fan impellers represent a considerable performance and cost effectiveness factor. Some users take advantage of this to consistently increase the efficiency of their process air fans. Long-term trouble-free operation also involves corrective maintenance based on economic influences. This even includes special services provided by the fan manufacturer.

## Environmental protection

J. Wirling, J. Jablonski

### 144 Safety aspects in the use of carbonaceous sorbents during waste gas treatment

Activated carbon technology ranks among the most effective processes in the cleaning of heavy metals and organics from flue gas streams. Safe handling of this technology requires knowledge of the properties of the activated carbon used and its behavior under process conditions. This article uses the example of Activated Lignite HOK® to give an account of its reactive behaviour and the resulting safety aspects.

O. Díaz, M. House

### 154 New water treatment plant guarantees superior water quality

Siderúrgica Añon started-up a new water treatment plant in conjunction with its new high-speed single-strand wire rod and rebar mill built in 2006. The water treatment plant design uses a combination of decanter and ring filter technology instead of the traditional sand filters. This guarantees superior water quality and significantly reduces operational, maintenance and the total investment costs.

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