



**Cover photo:**  
Looper and furnace section of the new hot dip galvanizing line at Voestalpine Stahl, Linz, Austria

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## MPT INTERNATIONAL

### Editorial

*A. Hannewald*

- 1 Some kind of uncertainty**

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## Topical themes

*M. Dicke, A. Kapellner, J. Ziemendorff*

- 66 Hot dip galvanizing line for latest high-strength steels commissioned at Voestalpine Stahl**

Voestalpine Stahl, the leading Austrian steel producer, implemented a new hot dip galvanizing line in the Linz steel works. The HDGL No. 4 features the latest equipment and process-control systems in order to produce products of high-strength steel grades with best galvanized surface qualities. Developed and installed by Andritz this plant enables efficient production of state-of-the-art steel products.

## Steelmaking

*D. Riedinger, R. Hetzel,  
M. Fleischer, R. Hagemann*

- 30 Conceptual basics and excellence of maintenance in minimills**

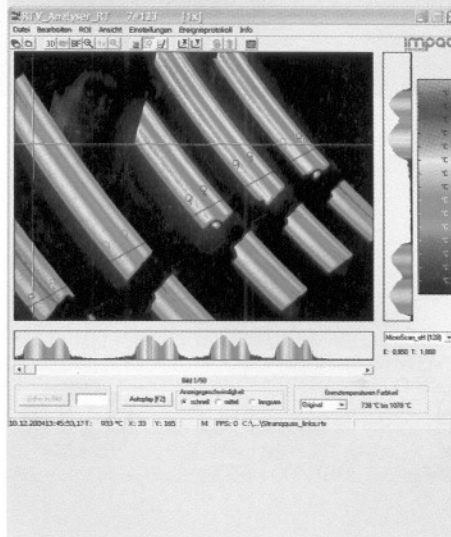
Maintenance in a minimill is a real challenge. This article presents possibilities and examples of maintenance optimization measures.

## Continuous casting

*V. Ostheimer, C. Schiewe*

- 42 Cooling zone control using thermographic temperature monitoring**

Over the past months, an innovative and flexible temperature measuring system has been developed. It is used in a continuous casting machine in the Völklingen steel works to control the secondary cooling of six strands.



## Forging

*W. Nowitzki*

- 46 Advanced manipulators increase throughput and save energy**

Forging manipulators designed with mechanically decoupled tong and frame units achieve the high acceleration speeds nowadays required to reach maximum step lengths in forging operations.

## Hot rolling

*F. Toschi*

- 50 Bar production using low temperature rolling and in-line annealing**

Thermo-mechanical rolling of in-line heat treated bar gives the bars the required annealed structure for further manufacturing without any intermediate treatment. An industrial application for this low-temperature rolling process is in operation at the ABS mill in Italy.

*F. Legros, M. Tufaru, F. Marchand*

- 58 Slab-to-order assignment based on hot strip mill scheduling constraints**

At Duferco La Louvière a software solution has been implemented to solve the classical assignment problems and the problems associated with slab scheduling.

## Company profile

### 26 Usiminas to build its third steel mill in Brazil

Latin America's leading flat steel group will erect a third steelworks in Santana do Paraíso (Minas Gerais state, Brazil). Its capacity will be 5 million t/year of steel for slab production. The group decided to speed up and enlarge its investment plan. US\$ 14.1 billion will be invested by 2012 in mining and steel capacity expansion, plant modernization, cost reduction and environmental protection.

## Heat treatment

*E. Malfa, M. Fantuzzi, M. Scotti*

### 60 Revamping of the austenitizing furnace at TenarisDalmine

The main goals of the revamping were to markedly decrease NOx emissions at the furnace stack and increase productivity by up to 20%. This article presents the results after one year of operation.

## Surface treatment

*A. Heimes-Scheller*

### 70 Coil coatings for construction applications

Steel and aluminium are very widely used in industrial buildings, but also in residential construction. A highly interesting area is the application of pre-coated coils for roof and wall elements, doors, window frames and garage doors.

## Quality management

*M. Dripke*

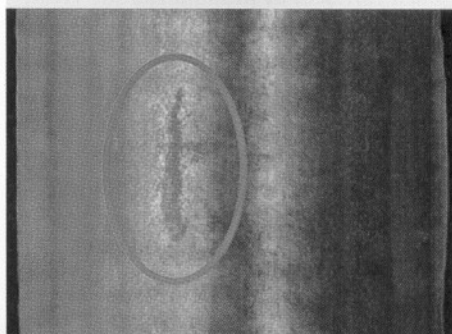
### 72 Choosing the right extensometer for every materials testing application

In materials and component testing the large range of applications demands various devices with different functions and characteristics, and the extensometer must be selected for each application.

*A. Ayani, A. Lago, A. Cruz, J. A. Gutierrez*

### 76 Surface inspection of hot rolled seamless tubes

During hot rolling of laminated seamless tubes, surface marks and other defects may occur sporadically due to wear of the roll stands. This article describes a new automatic inspection technology developed for a seamless tube manufacturer in Spain.



Surface defect on a tube

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