



CONTINUOUS BILLET CASTING SOLUTIONS

YOUR CHALLENGE

TO REACT QUICKLY AND FLEXIBLY TO THE GROWING DEMANDS OF THE MARKET

SOLUTIONS FOR PLANT OPTIMIZATION

Requirements for billet casting plants have constantly increased in recent years. Especially casting speeds have steadily become faster. In older plants, frequent section changes are not as easy as they should be. A great deal of time is wasted with this part of the process, and of course time is money. In the intensely competitive environment of the steel industry, a high degree of flexibility and customer orientation is absolutely essential for lasting success. That's why the majority of steel producers are seeking cost-efficient solutions to optimize their plants so they can meet the demands of competition.

INCREASING PRODUCTIVITY AND STABLE PLANT AVAILABILITY

Plant operators will have to continue optimizing output parameters in the future to achieve capacity increases and quality improvements with decreasing operating costs. This is the only way for them to strengthen their market performance over the long term. In the future, a maximum degree of automation will be required to ensure process reliability and maintenance-free operation. This will optimize the interface between mechanical and electronic process components.

FLEXIBLE MARKET PERFORMANCE

Does your billet casting plant meet your requirements and those of your customers for modern production when it comes to flexibility and cost effectiveness? Have you already calculated how much time you lose readjusting your plant? You haven't? Then now's the time to do so. Our technologies and solutions focus on the decisive points that determine quality and economy. This applies especially to the modernization of existing plants. Perfect coordination of the process parameters is usually decisive for market success, and the better you can meet your customer's specific requirements with your expertise and products, the more you can boost your performance in the market. We invite you to work with us in meeting these challenges Primetals Technologies - VAI, MHISES and Concast India AS ONE.

As demand for long products continues to grow, requirements for product quality and productivity, availability and process reliability in plants are also increasing.



YOU EXPECT ...

- Higher plant availability in view of increasing steel consumption
 - Modern concepts for high plant performance
 - Flexible technological upgrades in response to growing quality requirements
 - Increasing of casting speeds - to maximize productivity
 - Decreasing operating and maintenance costs to offset growing cost pressures
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OUR SOLUTION

INNOVATIVE AND SUSTAINABLE BILLET CASTING TECHNOLOGIES

EXPERTISE FROM A SINGLE SOURCE

You have very specific requirements and desires for the future of your billet casting plant, and we can provide you with optimum output in the shortest possible time. Profit from our full-line expertise that has made us a first-rate supplier to the world market with more than 2,500 billet strands worldwide. There's just one question left to answer: How exactly can we help you?

MODULE OR COMPLETE PACKAGE

This is both the question and the answer. We offer our customers precisely defined, modular technology packages to meet their specific requirements.

Those requirements might be for a new plant or the modernization of an existing one, for DiaMold or DynaFlex technology, for optimized secondary cooling or improved water treatment. It's your choice, and we work together with you to decide which solution is best.

PUTTING OUR INNOVATION TO WORK FOR YOU

The name Primetals Technologies stands for leadership in innovation. We've established a decisive competitive advantage in the area of R&D. The crucial point: Our innovations are directly relevant to the market. After all, we know not only which technology you need as a plant operator, but also which product qualities your customers need and expect. We invite you to work with us in applying our innovative strength to optimize your billet casting plant.

SERVICE ORIENTATION

Our service expertise includes capacity analyses and feasibility studies in advance of projects and coaching of your employees, as well as spare parts production and continuous updating of technology. And we don't want to forget to mention our long-term, customer-specific Primetals Technologies financing models. Everything we do is with one goal in mind - to help you achieve maximum process reliability throughout the entire life-cycle of your plant.

World markets are rapidly changing any day and becoming increasingly difficult to anticipate. The trends are leading to continuously higher capacities at lower production costs. Keeping up with these demands requires optimized, full-line solutions in the shortest possible time. And working in close collaboration with our customers, that's exactly what we at Primetals Technologies deliver.




**ADVANTAGES OF PRIMETALS
TECHNOLOGIES BILLET
CASTER SOLUTIONS:**

- High reliability and ease of operation - through the widest possible standardization
 - Optimization of your processes - through proven technology packages and tested automation solutions
 - Increased casting speed - with proven high-speed casting technology
 - Fast return on investment - through reduced operating and maintenance costs
 - Boost your competitive edge - through technology from the market leader, for example with DynaFlex hydraulic oscillators
 - Profit from our experience - in all metallurgical processes and our innovative strength
 - Higher plant performance - through life-cycle partnership for the entire life-cycle of your plant and beyond
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Compact and modular billet casters from Primetals Technologies feature advanced technological packages and special caster equipment and components.

They perfectly match the steadily growing demands of today's continuous casting machines: high productivity, high production flexibility and a high level of product quality.





TAILOR MADE
SOLUTIONS FOR
EVERY MARKET.
PRIMETALS
TECHNOLOGIES -
VAI, MHISES AND
CONCAST INDIA
AS ONE



BILLET CASTING TECHNOLOGY

PROVEN SOLUTIONS FOR THE HIGH-SPEED BILLET CASTERS

UP TO 50% HIGHER CASTING SPEEDS

High production flexibility and quality require a machine equipped with an optimized combination of technological equipment, process technology and automation. Primetals Technologies supplies tailor-made solutions for billet casting applied from more than 2,500 installed or upgraded billet caster strands. The Primetals Technologies billet casters allow for even 50% higher casting speeds, depending on steel grade.

HIGH PERFORMANCE BILLET CASTING

The modular caster design paired with DiaMold high-speed casting technology enables plant operators boost plant productivity to formerly unattained levels.

A package of quality assuring technologies helps steel producers meet today's and future market requirements. All components and systems are designed in accordance to applicable norms and standards and equipped with integrated production and process automation control in order to provide the highest possible degree of reliability. The billet caster includes the DynaFlex hydraulic oscillator providing a new production flexibility in combination with the modular equipment design for fast exchange. One of the most attractive benefits is certainly the lower operational costs through robust, long-life components and easy maintenance due to the modular equipment design.

SCOPE OF SUPPLY AND SERVICES

- Billet caster for casting rebar steel grades
- High-speed casting applications
- Advanced machine components
- Caster modernization
- Automation packages

MAIN BENEFITS

- Higher productivity
- Better quality
- Improved reliability
- More flexibility
- Lower operational costs



Two 5-strand billet casters, OAO Magnitogorsk, Russia

OUR BILLET CASTING SERVICES

We work in close collaboration with you to develop the best possible solution based on your specific requirements. You can trust on our experience from over 1,800 successfully completed projects around the world. In our customer relationships, we identify ourselves with each customer project in a way that is unsurpassed worldwide. Our on-site project teams work perfectly together, and are strongly rooted in the respective markets. They're familiar with local market conditions, as well as with the language and culture of each region. Online data management enables a fast, worldwide exchange of knowledge and experience.

MANUFACTURING NETWORK

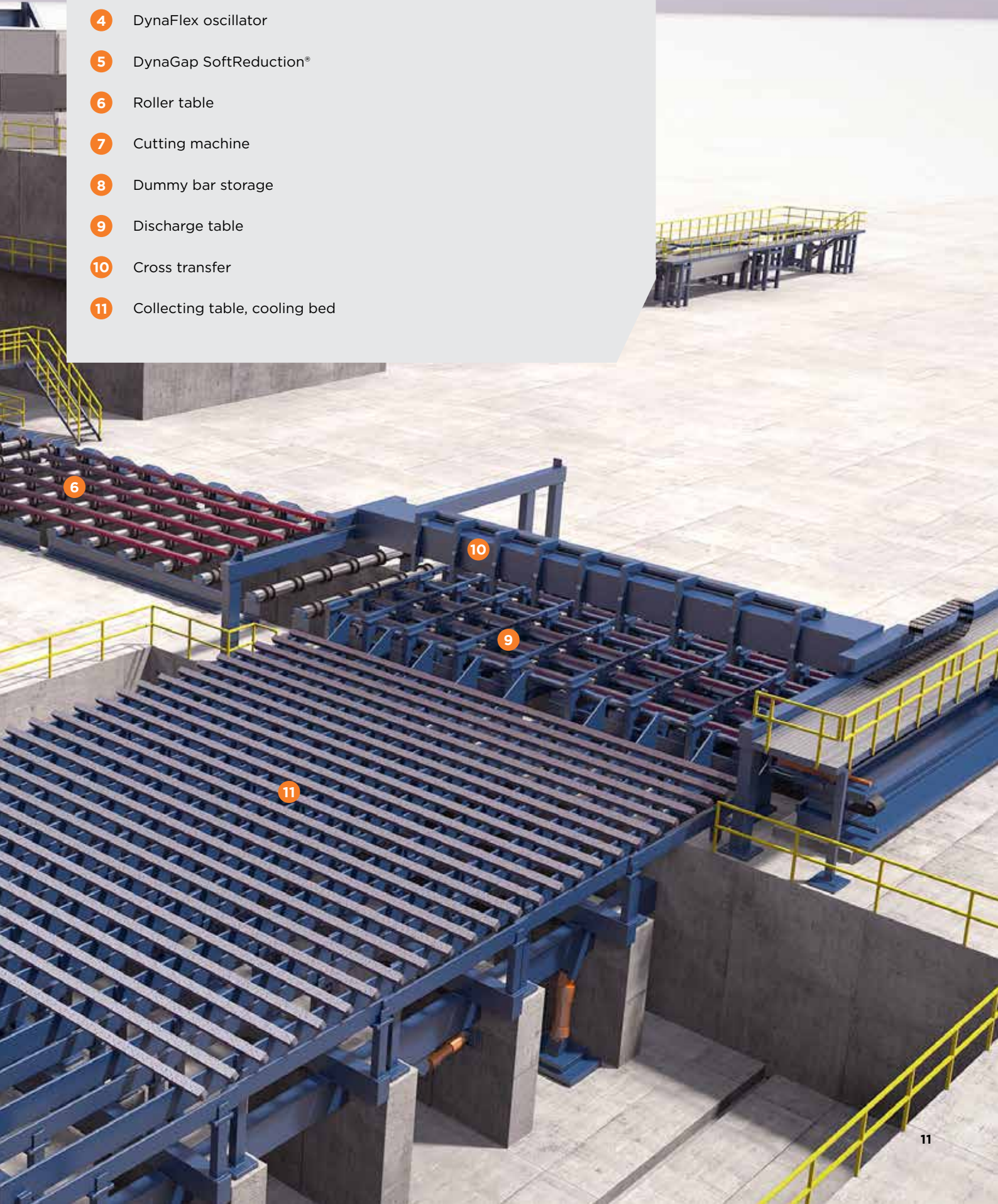
We manufacture core components and selected equipment in our own manufacturing centers and workshops. These are located across the globe in close proximity to our customers in Brazil, China, France, Germany, India, Mexico and the U.S.A. In this way, we ensure that the highest standards of quality are met during all phases of the project, beginning with production planning and selection of materials, to component manufacture, assembly and corrosion protection, up to workshop testing and dispatch. Primetals Technologies workshops and factories are certified and each meets the same high international standards for products and production (ISO 9001:2008), labor safety (ISO 18001:2007), and environmental compliance (ISO 14001:2004). This allows us to optimize the workload balance and production scheduling to reliably meet strict delivery times.

Prior to shipping, components and equipments are preassembled in the workshop to the maximum extent possible, followed by exhaustive testing and calibration. The vertical and comprehensive supply capability of Primetals Technologies, which includes mechanical equipment, electrics & automation systems, technological packages and mechatronic solutions, is the basis for short installation times, fast start-ups and reliable fulfillment of the guaranteed performance specifications.



Compact and modularly designed billet casters from Primetals Technologies feature the world's most advanced technological packages and special casting equipment and components.

- 1 Ladle turret
- 2 Tundish car
- 3 DiaMold
- 4 DynaFlex oscillator
- 5 DynaGap SoftReduction®
- 6 Roller table
- 7 Cutting machine
- 8 Dummy bar storage
- 9 Discharge table
- 10 Cross transfer
- 11 Collecting table, cooling bed





Modernized billet caster at Acciaierie di Calvisano, (Feralpi Group, Italy)

KEEPING PACE WITH THE MARKET

IMPROVED CASTER PERFORMANCE WITH INNOVATIVE TECHNOLOGY FROM PRIMETALS TECHNOLOGIES

Strongly increasing demands on product quality and lower-cost production force billet producers to constantly seek equipment improvements and more efficient casting operations. Through the use of modular technology packages, we achieve short revamping times and extremely fast start-up curves using modernization measures such as high casting speed and flexibility using fast section change with a huge variety of steel grades.

With our modernization expertise, we support our customers through to full production operation. In addition to our methods and tools, we offer long-term support through our life-cycle management. Special automation solutions ensure easy, safe and reliable production. The high degree of process reliability guarantees reproducible results on the highest level.

ELBE-STAHLWERKE FERALPI, GERMANY

TARGET

Yield and productivity increase

SOLUTION

New machine head with a retractable Dynaflex oscillator

Customer's target was to improve billet quality with technical features that included inline stroke adjustment, non-sinusoidal oscillation capability, inverse oscillation capability, a new mold equipped with a Diamold tube, and a newly designed secondary cooling system. In addition to quality improvements, ESF also wished to increase their production output. Retractable Dynaflex oscillators were therefore chosen for the Elbe-Stahlwerke Feralpi caster strands. This solution allows the mold to be exchanged on a strand without interrupting the casting process, which thus increases the productivity and flexibility of the caster. At the push of a button, all mechanical connections are hydraulically released and the entire billet-machine head - including the mold, mold table and the oscillator itself - are retracted from the casting position by means of a moveable carriage outfitted with support wheels. From stop to restart, the entire procedure requires only 15 minutes to a maximum of 20 minutes, and includes mold replacement, insertion of the dummy bar, and all mold-packing operations.



New caster machine head at Acciaierie di Calvisano, (Feralpi Group), Italy

BADISCHE STAHLWERKE, GERMANY

TARGET

Increased production and fast project realization

SOLUTION

Replace the existing five-strand billet caster with a new six-strand billet caster

Badische Stahlwerke GmbH awarded Primetals Technologies a contract to replace its billet caster CCM 2 at its steelworks in Kehl, Germany. The original five-strand billet caster has been replaced by a six-strand billet caster with a nominal annual capacity of roughly 1.3 million tons of billets with square cross-sections of 130 mm and 160mm. The project target was to replace the existing casting machine in the shortest time possible as well as increase production capacity. All of the equipment was designed to keep the shutdown period as short as possible.

The caster was started up successfully in early 2011, in just 42 days.

The caster is now equipped with new equipment, from the tundish car to the torch cutting machine. The scope of supply also included curved molds. A retractable DynaFlex mold-oscillating device was installed that enables flexible adjustment of the oscillation parameters over the entire frequency range of the unit. This solution is also by its ease of adjusting the stroke, frequency, and waveform during the casting process itself, and the absence of any servo-hydraulic components in the equipment. State-of-the-art solutions like withdrawal and straightening units

and new Level 1 and HMI automation system have also been installed. In addition, the new caster is equipped with safety equipment according to the European safety norm EN14753.

EXPERTISE FROM EXPERIENCE

Decades of experience reflect our expertise, especially in the field of billet casting, where increased productivity, higher capacity, lowered operating costs and reducing emissions count more than anything.

These are results with which our customers can measure their success - and ours as well. Have a closer look at our successful projects, and see for yourself how we could help you.





MORE THAN 2500
BILLET STRANDS
INSTALLED

Primetals Technologies Austria GmbH

A joint venture of Mitsubishi Heavy Industries and partners

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