Continuous Slab Casting Solutions

Technology, mechanics, automation and electrical engineering – high productivity casters for flexibility and life-cycle support
The market requirements in the steel industry are continually increasing. Today increased productivity with a high standard of quality and excellent plant availability are a competitive advantage. Faster throughput times and high flexibility in production require increased safety standards for the environment and the employees.

**You expect ...**

- Higher productivity and improved flexibility from your continuous casting plant using market relevant innovations.
- The complete expertise of the market leader in continuous casting plants – including the entire steel production process, as well as metallurgical, mechatronic and automation knowledge – all from a single source.
- Modular and highly efficient technological packages, which meet your individual requirements.
- Life-cycle service that offers professional training of your employees and covers everything from in-house spare part production to continuing technology updates.
Your challenge: To react quickly and flexibly to meet market requirements.

The market demands a lot.
Today continuous casting accounts for approx. 95% of steel production worldwide and is the leading technology used to convert steel from a molten into a solid form. Parallel to its enormously rising significance, the quality of the continuously cast product has been constantly rising since its introduction in the late 1960’s. At the same time the requirements for plant availability, flexibility and safety standards for the employee have also increased. In the process itself, casting speeds have been rising and the spectrum of possible dimensions and materials have been expanding continually. Fully dynamic, automatic and flexible adjustments of machine parameters for the production of high quality steel products can often no longer be achieved with older continuous casting plants. In the intensely competitive environment of the steel industry, a high degree of flexibility, product quality and customer orientation is absolutely essential for lasting success. That’s why the majority of steel producers are seeking cost-efficient solutions for optimizing their plants so that they can meet the demands of competition. Are you seeking the same?

How well are you prepared?
Or in other words, does your current continuous casting plant fulfill the requirements of you and your customers’ for modern production when it comes to quality, flexibility and reliability? Have you already calculated how much time you lose when changing products? Or asked yourself how much value you place on the safety of your production and employees? You haven’t? Then now’s the time to do so. The decisive factor for optimizing the continuous casting process is technological knowledge, developed over five decades and integrated to ensure an optimum solution. Our technological solutions focus on the decisive points that determine quality and economy. This applies especially in regard to the modernization of existing plants. The more flexible and productive your continuous casting machine, the more you can boost your performance in the market. We invite you to design your future with Siemens VAI, the market leader for continuous casting plants, work with us in meeting the growing demands of the market.
Putting our innovation to work for you

The name Siemens VAI stands for leadership in innovation. We’ve established a decisive competitive advantage in the area of metallurgy and process knowledge, not least because our headquarters are located next door to a steelmaking plant. The crucial point: Our innovations are directly relevant to the market. After all, we not only know which technology you need as a plant operator, but also which product qualities your customers need and expect. We therefore invite you to work with us in applying our innovative strength to optimizing your continuous casting production.

Service orientation

We’d like to give you some specific examples of what we mean by service. Our service expertise includes capacity analyses and feasibility studies in advance of projects and coaching of your employees, as well as in-house spare parts production and continuous updating of technology. Not to mention our long-term customer specific Siemens VAI consulting to help improve your plant’s production performance. Everything we do is with one goal in mind – to help you achieve the most economical solution throughout the entire life-cycle of your plant.

Expertise from a single source

If there’s anyone who receives top priority from us, then it’s you, as our customer with unique requirements and desires for the future of your continuous casting plant. Siemens VAI is also your leading partner for bloom/billet casting, and for near-net-shape technology of beam-blank casting. That’s because we have comprehensive expertise covering the entire steel production process, as well as metallurgical, mechatronic and automation knowledge, that is simply unique worldwide. Profit from our full line expertise that after 50 years has made us the market leader for continuous casting plants. There’s just one question to answer: In precisely which ways can we help you?

Module or complete package

That is the question – and our answer. We can offer our customers precisely defined, modular technological packages to meet their specific requirements. Those requirements might be for a new plant or the modernization of an existing one. It’s your choice, and we will work together with you to decide which solution is in your best interests.

Our solution: Optimum cast product in the shortest time

Optimum cast product in the shortest time

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The economy is rapidly changing each day and becoming increasingly difficult to anticipate. Keeping up with these demands requires optimized, flexible solutions for your plant. By working in close collaboration with our customers, that’s exactly what we at Siemens VAI deliver.

Good reasons for choosing Siemens VAI slab casting solutions

- You’re always technically on the cutting edge thanks to the metallurgical experience and technological expertise of Siemens VAI.
- It’s our job to fulfill your wishes – a modular approach makes it possible to create flexible solutions, whether for a small component upgrade or a turnkey project.
- Always on time – our worldwide project management experience and Connect & Cast® expertise enable ideal project development right up to the perfect plant start-up.
- We are your dependable partner – our support continues beyond the start-up to include the entire life-cycle of your plant thanks to our life-cycle management.

Did you know,

- that on a Siemens VAI caster you don’t have to reduce the casting speed to change the product width during the production process?
- that Siemens VAI achieves the shortest revamping times combined with return to full production? For example: Posco Gwangyang in Korea where the plant returned to full production after just 13 days.
Slab casting technology
Innovative strength for maximum productivity

We’ve been leading innovators right from the start. In the field of slab casting technology, Siemens VAI has implemented numerous pioneering developments in the past, including straight mold design, continuous bending and straightening, small roller pitches, dynamic secondary cooling as well as integrated quality control systems.

Today these are standard elements in all advanced slab casting machines. As the result of our continuous focus on research & development and implementing innovative technological packages, Siemens VAI has become the world market leader in slab casting technology. During the past five years, for example, our company has supplied more than 45% of all new slab casters and carried out more than 65% of all slab caster upgrading projects.

Scope of supply and services
- Slab casters, Bloom, Beam blank;
- Combi casters (single, twin and triple)
- Medium/thin-slab casters
- Casting and direct rolling
- Endless strip production (ESP)
- Special casters (e.g. vertical casters)
- Caster upgrading
- "Rapid action" spare-parts supply
- Engineering and feasibility studies
- Construction site management
- Operational and metallurgical assistance
- Start-up assistance
- Metallurgical “hot-line” service team
- Turnkey project implementation
- Process automation and quality control
- Expert operational training assistance
- After-sales service
- Innovative financial engineering

Revamping at its best
Through the use of mechatronic technological packages we achieve the shortest revamping times and extremely rapid start-ups with modernization steps for increasing productivity. Our expertise translates into flexibility through rapid format change and excellent product quality (DynaWidth, DynaGap SoftReduction®). With our Connect & Cast® principle, we support our customers during the project phase, through the integration phase, and into full production, and beyond thanks to our life-cycle management services.

With our sophisticated, proven products for example: SmartMold, the DynaFlex-Oscillator and the SMART®Segment, we have the leading solutions for every application. Reproducible results guarantee a high degree of process reliability, and our thoroughly tested and configured special automation solutions with simple operating panels ensure safe and reliable production.
A stainless reputation for excellence
Having supplied more than 80% of all stainless-steel slab casters during the past five years, Siemens VAI is the clear world market leader in this field. Standard elements of all Siemens VAI slab casters include SmartMold with hydraulic DynaWidth adjustment, DynaFlex Oscillator, SMART Segment with DynaGap SoftReduction, as well as integrated automation and quality control systems.

Main benefits slab casting
- Top quality and productivity at increased yield
- Connect & Cast packages ensuring fast ramp-ups
- High flexibility with regard to product width & thickness

Stainless steel
- High-end product quality maintained at top casting speeds
- Large operating window for steel grades
- Top yield

Did you know,
- that 70% of the slab casters installed in South Korea are from Siemens VAI?
- that in China, flat cast production is primarily performed on Siemens VAI slab casters?
- that 400 mm thick slabs can be produced on bow-type casting machines?
- that straight molds can be fitted onto machine where bent molds where previously used?
- that Siemens VAI manufactures the widest slab casting machine in the world?
1. Ladle turret
2. Tundish car
3. SmartMold with DynaWidth-adjustment MoldExpert LevCon
4. DynaFlex oscillator
5. SMART® Segment with DynaGap SoftReduction® Dynacs®
Compact and modularly designed slab casters from Siemens VAI feature the world’s most advanced technological packages and special casting equipment and components.
Slab caster technologies and products

Individual packages for optimized operations

The decisive factor in the optimization of the continuous casting process is our technological knowledge and experience, acquired in over five decades and integrated into our products.

Our technological solutions focus on the decisive points that determine quality and economy. When it comes to modernization of existing plants, today the boundaries between products and services are no longer clear defined. Conventional services and delivery have to be flexibly combined with the installation of new plant parts. That's why Siemens VAI offers precisely defined modular technological packages to exactly meet your individual needs.

Caster equipment and components:

Butterfly ladle turret
- Independent lifting of both ladles
- Compact design
- Good access and easy maintenance
- No general dismantling required to change lifting cylinders and/or bearings
- Combined main and emergency drive

Tundish support systems
- Tundish turret
- Semi gantry-type tundish car
- Gantry-type tundish car
- Cantilever-type tundish car
**SmartMold**

The standard features of the SmartMold package are the mold cassettes, which provide a number of advantages in terms of operation and maintenance. It perfectly supports the DynaWidth function. DynaWidth is the technological package with hydraulic solution for fast remote width adjustment, with no need for casting speed reductions, to achieve shortest possible slab transition lengths. In addition, it guarantees minimum mechanical backlash and high guiding accuracy. Even the upgrade of non-SmartMolds is possible.

**DynaFlex hydraulic oscillator**

The DynaFlex oscillator is a patented solution from Siemens VAI. It’s a technological package comprising of a foundation frame and two individually exchangeable and interchangeable oscillator units each fitted with one leaf spring guided mold table and a hydraulic cylinder. Despite freely selectable stroke, frequency and curve pattern, Siemens VAI developed a so called “inverse” oscillation mode.

DynaWidth – Online mold-width adjustments for flexible and fast slab-width changes

DynaFlex – Hydraulic oscillator control for improved strand-surface quality
**SMART® Bender**
The SMART Bender is a fully remote adjustable first segment that allows quick thickness adjustments. This can be very beneficial for plants which have more than one casting thickness to operate and often change due for scheduling reasons. In connection with the SmartMold, this is a very favorable advantage for increasing production.

**SMART® Segment**
The technological package with numerous patented solutions featuring the combination of SMART Segments with Siemens VAI’s Dynacs® Dynamic Cooling Model allows dynamically optimized adjustment of the roller gap and taper during transient casting conditions, and quick and simple remote changing of casting thickness between the casts. This results in improvements of internal quality, especially for pipe and plate grades.

The thermal tracking model of Dynacs determines the final point of solidification, and the DynaGap model automatically adjusts the set points for the SMART Segment for an optimum roller gap.

**STAR roller family**
The STAR rollers developed at Siemens VAI ideally support the continuous cast steel strand in the segment. You might be seeking a solution to optimize your costs, or wish to update to the current state of the art in strand guide roller technology: Siemens VAI offers solutions to meet all of your needs.

The STAR roller family can be installed to offer different solutions, i.e.: such as a dry roller or as a economic retrail solution (DRI-STAR, ECO-STAR).
LubriCon & HydrauliCon
This control packages provide configurable controls for caster lubrication and hydraulic-power systems directly after it is switched on. Shorter start-up times of casters are ensured due to immediate availability of hydraulic power and lubrication. Detailed system information on the controllers local displays give perfect support for the maintenance personnel directly at the power units.

DriveCon
DriveCon is a modular system that controls withdrawal drives and pinch roll screw down. It is delivered fully preconfigured, which allows minimum commissioning times and reliable operation of the withdrawal drives from the first heat. Dummy bar insertion is handled, as well as tracking and load sharing.
Connect & Cast automation

Unlimited automation expertise at your disposal

Today more than ever, the market sets the conditions – for short delivery times, flexible lot sizes, competitive prices and ensured quality. We respond with shorter throughput and preparation times, cost minimization, innovation and higher productivity. Our automated technology lets you meet even the most complex requirements.

Totally integrated, totally efficient

Siemens VAI provides a comprehensive, integrated range of products and systems for efficient automation of the entire production workflow. It enables the realization of perfectly tailored automation solutions to meet all individual production requirements. Thanks to the uniquely integrated qualities of our automation packages, companies are able to optimize their production processes, accelerate time to market and reduce production costs. It also provides a high level of investment security while minimizing overall project complexity.

Backed by comprehensive metallurgical, engineering and operational expertise, Siemens VAI automation experts excel in the design and integration of advanced automation products which result in major improvements in caster performance, product quality and operational reliability. Modularly designed and expandable software packages are available for both new and existing casters. Customer support, including system maintenance, upgrades and troubleshooting, can be provided by our worldwide network of Siemens VAI automation branch offices or via remote data links. Siemens VAI automation solutions have been implemented in approx. 300 continuous casting plants worldwide.

Features & benefits*

- 80% fewer sticker breakouts with MoldExpert
- Up to 60% fewer plate rejections with Dynacs®
- 7% increased direct-charging rate with Dynamic Order Assignment Model
- 4.5% increased output with online width adjustments
- 75% reduced quality-test failures of deep-sour plate grades through application of DynaGap SoftReduction®
- Significant reduction or elimination of mold-level fluctuations with LevCon

* Examples of achieved values on various installations worldwide
LevCon – Automatic mold-level control under all casting conditions
The mold level controller LevCon applies an advanced control algorithm which takes into account delayed system reaction, clogging and mechanical wear of the tundish stopper or slide gate through improved dynamic behavior. Automatic starting and resuming of the casting process are additional functions. Thanks to the modular concept, several types of mold level measurements, flow control mechanics and actuators can be used.

MoldExpert – Expert information to “look into the mold”
The MoldExperts collects all relevant data about the mold (temperatures, pressures, strokes, flows, level signals) and provides a detailed “look into the mold.” The individual packages can be installed together and also independently:
- Breakout prevention – with auto-adaptive algorithms
- Temperature monitoring – information about liquid steel flow and lubrication
- Heat flux monitoring – information about integral heat extraction
- Mold friction monitoring – information about mold/strand friction

SiMETAL® VAIQ Quality Control – A milestone for improved quality control
- Online quality control and alarming
- Quality tracking and prediction
- Continual improvement of expertise and production practices with SiMETAL® VAIQ Discovery
- Increased hot-charging rate with automatic quality disposition

... on all plant levels from the field up to the management level
Innovations and developments
Digital prototyping and new developments

Traditionally, at Siemens VAI innovations meant numerical simulations and technological improvements. The results were trend setting developments, such as straight molds, small roller pitches, continuous bending and straightening or a dynamic cooling concept. Expanding our focus to workflow processes was the basis for development of modular technological packages and Connect & Cast® philosophy.

Since continuous casting takes place in a very rough environment in which it is very difficult or impossible to conduct practical tests, numerical simulations play a significant role in the development activities at Siemens VAI. Traditionally, the area of strand mechanics was given great attention. Special non-linear methods were developed to calculate the growth and deformation of the strand shell in a continuous casting machine. The goal of these studies is always to ensure formation of a uniform strand shell and to avoid defects on the solidification front.

Digital prototyping – from design to reality

Established material science as a basis for future innovations

Newer developments concentrate on the simulation of phase transformations (TTT) and of precipitation processes (PTT) in solidified steel. These simulations are of practical relevance as the material behavior and the ductility of the strand shell are significantly influenced by these phenomena. In literature this phenomena is called the second ductility through. The prevention of deformation of the strand shell in this temperature range is a typical problem for the design of a continuous casting machine.

The so-called IMT (In-situ Material Test) was developed and patented by Siemens VAI to determine the material parameters in the high temperature range. It enables tensile testing of steel under continuous casting conditions in laboratory scale.

The flow of molten steel in the tundish and molds has a large effect on the homogeneity of the steel temperature, the separation of non-metallic inclusions and gas bubbles and on the melting behavior of casting powder. This type of problem is studied with the help of modern CFD methods which can be used for one-phase and also multi-phase flows.
Innovative technological packages that safely move you ahead

Findings from theoretical studies are always incorporated in the design of the continuous casting machines. To incorporate more flexible operation in our machines, Siemens VAI has developed the so-called technological packages. Examples include DynaFlex hydraulic oscillator for frequency stroke, and curve form adjustment, DynaWidth for extremely fast width adjustment and SMART® Segment with DynaGap SoftReduction® featuring extremely fast thickness adjustment and dynamic Soft Reduction and Dynacs®, a process model for cooling. All these technological packages are perfectly modularized and thus suitable not only for integration in new machines but for upgrading existing equipment. In addition, during the development of these packages we also gave a great deal of attention to order processing, with a main focus on the quality of the products and thus their full functional capability from the first start of casting (Connect & Cast).

In addition to technological innovations, the further development of the operational safety and thus protection of the personnel is an important concern for Siemens VAI. With the development of LiquiRob®, Siemens VAI showed that it’s determined to be on the cutting edge in this area as well. With LiquiRob, the operational expertise of Siemens VAI is combined with the reliability of industrial robots suitable for operation in harsh environments. In the final upgrade stage of the modularly expandable concept, operating personnel must no longer enter the dangerous area near molten steel.

A further example in this area was the development of the 3D Sprays, which allow the distance variation of the spray nozzles from the hot strand and therefore the spray width variation during casting. This can be used to avoid an overcooling of the strand edges. Additionally, this expands the control range for secondary cooling and thus the operating window of the machine.

Innovative technological packages to enhance operational safety on casting and ladle platforms
Our slab casting services
Project support from a market leader

Project management with a future
Our life-cycle management revolves around proven project management. We work in close collaboration with you to develop the best possible solution based on your specific requirements. Siemens VAI offers you our experience from over 300 successfully completed slab caster projects worldwide.

Our modern planning tools lead to a logistically perfected greenfield plant. Or, with often small modifications to your existing plant we can create unrealized optimization of potential to generate maximum profit in the future. All such complex projects are implemented on schedule and with the shortest possible run-up time.

In our customer relationships, we identify 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. Our project management is certified to ISO 9001: 2000 and standardized, so that we can develop all project levels transparently and in an organized manner. An online data management enables a fast, worldwide exchange of knowledge and experience, and our project manager forum makes sure that experience and results from individual projects are forwarded and shared.

Our employees are supported by an integrated apprenticeship and training program right from the start. You receive the knowledge and also the experience needed for a successful caster project.

We offer you a broad spectrum of services
Three thousand service employees from around the world have the knowledge and experience to meet your totally specific operational requirements. From the delivery of a simple spare part through to the modernization of plant components, from training of customer personnel through to assumption of outsourced maintenance services, from technological update of your processes to individual automation packages, and from hardware to software solutions – we offer you the complete package of customer services, perfectly coordinated for the optimization of your plant.
Life-cycle management

Partnership never ends

Siemens VAI Life-cycle Services
As a plant operator, you have conflicting needs. On the one hand, your performance is measured each quarter against short-term profitability expectations. On the other hand, you have to think on a totally different timescale compared with the capital market. Depending on the lifetime of your plant, you have to take 15 years or more into account. At the very least, that’s 60 full quarters.

But thanks to our comprehensive expertise and integrated approach to solutions, you benefit both short-term and long-term from our life-cycle services.

In the short term: Backed by our extensive experience with many reference plants, we provide you with the certainty of fast, dependable production start-up and shorter amortization periods.

In the long term: Our master plan guarantees competitive performance for your plant in every phase of its life-cycle. Whether we’re providing 24/7 technical support, optimizing maintenance, or making permanent plant improvements, we’re always working to ensure the cost-effective operation of your plant.
Expertise from experience

Selected success stories with slab casting technologies

Numbers reflect our expertise. Especially in the field of slab casting, where increased productivity, higher capacity, lowered operating costs and reducing emissions count more than anything else. These are results with which our customers can measure their success – and ours as well. Have a closer look, and you can judge us by these following examples of our successful projects.

### New slab casters – at their best

<table>
<thead>
<tr>
<th>Customer:</th>
<th>Taiyuan Iron &amp; Steel Co., China</th>
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<tbody>
<tr>
<td>Type of system:</td>
<td>2-strand slab caster for carbon steels</td>
</tr>
<tr>
<td>Our solution:</td>
<td>Incorporation of latest state-of-the-art technology in a new 2-strand slab caster for ensuring highest flexibility and productivity in a demanding environment.</td>
</tr>
<tr>
<td>The result:</td>
<td>Most modern slab caster in P.R.China which started up in 2006, fast ramp-up of production, saleable product right from the start</td>
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### New slab casters – at their best

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<th>Customer:</th>
<th>voestalpine Stahl, Linz, Austria</th>
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<tbody>
<tr>
<td>Type of system:</td>
<td>1-strand high-performance slab caster No. 6</td>
</tr>
<tr>
<td>Our solution:</td>
<td>Versatile slab caster meeting highest quality standards for automotive industry. Production of broad range of grades through highly automated machine components and technological packages.</td>
</tr>
<tr>
<td>The result:</td>
<td>2004 first heat, fast production ramp-up, met rated capacity in first month of operation</td>
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### New slab casters – at their best

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<th>Customer:</th>
<th>Acciaieria Arvedi S.p.A., Italy</th>
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<tr>
<td>Type of system:</td>
<td>Thin slab caster for Endless Strip Production (ESP)</td>
</tr>
<tr>
<td>Our solution:</td>
<td>The integration of the previously separate process steps of casting and rolling into a single production process will enable the direct and continuous production of high-performance thin gauge steel strip and thus result in significant lower production costs.</td>
</tr>
<tr>
<td>The result:</td>
<td>Completion date 2008</td>
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### New slab casters – at their best

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<th>Customer:</th>
<th>Nizhnij Tagil Metallurgical Kombinat, Russia</th>
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<tr>
<td>Type of system:</td>
<td>1(2)-strand combi slab caster</td>
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<tr>
<td>Our solution:</td>
<td>Wide slab caster for highest productivity of API grades for plate production, casting of twin slabs for strip production in same machine set-up.</td>
</tr>
<tr>
<td>The result:</td>
<td>1.36 million tons in first year of operation</td>
</tr>
<tr>
<td><strong>Revamped slab casters – setting the standards</strong></td>
<td><strong>Customer:</strong></td>
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<tr>
<td><strong>Our solution:</strong></td>
<td>Curved to straight mold conversion based on Sollac-VAI patent</td>
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<th><strong>Revamped slab casters – setting the standards</strong></th>
<th><strong>Customer:</strong></th>
<th><strong>Ugine&amp;ALZ (Arcelor Group), Belgium</strong></th>
<th><strong>Type of system:</strong></th>
<th><strong>1(2)-strand slab caster for stainless steels</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>Our solution:</strong></td>
<td>Minimum on-site construction time due to pre-assembly of entire caster and extensive workshop integration tests</td>
<td><strong>The result:</strong></td>
<td>Replacement of the main caster components within 21 days</td>
<td></td>
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<th><strong>Revamped slab casters – setting the standards</strong></th>
<th><strong>Customer:</strong></th>
<th><strong>Posco, Gwangyang Works CC 1-3, 2-4, 2-3, South Korea</strong></th>
<th><strong>Type of system:</strong></th>
<th><strong>2-strand slab casters for carbon steels</strong></th>
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<tbody>
<tr>
<td><strong>Our solution:</strong></td>
<td>Modernization of entire caster components with latest Connect &amp; Cast® technological packages for fast ramp up of caster and highest productivity and product quality</td>
<td><strong>The result:</strong></td>
<td>Ramp up of caster to full production within 13 days</td>
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<th><strong>Customer:</strong></th>
<th><strong>Sollac Fos sur Mer, France</strong></th>
<th><strong>Type of system:</strong></th>
<th><strong>2-strand slab caster CC2 for carbon steels</strong></th>
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<tr>
<td><strong>Our solution:</strong></td>
<td>First curved to straight mold conversion according Sollac-VAI patent</td>
<td><strong>The result:</strong></td>
<td>Remarkable quality improvements with respect to sliver and blister defects</td>
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<th><strong>Customer:</strong></th>
<th><strong>Novolipetsk Metalurgical Kombinat CC 6 and CC 7, Russia</strong></th>
<th><strong>Type of system:</strong></th>
<th><strong>2-strand slab casters for carbon steels</strong></th>
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<td><strong>Our solution:</strong></td>
<td>Incorporation of state-of-the-art technology features in an existing steel plant. Most modern caster technology supplied to Russia</td>
<td><strong>The result:</strong></td>
<td>Project completion in 2008</td>
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Stainless steel slab casters – profit through quality

Customer: Taiyuan Iron & Steel Co. SSC1, SSC2, China
Type of system: 1-strand slab casters for stainless steels
Our solution: Highest technology slab caster features to fulfill the requirements for high quality stainless steel demand
The result: Start-up in September 2006

Stainless steel slab casters – profit through quality

Customer: Carinox (Arcelor Group), Belgium
Type of system: 1-strand slab caster for stainless steels
Our solution: Specialized caster for high volume of ferritic stainless steels
The result: Start-up in 2005 together with Stainless Meltshop of Siemens-VAI

Stainless steel slab casters – profit through quality

Customer: Zhangjiagang Pohang Stainless, China
Type of system: 1-strand slab casters for stainless steels
Our solution: Highest technology slab caster features to fulfill the requirements for high quality stainless steel demand
The result: Start-up in 2005 together with Stainless Meltshop of Siemens-VAI, met rated capacity in about 2 months of production

Stainless steel slab casters – profit through quality

Customer: Outokumpu Stainless Oy Tornio, Finland
Type of system: 1-strand slab casters for stainless steels
Our solution: Trendsetting high performance slab caster
The result: Highest production at best product quality, reached world-record casting speed for austenitic grades of a slab caster shortly after first heat in 2002

Stainless steel slab casters – profit through quality

Customer: Posco Pohang Works SSC3, South Korea
Type of system: 1-strand slab caster for stainless steels
Our solution: Highest technology slab caster features to fulfill the requirements for high quality stainless steel demand
The result: Start-up 2003, successful austenitic production right from the start.
Plate slab casters – geared for the future

Customer: Nanjing Iron & Steel Co., China
Type of system: 1-strand wide medium thick slab caster
Our solution: Widest slab caster worldwide
The result: Production of widest slabs, API grade production, direct linking to combined Plate/Steckel-Mill also delivered by Siemens-VAI, Compact Plate Production line

Plate slab casters – geared for the future

Customer: Compania Siderurgia Paulista, Brazil
Type of system: 1-strand slab caster
Our solution: The project includes engineering, supply and turnkey installation of a new single-strand slab caster which will be equipped with the latest technological equipment and packages to enable nominal casting capacity of 1.3 million tons of high-quality slabs per year.
The result: Start-up of the caster is scheduled for end of 2007

Plate slab casters – geared for the future

Customer: Mittal Steel USA Sparrows Point, USA
Type of system: 1-strand slab caster revamp
Our solution: Caster modernization to boost productivity and increase yield and product mix for a heavy plate production facility
The result: 1.6 million tons in first year of production on a 1-strand caster

Plate slab casters – geared for the future

Customer: Tokyo Steel MFG Co. Ltd., Japan
Type of system: 1-strand wide slab caster
Our solution: Cost-competitive high-performance caster with state-of-the-art technology
The result: Completion at the beginning of 2007

Plate slab casters – geared for the future

Customer: Anshan Group New Iron & Steel Co, China
Type of system: 2 x 1-strand medium thick slab casters
Our solution: Ultimate productivity caster by using highest technology to work in the optimized range of casting thickness x casting speed, hot strip and coiled plate production
The result: 1.25 million tons per year and strand
Completely Integrated Solutions with Siemens VAI

Integrated offerings for higher plant performance

**Optimized processes**
We lay the foundation for optimized processes with proven, leading products worldwide, including mechanical and technological engineering for metal production, rolling and strip processing as well as process control engineering, drive engineering and power supply. Integrated online and offline process models reflect decades of practical experience and help to ensure reliable, reproducible quality.

Our process engineering expertise fuses these products into complete plant solutions that also accommodate the upstream and downstream processes. These solutions are the basis for optimal resource use, minimized waiting times and reduced maintenance and spare parts costs, as well as wide flexibility with respect to raw materials and the resulting products.

**Efficient production control**
A further factor for competitive production is the quality of information processing. Production data must be consolidated and compared with planning data to ensure optimal production flow.

As a leading supplier for the metals industry Siemens VAI offers integrated information technology across all automation levels – from the sensor to the Enterprise Resource Planning system. Patented solutions, such as for smelting reduction plants, electric arc furnaces, hot strip mills, profile rolling or processing lines, enable systematic quality assurance, efficient logistics, flexible production planning and scheduling, end-to-end tracking and tracing from raw materials to the end product and back, and much more.

**Maximized life-cycle returns**
Services from Siemens VAI help to ensure high profitability for your plant throughout the entire life-cycle. Reliable project implementation by our specialists sets the course for quick start-up and repayment of funds as scheduled.

During the operating phase, preventive maintenance, standardized components and component design that meets the requirements of steel plants help keep maintenance costs low. A reliable spare parts supply – with in-house workshops for key components – ensures high availability. And modernization at the right time guarantees a high level of competitiveness and compliance with environmental regulations in the future.
Completely Integrated Solutions offer a comprehensive range of products and services, tailored and refined to the specific requirements of your plant. The key to this approach is the close interlinking of plant construction, process engineering, electrical and automation engineering, sensors and actuators, as well as information technology and life-cycle services, seamlessly integrated by Siemens VAI.
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