LD (BOF) Steelmaking Solutions

Technology, mechanical engineering, automation and electrical engineering from a single source – we drive steelmaking to perfection
The level of technology used in LD steel mills continues to increase. As demand for steel keeps growing, requirements for product quality and plant productivity and availability are also on the rise. The LD route holds the greatest potential in the steelmaking sector as the most reliable and comparatively economic approach.

**You expect ...**

- Higher plant availability with regards to increasing steel consumption
- Increased modernization for higher plant performance
- Flexible technological updates in response to growing quality requirements
- Flexibility of charge materials as a reaction to price fluctuations of raw materials
- Optimized plant processes as a response to more stringent environmental standards
- Decreasing operating and maintenance costs to offset growing cost pressures
Your challenge:
To increase productivity and reduce operating costs in a growing market.

Continuous growth
According to current forecasts, worldwide demand for steel is set to grow 25% by the year 2015. This increased demand must be met with expanded capacity, a reduction in tap-to-tap times and a general increase of plant productivity. Mainly China, India, Brazil and the CIS are driving the global market. Continuous growth requires continuous optimization of processes in order to stay globally competitive.

Local specializations
In addition to large consolidations, there are especially many local concentrations of iron and steel mills. However, the value-added chain is shifting as the availability of the necessary raw materials continues to diminish. Many investors and plant operators are placing their plants at locations with close access to raw materials or sources of energy, such as in South America and the Middle East.

Growing environmental awareness
Increasing environmental regulations ultimately require increased investments in LD plants, especially in offgas systems. These investments must pay off in the longterm and be sustainable, while meeting both present and future environmental standards.

Increasing productivity and stable plant availability
In the future plant operators will have to continue optimizing consumption parameters in order 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.

Requirements for product quality are continuously growing. Especially in the automotive branch, increasingly higher steel quality – both physical and chemical – is in demand. If producers are to succeed in these markets, they will have to continuously update their technology.

Increased modernization
Extensive saving potentials can be tapped in the area of operating costs, especially through the installation of technological components such as bottom purging, slag stoppers and sublances. 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.

Flexibility in the market
In general, the more comprehensive your process expertise, the better you are able to meet your customer’s specific requirements with your expertise and products, and the more you are able to boost your performance in the market – a market that is continuously becoming more complex and dynamic. We invite you to work together with us in meeting these new challenges.
Our solution: Tailored technologies for process optimization.

Quality from the leader in technology
Benefit from the experience and expertise that has made us the world leader in LD. In every one of our projects, we have excelled by achieving flexibility, top performance and short exchange and run-up times. We have the process knowledge to shorten your tap-to-tap times and to lower your plant operating costs through optimized material consumption, individual performance packages, dynamic process control and customized automation packages.

Innovative technologies
We developed the LD process in 1952, but we don’t let it end there. Since then we have continually expanded and improved the process. The name Siemens VAI represents a permanent leader in innovation, not least because our headquarters are located very near to an iron and steelworks. We look forward to applying our innovative strength to optimize your LD process throughout the entire life-cycle of your plant.

Automated solutions
Our automation packages allow you to react quickly to your customer’s requirements and achieve market-driven production. In conjunction with an integrated alarm system, they ensure the smooth running of your plant. If there are breakdowns, emergency programs prevent possible downtimes, while logical, simple process screens make it easy to maintain an overview and full control of the process.

Customized package
You might be looking for a complete solution or a stand-alone package, modernization or construction of a new plant. No matter what your needs, we offer you the complete range of all current LD technologies. From individual converter design to single performance packages (bottom purging, slag stopper, sublance) and converter offgas plants, our technology meets with your requirements. But that’s not all: continuous technology updates, immediate spare parts delivery and coaching of your employees round off our services.
As the only global full-line provider and inventor of the LD process, we possess unique expertise. Backed by this extensive experience, we completely focus on process optimization – starting with individual converter designs, including tried and tested lance technologies as well as sophisticated automation packages and sustainable solutions for offgas utilization. In everything we do, we have one goal in mind: To increase the performance of your plant.

Good reasons for Siemens VAI LD (BOF) steelmaking solutions:

- Being always at the leading edge of technical advances through continuous innovation and perfection from the inventor of the LD process
- Optimization of your processes thanks to proven technology packages
- Shortened tap-to-tap times and proven automation solutions
- Fast return on investment through reduced operating and maintenance costs
- Profit from our experience in all metallurgical processes – a significant percentage of the world’s steel production comes from Siemens VAI plants
- Boost your competitive edge – thanks to full-line solutions from the market leader that are unique worldwide
- Higher plant performance through a life-cycle partnership for the entire life-cycle of your plant
When engineers in the early 1950s were looking for alternatives to the Siemens-Martin method and the Thomas method, they could never have imagined that they would set off a revolution in steel manufacturing with their invention of the Linz-Donawitz (LD) process. Nowadays, more than 60% of the global steel production takes place using the LD method, of which more than 30% (more than 185 plants, including 15 turnkey projects) were planned, built and commissioned by Siemens VAI.

Time has not stood still since the LD technology was developed and implemented. Siemens VAI engineers have constantly further developed the system and complemented it with automation expertise. The lead now held by the merged companies in the area of steel production is a good basis for the future.

In the meantime, Siemens VAI has extended its market and technology leadership to include the entire range of converter methods, their upstream and downstream process steps and the electric steel production line.

Our specialists continue their fine-tuning efforts, building on the feedback from a multitude of international projects. Changes in customer requirements and standards over the years are reflected in plant layout, equipment and operational procedures.

Siemens VAI supplies the entire range of products, systems and processes for efficient and reliable steel production. From the expansion or modernization of individual parts of a system through to a completely new construction in the framework of a turnkey project, Siemens VAI opens up new horizons in the field of steel manufacturing. The members of the Siemens VAI LD steelmaking team are ready to put their company’s 50 years of experience at your service.

Milestones in converter technology

1952: 1st LD steel plant (Linz, Austria)
1956: 1st LD steel plant abroad (Rourkela, India), founding of VAI
1962: 1st exchangeable converter in the world (Arbed, Luxembourg)
1965: 1st 300 t converter (Taranto, Italy)
1975: 1st OBM steel plant (Thy Marcinelle, Belgium)
1980: LD perfection package
1985: 1st steel plant with dry-dedusting (EKO, Germany)
1990: 1st LD steel plant with dust recycling (Kwanyang, Rep. of Korea)
1995-1997: VAI becomes leading supplier of stainless steel plants
1996: VAI-CON® Link converter suspension system
1998: DYNACON (dynamic process control)
Siemens VAI full-line spectrum of steelmaking solutions:
- Converter
- Offgas cleaning systems
- Secondary metallurgical facilities
- Continuous casting
- Integrated automation systems
- Slag handling systems
- Ladle handling and preparation
- Additive handling
- All auxiliary facilities
- Utility supply
- Power supply
- Civil works
- Steel structure
- Hot metal handling
- Hot metal pretreatment
- Scrap handling

Know-how and performance
Success in LD (BOF) steelmaking requires state-of-the-art know-how, an understanding of the overall process and the ability to focus on customer-driven solutions.

Clients can profit from the strength of Siemens VAI, one of the world’s leading engineering and plant-building companies for the international iron and steel industry:
- A dedicated staff of nearly 4000 engineers, specialists and support personnel
- A complete spectrum of all related iron and steelmaking technologies, from raw materials to the finished product
- Engineering and completion of more than 800 major industrial projects in some 80 countries.
- In addition to the mainstream LD-vessels, Siemens VAI can offer its experience with bottom blowing converters and process routes with de-[P] and de-[V] converters

1999: Continuous temperature measuring
2004: First electrostatic precipitator in VAI design (Kosice, Slovakia)
2005: Sublance compact design
2006: Advanced de-[P] converter
2007: Innovative upgrade of process models
Converter solutions
Optimizing the process route – increasing plant performance

Tailored solutions:
We create the best possible converter in terms of size and design for every customer.
Simulation tools for ideal plant layout

The best possible arrangement and configuration of all production units and transport systems within a steel works are a prerequisite for maximized plant productivity. Since it is impossible to manually assess and analyze all of the transport events within a steel works, particularly over longer production periods, Siemens VAI utilizes a four-dimensional (3D + time) simulation tool. The Logistic Optimization & Routing Algorithm (LORA) was developed in-house to analyze process and transport logistics. LORA is capable of optimizing and simulating any steel plant configuration and also allows different plant layouts and process options to be efficiently checked.

Our process and logistics expertise is the basis for our successful plant design. Worldwide experience makes it possible for us to guarantee optimum converter productivity, even in complex conditions, whether integrated in a steel plant or compact mill.

Main benefits:
- Ideal equipment selection and dimensioning
- Totally optimized plant layout and logistics for highest plant productivity
- Minimum investment costs for meeting the product mix targets
- Lowest achievable plant operating costs

Application of expert systems

In order to optimize process routes, equipment selection and design, Siemens VAI has developed a unique expert system. This tool identifies all process parameters, from hot metal pretreatment to continuous casting, that are necessary to achieve the most cost-effective plant configuration, whether for new plants or for plant expansions.

Taking into account the entire production route, the following features are calculated for each process step:
- The ideal temperature and analysis,
- quantity and cost of input materials as well as
- quantity and composition of by-products
The VAI-CON® Link suspension system for ease of maintenance

The VAI-CON Link suspension system represents the latest generation of suspension systems for converters. It combines the advantages of proven components with Siemens VAI’s design philosophy of employing a statically determined system for all converter operating and deformation conditions. This is achieved through the application of six suspension elements, with three pendulum-type links arranged vertically and two horizontally. The sixth element, a guiding bracket, prevents lateral shifting of the converter.

All suspension elements are mounted below the trunnion ring in the cooler zone of the converter. In this position, they are well protected against spitting and slopping. With the VAI-CON Link suspension system a statically determined and virtually maintenance-free converter suspension system is realized, greatly contributing towards maximum converter availability.

Main benefits:
- Statically determined converter suspension system
- for unobstructed shell deformation
- for reducing restraint forces
- No converter rocking motions or shock loads during tilting
- No post-adjustment of suspension elements
- Proven and maintenance-free components
- Ideal for all existing and new converters

Converter technologies and products
Individual packages for optimized operations
Bottom stirring

Bottom injection of inert gas into the steel bath during oxygen top blowing substantially improves and accelerates the overall process kinetics, allowing for the ideal metallurgical equilibriums to be better approached. Individual flow control and all advantages of combined pressure/flow monitoring ensure best performance and a long lifetime of all types of stirring elements.

Main benefits:

- Yield increase of more than 1%
- Fast and accurate adjustment of tapping temperature
- Reduction of carbon content to 0.015% without the need for vacuum treatment
- Lower phosphorous and oxygen levels in the tapped steel
- Reduced flux quantities (more than 10%)

Converter disposal

We offer all types of converter cooling, from uncooled vessels to air/water combinations and also technological solutions for supplying the necessary media to the converter vessel. Rotary ducts also guide stirring gases and the pneumatic drive supply, along with the cooling media, through the trunnions to the vessel without limiting the converter’s freedom of movement. Due to the special design and the selection of exclusive finishers, the system remains leak-proof and maintenance-free during the entire converter campaign. The compact and premounted valve station ensures uniform and fully-automatic distribution of the purging gases.

Tilting drive

Our converter drives offer excellent reliability and precision. Depending on the converter size, up to four motors are used that act through gears on the converter trunnions. Interaction with the individual brakes enable secure fixation in any desired position. High speeds enable fast tip-back after tapping to reduce escaping slag.

The ample dimensions of the drive are designed for all imaginable operating conditions; using a 4-motor drive the full function is still provided with 3 motors. In an emergency, our drive has 2 integrated pneumatic emergency motors to set the converter down or to tip it, independent of the power supply. If requested, all important parameters are displayed on the screen.
**Lance systems**

The main process equipment of LD converters is the blowing lance. The copper tip is designed for a constant oxygen jet over a long lifetime; the sliding seal and slide connections for the inner lance pipes compensate for thermal expansion. Two lance cars equipped with the latest technology in drive, control and safety equipment ensure flexibility and maximum availability of the system.

The automatic coupling systems use the weight of the lance to fix the lance on the lance car in order to bring the lance exchange time down to 15 minutes. Self-centering of the lance and compensation of lance deviations at the male coupling parts on the car ensure easy utility connection. Manual activities are limited to checking the seals and tightening two swing bolts.

**Sublance systems**

Siemens VAI offers sublance technology for every type of converter. They offer immediate information on temperature, [C] content or O₂ activity and bath level. The physical steel samples for measurement can be analyzed in a chemical lab in order to determine the trace elements or feedback tuning without time constraints. A sample manipulation system and a slag remover support the robust and low maintenance equipment.

The most up-to-date technologies for measurement techniques, the drive, double cable engineering, mechanical free-fall brakes and emergency drive all ensure the maximum positional precision. The sublance, a central part of dynamic process control, is responsively displayed. Shortened process times, avoidance of converter tilting and more uniform operation without temperature spikes ensure a short return on investment of the sublance.

**Pneumatic slag stopper**

The robust slag stopper provides steelmakers with the means for tight control of slag carry-over at the end of tapping. Consisting of a cylinder and cast iron nozzle mounted on a support structure which are installed adjacent to the taphole, the nozzle is slewed into the taphole either manually or automatically actuated by the IRIS slag indication system. The contact-free infrared identification offers optimum differentiation between slag and steel. Precise resolution, robustness and data archiving are the advantages.

**Main benefits:**

- Reduced slag carry-over from 8-16 down to 2-5 kg/t steel
- Lower ladle refractory consumption
- Reduced rephosphorization of the steel
- Reduced consumption of deoxidization and alloying materials
- Cost savings
Converter auxiliary equipment

We offer all auxiliary equipment related to the converter. Following the production chain, we offer processes for hot-metal mixing, desulfurization and deslagging. Our storage and charging systems for converter additions and tapping-alloys form the basis for flexible and fast cycle times. Ladles, slagpots and transfer cars are built for reliable transport of the liquid converter products. Further equipment like doghouses, cranes and buildings complete our scope as a complete turnkey provider.

LOMAS® and DYNACON

LOMAS, the proven gas analysis system, stands out because of its very short response time and minimum maintenance time. The gas preparation is located in the immediate vicinity of the sample sensor in order to avoid an incorrect composition. The current carbon content of the melt is determined via the decarburization rate that is supported by the DYNACON process model.

Main benefits:
- Accurate determination of the C blowing endpoint
- Avoidance of over-blowing for higher steel yields and lower deoxidation agent costs
- Increased converter refractory lifetime
- Continuous oxygen blowing for higher CO recovery rates
- Significantly lower investment and operating costs compared to a sublance
- ROI typically within 11 months
LD (BOF) steelmaking automation
Maximized performance through dynamic modeling

Intelligent solutions
Siemens VAI steelmaking automation supplies the latest state-of-the-art solutions for maximum performance and product quality in the entire steel plant. The unique advantage of this integrated approach is that it covers all aspects of process stability, product quality and operational flexibility, while ensuring efficiency and profitability throughout the entire plant life-cycle.

Combining decades of steelmaking technology with automation experience provides the basis for highly advanced automation systems for every plant unit. Proven solutions for power supply, drives, technological packages and process optimization enable smooth production and the intelligent use of energy and raw materials. Future-oriented service concepts ensure continuously high availability of plant and equipment.

Features:
- Modular, expandable, upgradable and user-friendly design
- Advanced solutions for new and existing plants
- Dynamic process models
- Reporting and statistics
- Remote monitoring and diagnostic options

LD (BOF) process control:
- Oxygen lance control system
- Converter tilting drive
- Sublance measuring system
- Bottom stirring – single line control
- Additive & alloy weighing & control
- Waste gas cooling & cleaning
- Gas recovery & analyzing
- Slopping prevention system
- Secondary dedusting
- Interlocking & alarm system
- Human machine interface

LD (BOF) process optimization
Siemens VAI automation for LD (BOF) steelmaking not only considers the vessel-specific process functions, but also takes into account all relevant parameters of the charging materials, including hot metal preparation, scrap yard management and logistic scheduling. The process optimization solutions are based on advanced algorithmic equations, which accurately represent the complex thermodynamic-metallurgical reactions. The solutions are suitable for a wide range of operating conditions, e.g. variable scrap to hot metal ratios, minimum slag practice and varying phosphorus content.
Dynamic process models

SteelExpert is a comprehensive group of process models that perfectly images and optimizes the process of LD (BOF) steelmaking. The prediction model provides a forecast of the progress and the final condition of the heat, predicts all required vessel additions and serves to optimize the production process. While the supervision models monitor the metallurgical and thermal process, calculating the actual condition of steel and slag online, the setpoint models determine the oxygen amount and all charged materials that are necessary to meet the quality requirements.

Siemens VAI offers two different dynamic process models for achieving the required end-point values for carbon and steel-bath temperature. Should a sublance be available, SteelExpert Inblow uses the measured values for optimization of the remaining blowing phase for an improved hitting rate.

If continuous offgas measurement (analysis and flow) is available, DYNACON is applied as a supplement for SteelExpert Supervision. It dynamically calculates the optimum moment for blow end in order to achieve the target carbon content of the steel from the offgas information. Thus DYNACON saves valuable time due to the uninterrupted blowing process and therefore unimpaired decarburization rate. The co-operation of the supervision model and DYNACON is the proven approach to increase carbon hitting rates at low investment, maintenance and operational expenses.

Main benefits:
- Consistently high and reproducible steel quality
- Reduced operating costs
- Increased productivity and yield
- Increased hitting rate for carbon content and temperature
- User-friendly operation, full transparency and flexibility
Converter offgas systems

Environmental solutions for the future

Dry-type waste gas cleaning system

Siemens VAI’s dry-type waste gas cleaning system is the most efficient environmental solution available for emissions control, energy recovery and dust recycling in LD (BOF) plants with suppressed combustion.

Efficient waste gas cleaning is accomplished in two stages. The waste gas is pre-cleaned in a so-called evaporation cooler. Final cleaning of the waste gas takes place in the cylindrically-shaped electrostatic precipitator, which represents the heart of Siemens VAI’s dry-type waste gas cleaning system.

Siemens VAI’s dry-type waste gas cleaning system assures high energy recovery rates. The thermal energy of the hot converter waste gas may be recovered by a boiler-type cooling stack generating steam. The combustible CO-rich converter gas may be recovered by directing it to a gasholder for further use.

The precipitated dust can be recycled to the steelmaking process to substitute iron ore or scrap.

Wet-type waste gas cleaning system

In the majority of all waste gas cleaning systems for converter steel plants around the world, wet-type waste gas cleaning systems are installed. Compared to dry-type waste gas cleaning systems, wet-type gas cleaning systems are associated with lower investment costs. Siemens VAI offers two kinds of wet gas cleaning systems:

- VAI-BAUMCO® scrubber system with venturi technology
- VAI-CONE scrubber system with annular gap technology

Both types are optimized to ensure maximum possible dedusting efficiencies and lowest energy requirements. Siemens VAI offers a highly efficient dust recycling process to recover valuable sludge components and to reduce disposal costs.
Main benefits:
- High dedusting efficiency
- Reduced plant energy import costs through energy recovery system (converter gas and steam)
- Low operating costs due to low pressure loss and minimum service requirements, especially for dry-type waste gas cleaning system
- High sludge and dust recycling rates
- Simple and robust design for low maintenance requirements

Secondary dedusting system
Secondary dedusting systems collect dust emissions at various suction points inside the steelmaking building that arise from hot metal and steel treating (e.g., reladling, deslagging, charging, tapping). The installation of secondary dedusting systems is essential to protect both the steel plant facilities and the personnel from high dust loads.
Advanced Siemens VAI pulse jet filter technology assures highly efficient dedusting and increased life time of filter bags.
Siemens VAI’s innovative technology of so-called static coolers is a major advancement in secondary dedusting. Static coolers absorb thermal heat that is released during charging and allow for shorter charging periods and increased safety.

Main benefits:
- Efficient reduction of dust immission levels inside the steel building
- Siemens VAI pulse jet filter technology with advanced life time of filter bags and efficient gas cleaning
- Static coolers reduce process times and increase safety
- Clean working environment results in reduced maintenance costs
- Complete recycling of by-products via oxide briquetting
Our LD (BOF) steelmaking services

Project support from the 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 1,800 successfully completed projects around the world.

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

In our customer relationships, we identify with each customer project in a way that is unsurpassed worldwide. Our on-site project teams work together perfectly, 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. 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 successful LD (BOF) projects.

Working systems and synergies

Our automation systems include the market-leading SIMATIC S7 and user-friendly interface SIMATIC WinCC. With an upgrade to the current SIMATIC PCS 7 system, you receive access to many new control functions. We analyze your drive systems and develop individual migration concepts.

In addition, we offer you our expertise for offgas cleaning system solutions in order to return older plants to compliance with the most stringent environmental regulations.

Our specialists for transport systems, cranes and media work closely with our partners in building and steel construction, as well as process technology. This allows for flexible and quick reactions to changing market conditions.
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 than 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 in the short 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 LD (BOF) steelmaking technologies

Competence in figures – especially in the field of LD (BOF) steelmaking, 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. Take a closer look at our successful projects and decide for yourself.

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**The giant de-[P] converter**

Customer: Posco, Gwangyang, Korea  
Type of system: 300 t de-[P] converter, start-up 2008  
Our solution: High intensity bottom stirring system  
The result: Duplex steelmaking with higher overall throughput

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**Small, but stress-free**

Customer: AHMSA, Monclova, Mexico  
Type of system: 65 t LD  
Our solution: Replacement of tendon by VAI-CON Link  
The result: No more deformations, zero maintenance on suspension

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**One of the first, one of the largest**

Customer: ILVA Spa, Taranto, Italy  
Type of system: 375 t LD  
Our solution: VAI-CON Link suspension  
The result: Best impressions at general inspection after seven years
### Modern environmentally-friendly LD

**Customer:** US Steel Kosice, Slovakia  
**Type of system:** 180 t LD  
**Our solution:** Replace 3 old vessels with 2 modern converters + dry dedusting systems  
**The result:** Increased production with less emissions

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### Exact carbon endpoint determination

**Customer:** Pangang Panzhihua, China  
**Type of system:** 120 t LD  
**Our solution:** LOMAS offgas measurement, sublance and DYNACON process model  
**The result:** Reduced tap-to-tap time, fewer reblows

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### Revamping in shortest time

**Customer:** SSAB, Lulea, Sweden  
**Type of system:** 120 t LD  
**Our solution:** Upgrade the vessels with VAI-CON Link suspension  
**The result:** Increased converter size by 14%

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### The sublance experts

**Customer:** COSIPA, Cubatão, Brazil  
**Type of system:** 160 t LD  
**Our solution:** VAI-CON Link suspension, sublance & automation  
**The result:** High performance through sublance

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### Where LD was born, the future starts again

**Customer:** voestalpine Stahl Donawitz, Austria  
**Type of system:** 65 t LD  
**Our solution:** Revamp to compact LD plant  
**The result:** Successful revamp during ongoing production
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.
Perfect integration of every aspect

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.

**Completely Integrated Solutions from Siemens VAI – your benefits from an integrated concept:**

- High process quality, lower energy costs and increased throughput – by taking all process steps into account
- Reproducible high product quality and efficient use of charging materials – thanks to integrated process models
- High enterprise quality, low life-cycle costs and unique investment protection – through flexible production based on metal-specific MES systems, intelligent plant design and integrated planning.
For further information, please contact:

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