MEVAC TECHNOLOGIES AND APPLICATIONS
Product program for efficient metallurgy
# METALLURGY BY SMS MEVAC – ADDING VALUE TO YOUR STEEL

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WHAT IS MEVAC

The two pioneers in secondary metallurgy (Messo and Vacmetal) were merged to SMS Mevac in 1999.

WHAT DOES MEVAC STAND FOR

Metallurgical Expertise
Vacuum Applications
Competence

M E V A C
Metallurgy at its best

WHAT IS OUR MISSION

- Consistency: Being your longterm partner for technological developments and innovations in your steel business
- Focus on Customer’s demands: Developing ideas today and finding solutions regarding possible future demands and challenges that you may be facing

MEVAC as your competence center within the SMS group for highest demands on Metallurgy and added value in the field of:

P Pretreatment
S Secondary Metallurgy
T Tertiary Metallurgy (special melting and solidification processes for highest steel qualities and superalloys)
WHAT IS YOUR BENEFIT

We provide consulting and engineering expertise to tailor products with superior characteristics to match your needs and thereby the demands of your final customer.
COMPLETE RANGE OF TECHNOLOGIES AND SERVICES FOR ADVANCED STEEL QUALITY

**Pretreatment**
- HMD / KR

**Secondary Metallurgy - atmospheric**
- LF / CAS-OB / LTS

**Secondary Metallurgy - vacuum**
- RH / RH-OB / RH-TOP / REDA
- VLD / VD / VD-OB / VOD / VIC

**Tertiary Metallurgy**
- VIM / ESR / VAR
Adding value to your steel by ADVANCED TECHNOLOGIES

A PACKAGE OF SUPERIOR SOLUTIONS

Our complete range of technologies and services will support you in delivering products with superior benefit to your final customer.

Lifecycle Partnership
- Stable quality
- Innovative, future-oriented solutions
- Optimized equipment to achieve optimum results and low operational costs
- Unique competitiveness in economy and ecology
- Focussing on your specific needs

After-sales Service
We assist you from day one of commissioning of your plant and into the future.

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<td>Building, Architecture</td>
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</tr>
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<td>High wear resistance</td>
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ATMOSPHERIC PROCESS TECHNOLOGIES
HOT METAL PRETREATMENT STATIONS
SMS Mevac’s HMP stations are installed in many steelmaking plants in order to economically remove detrimental elements from hot metal prior to steel melting processes. Heat sizes cover a range up to 350 t.

Metallurgical functions
- Desulfurization (De-S)
- Dephosphorization (De-P)
- Desiliconization (De-Si)
- Deslagging
- Adjustment and homogenization of chemical composition and temperature

HOT METAL DESULFURIZATION (HMD)
Powder Injection
A range of powders can be injected through a refractory-coated lance immersed into the liquid iron.

Typically lime, calcium carbide and/or magnesium are used for desulfurization. In case of disiliconization or dephosphorization iron oxide is commonly used.
Reagents are pneumatically transferred using mono or co-injection technologies.

Our latest Twinjection® allows fast reagent delivery without compromising efficiency.

Mechanical Stirring – Kanbara Reactor (KR)
Using an alternative technology desulphurization is done by means of mechanical stirring process in the hot metal transfer ladle.

A large refractory-coated impeller rotates in the liquid iron and creates a strong downward vortex. Thus low-cost lime-based reagent additions with some fluxing agent (CaF₂) are stirred deep into the bath for reaction. Unreacted lime particles rising to the bath surface are submerged again and again, maximizing the reagent/metal contact time.
Atmospheric process technologies

**SECONDARY STEEL TREATMENT STATIONS**
SMS Mevac’s atmospheric ladle metallurgical processes serve to adjust steel condition (temperature and chemical analysis) prior to vacuum treatment or casting procedure. An important set of metallurgical processes is carried out without using large-scale, capital-intensive equipment. Heating capabilities provide extra flexibility and safety in steel shop logistics. A variety of auxiliary equipment provides additional metallurgical capabilities. The stations serve heat sizes of up to 400 t.

**LADLE FURNACES (LF)**
SMS Mevac’s LFs provide electric arc heating of liquid steel. State of the art roof designs reduce nitrogen pick-up from ambient air. Fixed and slewing roof layouts comply with productivity demands.

Metallurgical functions
- Electrical heating
- Alloying and fine trimming
- Desulfurization by metal-slag reaction
- Homogenization
- Slag management
- Improvement of castability

**CHEMICAL HEATING STATIONS (CHS)**
In SMS Mevac’s CHS treatment is slag free under inert gas atmosphere inside a refractory-coated bell immersed into the bath. This results in minimized gas pick-up from ambient air and a high yield of alloy additions. The alumino-thermal process ensures extra high heating rates.

Metallurgical functions
- Alloy addition under oxygen-free conditions
- Chemical heating by combustion of aluminum or silicon
- Homogenization
- Improvement of castability

**LADLE TREATMENT STATIONS (LTS)**
SMS Mevac’s LTS offer most of the metallurgical functions shown above, except heating, such as

- Desulfurization by synthetic slag
- Alloying and fine trimming
- Temperature adjustment by cooling agents
- Homogenization.

**POWDER INJECTION (PI)**
The installation of powder injection equipment expands the functionality of all the processes

- Ultra-low desulfurization by agents such as lime, CaSi, mixtures of lime, fluorspar or alumina.
VACUUM PROCESS TECHNOLOGIES
Vacuum process technologies
RH, RH-TOP

RH AND RH-TOP RECIRCULATION DEGASSERS
RH and RH-TOP units are installed in steelmaking plants with heat sizes of up to 400 t.

Different types of lifting systems are available.

Fixed vessel installations use ladle lifting systems, while movable vessel installations employ vessel lifting systems. Fast vessel exchange systems increase the plant’s general performance and duplex vessel installations enable further increased output.

The RH process is characterized by short treatment periods, minimal temperature losses and extremely favorable results for decarburization and degassing. No special slag measures, extra ladle freeboard or porous plugs are required.

RH-TOP LANCES
A short lance design is used to blow from a long distance, allowing installation in plants with restricted headroom. Oxygen blowing, powder blowing and gas burner functions may be combined in a single multifunction lance. Video camera installations can also be incorporated to provide constant visual monitoring.

Metallurgical functions
- Decarburization to lowest levels
- Hydrogen removal
- Alloying and fine trimming with high accuracy
- Fast homogenization of the ladle content, even when large quantities of alloys are introduced
- Vacuum carbon deoxidation

With RH-TOP lance
- Forced decarburization
- Adjustment of C:O ratio
- Desulfurization
- Adjustment of steel temperature by chemical heating
- Skull removal
- Heating of vessel by means of integrated gas burner function
RH-ROCKERTYPE® – A BOOST FOR SAFETY

The RH-RockerType® unit has been engineered to significantly increase the performance parameters of RH processes. This well proven yet future-oriented solution provides safe, reliable RH operation.

The origin of RH-RockerType® technology from SMS Mevac goes back to the 1950s. Its main purpose then was to safely lower the vacuum vessel system and immerse the snorkels into the liquid steel in a simple and reliable way. The system stands out because of its user-friendly operation and maintenance.

Recently, RH-RockerType® technology has been further improved. It now smoothly lifts and lowers the ladle instead of the vacuum vessel system. Many useful features have been added.

INCREASED EFFICIENCY

To speed up your intra-logistic processes in the RH plant, the ladle lifting RH-RockerType® can use two ladle cars. One of them brings the ladle to the RH station for treatment. After treatment, another car takes it to the caster area while the first ladle car brings the next ladle.

This design supports flexible processes, since the first ladle car can be recharged while the ladle is being treated. Depending on the layout of the steel shop, this greatly improves your ladle transportation logistics. The resulting advantages can be implemented both in single treatment stations as well as in our fast vessel exchange units.

Since the alloy system and the vacuum pump are fixed directly to the vacuum vessel system, no special conveyors or moving vacuum ductwork are required.

A KEY TO LASTING RELIABILITY

Two hydraulic cylinders are installed to operate the lifting and lowering processes of the ladle. For normal operations, they are mechanically synchronized. In the case of an electric power failure, the ladle is lowered safely onto the ladle car in a controlled way by gravity. Maintenance of the complete hydraulic system is simple and straightforward. The RH-RockerType® unit is very well protected against liquid steel splashes and liquid steel from a ladle break-out.

In comparison to vacuum vessel lifting installations, there is much better access to the vacuum vessel platform. Similarly the automatic sampler and other auxiliary equipment are easily accessed.

For safety and efficiency reasons RH-RockerType® technology will play an important role in future RH secondary metallurgical infrastructure.
Vacuum process technologies
VD, VD-OB

VD AND VD-OB TANK DEGASSERS
SMS Mevac’s tank degassers support EAF and BOF plants, permitting heat sizes of up to 400 t. Inert gas is introduced into the bottom of the ladle by means of porous plugs. The process is characterized by slag-free tapping at the melting unit. The plant requires an efficient vacuum pump system to meet the specific requirements of the desired metallurgical process.

Standard tank installations are fixed above or below the shop floor. Movable tank installations or twin tank installations substantially increase performance.

Metallurgical functions
- Hydrogen and nitrogen removal
- Decarburization to lowest levels
- Desulfurization by metal and slag reaction
- Efficient alloying and fine trimming with high accuracy
- Slag management
- Improvement of castability
- Homogenization of ladle contents

Additional applications using VD-OB lance systems:
- Oxygen blowing for forced decarburization from high initial carbon levels, e.g. for the production of ultra-low carbon steel grades
- Oxygen blowing for chemical heating by aluminum oxidation

VACUUM INGOT CASTING (VIC)
An alternative application for Tank Degasser technology is VIC. The basic principle is stream degassing of liquid steel poured under vacuum conditions to form an ingot situated in the vacuum tank. Beneath the removal of gases oxygen pick-up from ambient air is safely prevented.

Steel flow is controlled either by stopper rod or slide gate. Stations process ingots from 15 to 350 t.

Metallurgical functions
- Degassing
- Prevention of oxygen pick-up during casting
- Prevention of re-oxidation
- Reduction of macro inclusions
- Significant reduction of alumina inclusions
Vacuum process technologies

VOD

**VOD TANK DEGASSERS**
Vacuum Oxygen Decarburization units are needed in stainless steel production in order to reach extra low carbon contents in an economical way. This advantage is due to reduced chromium oxidation that results in less reduction agent consumption. VOD is still without any alternative in the production of high-end stainless steels such as ferritic and super-ferritic grades. SMS Mevac supplied VOD units up to 200 t.

Metallurgical functions in addition to VD-OB
- Forced decarburization of up to 1 % \([C]\)
- Oxygen blowing at < 80 mbar pressure
- Slag reduction for chromium recovery

VODs are integrated into the production line in two ways:
- DUPLEX-line – EAF- (LF) – VOD - CCM

Basically similar to VD-OB the VOD units feature an adapted design due to the more violent character of the process:
- Additional water-cooled parts and splash shield
- Design and control of the vacuum pump match the demanding process
- Vacuum bag filters ensure waste gas cleaning from extra dust load

SMS Mevac offers a sophisticated metallurgical model for operator support in achieving uniform results with complex VOD process:
- Dynamic tracking of steel condition
- Dynamic calculation of set point values
- Dynamic tracking and guidance of carbon content based upon waste gas data
- Thermal model
- Least-cost calculation of alloy additions
ADVANCED STEEL QUALITY

STEELMAKING PROCESS ROUTE – EAF

- Extra-deep drawing steels
e.g. for automotive applications

- SMS Mevac VD-OB Vacuum tank degasser
  - Decarburization
  - Deoxidation
  - Final trimming
  - Temperature adjustment

- SMS Mevac LF Ladle furnace
  - Temperature adjustment

- EAF Electric arc furnace, deslagging unit
INTEGRATED PROCESSES
A growing number of advanced steel grades are based on sequential treatment in a series of secondary metallurgy stations. These process routes combine complementary technologies to produce steels at unique quality levels. Finished products with high performance profiles originate from these high-quality steels.

Consistent reproducibility makes them preferred grades for high-level industrial applications. The technology of the steelmaking process and the required steel quality determine the most suitable process route. SMS Mevac’s full range of secondary metallurgy technology permits a broad spectrum of combinations. Integrated technologies for atmospheric and vacuum processes determine the choice of the most appropriate routes.

LINE PIPE STEELS
Micro-alloyed line-pipe steels with high strength and HIC-resistant profiles can be produced on BOF or EAF routes. Secondary metallurgy equipment consists of SMS Mevac VD vacuum degassers and LF ladle furnaces for the EAF route, alternatively SMS Mevac LTS ladle treatment stations, RH-TOP recirculation degassers, LF ladle furnaces and an HMP hot metal pretreatment station to serve the BOF route.

EXTRA-DEEP DRAWING STEELS
The EAF route, for example for automotive applications uses SMS Mevac VD-OB vacuum degassers and LF ladle furnaces. The BOF route combines SMS Mevac HMP desulphurization units, LTS ladle treatment stations and VD-OB tank degassers or RH-TOP recirculation degassers.

STAINLESS STEELS
The Duplex process route especially for the production of ferritic grades combines SMS Mevac VOD vacuum oxygen decarburization technology and LF ladle furnaces. The Triplex route is supported by SMS Mevac HMP desulphurization units and VOD vacuum oxygen decarburization technology.

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<td>• Micro-alloyed high-strength steels</td>
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<tr>
<td>• SMS Mevac LF Ladle furnace</td>
<td>• SMS Mevac LTS Ladle treatment station</td>
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<tr>
<td>- Slag conditioning</td>
<td>- Shape control, Ca-treatment</td>
</tr>
<tr>
<td>- Temperature adjustment</td>
<td>• SMS Mevac RH-TOP Recirculation degasser</td>
</tr>
<tr>
<td>- Shape control</td>
<td>- Degassing of H, N, final trimming, cleanliness</td>
</tr>
<tr>
<td>- Cleanliness</td>
<td>• SMS Mevac LF Ladle furnace</td>
</tr>
<tr>
<td>• SMS Mevac VOD Vacuum oxygen decarburization unit</td>
<td>- Analysis, slag conditioning, temperature adjustment</td>
</tr>
<tr>
<td>- Decarburization</td>
<td>• BOF Basic oxygen furnace</td>
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<tr>
<td>- Desulfurization</td>
<td>• SMS Mevac HMP Hot metal pretreatment station</td>
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<tr>
<td>- Final trimming</td>
<td>- Desulfurization</td>
</tr>
<tr>
<td>• EAF Electric arc furnace, deslagging unit</td>
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TERTIARY METALLURGICAL PLANTS / SPECIAL MELTING PROCESSES
VIM, ESR, VAR

TERTIARY METALLURGICAL PLANTS
In 2011 SMS Mevac GmbH started to market its new tertiary metallurgical plants. Clearly reflected at METEC fair in technical presentations to a large number of customers about the field of applications and features. SMS Mevac supplies a comprehensive range of plants, processes and services as full-liner in the tertiary metallurgical sector. This program consists of VIM X-eed® smelting technology, ESR-X-eed® and VAR-X-eed® remelting technology.

- Reliable and safe facilities of advanced technology
- Plant and process design based upon in-house operational know-how
- Sophisticated process automation
- Training
- Customer support
- Trouble shooting
- Supply of spare parts

Products processed in tertiary metallurgical plants feature a variety of unique technological properties in steels of highest purity, super alloys, cast alloys as well as nonferrous metals. Accordingly the high performance, heavy duty materials find application in demanding high tech industries like

- Aviation and aerospace
- Power plants
- Automotive

There is not any alternative technology on the market.

PREFERRED TECHNOLOGIES

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<td>ESR or VIM, ESR</td>
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EXAMPLES FOR MATERIAL APPLICATIONS

Upstream

- Stainless steels
- Duplex stainless
- Ni alloys

Processing

- Stainless steels
- Duplex stainless
- Ni alloys
- Titanium
- Zirconium
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<td>Wear parts for high volume manufacturing</td>
<td>Surface quality, long service life</td>
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<tr>
<td>Valves, fittings and pumps</td>
<td>Surface quality, high corrosion resistance, long service life</td>
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<td>Solenoids, electrodos</td>
<td>Superior technological and magnetic properties</td>
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<tr>
<td>Sensors, magnets, amorphous metals</td>
<td>Superior technological properties</td>
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<td>Drill collars, bearings</td>
<td>Surface quality, high corrosion resistance, long service life</td>
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<td>Turbine blades</td>
<td>Surface quality, superior technological properties, rotating parts application</td>
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<tr>
<td>Discs and shafts</td>
<td>Surface quality, superior technological properties, rotating parts application</td>
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<tr>
<td>Body and engine</td>
<td>Surface quality, superior technological properties</td>
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<td>Fasteners</td>
<td>Surface quality, superior technological properties</td>
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<td>Landing gear</td>
<td>Surface quality, superior technological properties</td>
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<td>Airfoil cores</td>
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<td>Engine shafting</td>
<td>Surface quality, superior technological properties, rotating parts application</td>
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<tr>
<td>Electrical generators</td>
<td>Surface quality, superior technological properties, rotating parts application</td>
</tr>
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**Transport**
- Stainless steels
- Duplex stainless
- Ni alloys

**Storage**
- Stainless steels
- Duplex stainless
- Ni alloys
Vacuum Induction Melting & Casting (VIM) is a high-end process for melting down selected scrap and refining the resulting liquid steel in a powerful manner. The capability to perform ingot casting under vacuum conditions further improves the final product quality. SMS Mevac supplied a 8/18 t VIM unit to a customer in the UK. The plant is to be commissioned in 2015.

**VIM features dedicated vacuum chambers for melting and casting connected by launder and tundish. The crucible has vacuum-tight electrical power supply and can be exchanged easily via advanced lifting system. The mechanical pump system generates extra-deep vacuum. A charger ensures clean material addition under vacuum conditions. Direct slag removal is enabled by integrated deslagging machine.**

**Metallurgical functions**
- “Clean” inductive heat transfer
- Vacuum conditions of < 0.05 mbar
- Massive degassing of steel
- No influence of ambient air (O₂)
- Evaporation of tramp elements
- Narrow chemical steel analysis (in ppm range)
- Precise setting of temperature and excellent homogeneity of melt
- Vacuum casting of electrodes for remelting and semis for forging/rolling
Tertiary metallurgical plants / Special melting processes

ESR, VAR

ELECTRO SLAG REMELTING / VACUUM ARC REMELTING

Common feature of remelting processes are the melt-down of a metal electrode, the metallurgical treatment of the liquid phase and the subsequent uniquely fast solidification an ingot. The ingots produced feature superior material properties as:

- Highest cleanliness (purity)
- No macro segregation
- Extremely homogenous structure of produced ingot for excellent material properties
- No hydrogen flakes

These products represent the top end of technological properties in metals.
ESR – ELECTRO SLAG REMELTING

Features

- Melt-down in liquid slag created by resistance heating
- Inert atmosphere
- Lowest sulfur content and excellent cleanliness
- High yield
- Ingot diameter from 300 to 1600 mm
- Ingot weight from 2 to 160 t

VAR – VACUUM ARC REMELTING

Features

- Melt-down by electric arc under vacuum of 0.004 mbar
- Evaporation of tramp elements
- Utmost degassing
- Excellent cleanliness
- No risk of freckle formation
- Extra-high accuracy of final chemistry
- Ingot diameter from 300 to 1000 mm
- Ingot weight from 1 to 30 t
METALLURGICAL PROCESS ROUTES

In order to achieve the excellent final product properties different process routes are available and applied depending on the individual request.

Hot processing of the ingots from VIM, ESR and VAR to semi-finished product is performed by
- Forging
- Longitudinal forging
- Open die forging
- Forging presses
- Hot rolling

Material processed via single or double melt route is used for components in industrial, chemical and off-shore applications:
- Tooling, moulds for die-casting
- Heat exchanger, nozzles
- Wear parts for high-volume manufacturing
- Valves, fittings, pumps

- Solenoids, electrodes, drill collars
- Bearings, sensors
- Magnets, amorphous metals

Production route
SINGLE MELT
VD/VOD → ESR or VAR

Production route
DOUBLE MELT
VIM → ESR or VAR
Material processed via triple melt route is used for components in aerospace and jet engines applications:
- Turbine blade, disc, shaft body, engine fastener
- Landing gear
- Airfoil cores
- Electrical generators
- Avionics
- Pneumatic ducting

Production route
TRIPLE MELT
VIM \(\rightarrow\) ESR

VIM \(X\text{-eed}^\text{\textregistered}\)

ESU \(X\text{-eed}^\text{\textregistered}\)

VAR \(X\text{-eed}^\text{\textregistered}\)
Vacuum process technologies

VACUUM PUMPS

EFFECTIVE VACUUM TREATMENT
High-performance vacuum pumps from SMS Mevac are the heart of secondary metallurgical vacuum processes. For both recirculation or tank degassing processes, our vacuum pump technologies are tuned to your specific steel conditions and to your individual plant and production requirements.

Our vacuum pump systems precisely control the rate of pressure reduction from atmospheric level to low vacuum pressure. During the various treatment steps the vacuum level is accurately controlled to match the system’s metallurgical needs.

In order to deliver optimum results high suction capacity, low energy consumption and optimal reliability are essential elements of our design.

VACUUM PUMP TECHNOLOGY FOR YOUR PROCESS
Three technologies form the cornerstones of SMS Mevac’s vacuum systems:
- Steam ejector vacuum pumps
- Steam ejectors with water ring pumps
- Dry mechanical pump systems.

STEAM EJECTOR VACUUM PUMP (SVP)
SMS Mevac steam ejector vacuum pumps are multi stage systems successfully in use in steel shops over decades. These pumps still set the state-of-the-art standard and feature the following:
- High performance
- Minimum steam consumption
- Minimum condenser cooling-water consumption
- Direct performance control via nozzles with needle valve technology
- Reliable, long-term operation
- No rotating parts
- Robust design
- Easy maintenance
- Steam saving by water ring pumps in atmospheric stage
- Optional waste gas cooling and cleaning system
The selection of a specific technology depends on the respective conditions in the secondary metallurgical plant. Availability of utilities, metallurgical needs and the balance of operational and investment costs are basic considerations for our individual, high-performance concepts.

ENGINEERING EXPERIENCE
SMS Mevac has decades of pioneering experience in various vacuum pump technologies.

MECHANICAL VACUUM PUMP (MVP)
SMS Mevac mechanical vacuum pump systems feature the following:
- Low operational cost
- High availability and maximum flexibility,
- Minimum electrical power consumption,
- Modular, easy-to-extend configuration for both pump skids and pump systems,
- No water pollution and no requirement for steam generation
- Excellent control of suction capacity and pressure
- Waste gas cooling and cleaning system
- Compliance with ATEX

In 1956 SMS Mevac built its first steam ejector vacuum pump for the vacuum treatment processing of liquid steel. Since 1960, we have also designed plants with mechanical vacuum pumps.

In 1985 our four-stage steam ejectors replaced the former five-stage version for high cooling-water temperatures. For advanced splash control, our RH-SC® with variable steam nozzles was launched in 2000. And in 2006 we introduced our Triple-S-technology for reduced consumption of cooling water.
AUTOMATION SYSTEMS
Automation systems

PLANT AND PROCESS CONTROL SYSTEMS

SMS MEVAC’S AUTOMATION SYSTEMS
Advanced electrical systems, automation and instrumentation bring together the balance of product quality, safety, energy and media consumption and reliable operations. SMS Mevac’s Level 1 and Level 2 automation systems link these functions, allowing highly efficient plant operation.

MANAGEMENT SUPPORT AND CONTINUOUS IMPROVEMENT
Secondary metallurgy automation is linked to the steelwork’s Level 3 system, providing full information and reporting systems and supporting the scheduling of heats.

Metallurgical and thermal models, least-cost calculations and process simulation assist your specialists in continuously improving your processes.

OPERATOR SUPPORT
Ergonomic HMI’s are supported by state-of-the-art technology. Operators obtain up-to-the-minute information to safely control secondary metallurgical processes.

Maximum safety is provided by interlock indication regarding HMI, sequence control, equipment and functional interlocks, pin-pointing failures and monitoring of critical processes such as media flow and possible leakage.

A WELL-PROVEN BRAND
SMS Mevac and SMS Siemag express their great passion for steelmaking by sharing the unmatched X-Pact® automation brand for their plant and process control systems.

This gives additional assurance of highest quality to our customers.
LIFECYCLE-ORIENTED CARE
Secondary metallurgical plants from SMS Mevac are highly reliable and maintenance-friendly. Care for our customer’s plant starts even before handing over.

Our vast spectrum of consulting services begins with the feasibility study – based on the individual strategy of the customer. We discuss alternative solutions with regard to technologies and economics. By using extended 3D simulation programs we fine-tune the final layout of each component.

TRAINING PROGRAMS
Individual training packages provide sound knowledge and motivation to the prospective teams - from operation routines to automation details and safety measures.

A combination of initial off-site training courses at the SMS Mevac headquarters or at suitable partner plants plus continuous on-site workshops provide advanced know-how for successful long-term operations.

MAINTENANCE AND SPARE-PARTS
Monitoring of the plant’s performance by our specialists along with preventive maintenance packages effectively reduce costly downtimes needed for fault-finding and trouble-shooting activities. Our after-sales service supplies the required OEM spare parts for our customer’s plants ensuring continuous high performance of the equipment.

UPGRADING, MODERNIZATION, AND REVAMPING
Depending on your plant’s lifecycle stage, a periodic update of special innovations and improvements provides optimum return on your investment. Our specialists’ recommendations focus on metallurgy, process technology, engineering and automation.

SMS Mevac is very experienced in careful planning to ensure minimum down times for the required activities. Fast return-on-investment after modernization supports our customer’s economic and market targets.

For these reasons, our broad service spectrum provides efficient lifecycle maintenance to our customer’s secondary metallurgical operations.

As a recent development SMS Mevac provides 3-D-laser-scans of existing plants. The service comprises entire production units as well as major components of the equipment. Different applications of the scans either serve to facilitate revamping investigations or to check the correct alignment of equipment.
The information provided in this brochure contains a general description of the performance characteristics of the products concerned. The actual products may not always have these characteristics as described and, in particular, these may change as a result of further developments of the products. The provision of this information is not intended to have and will not have legal effect. An obligation to deliver products having particular characteristics shall only exist if expressly agreed in the terms of the contract.