# NEW DEVELOPMENTS TO ACHIEVE ENVIRONMENTALLY FRIENDLY SINTER PRODUCTION[1]

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**Abstract**

Siemens VAI developed new sintering technologies for the reduction of off-gas volumes and harmful emission concentrations. The Selective Waste Gas Recirculation System – implemented jointly with voestalpine in Linz/Austria, makes it possible to avoid additional environmental loads when increasing sinter capacity by 30%. Concentrations of SOx and NOx were lowered, and dioxin and mercury concentrations were significantly reduced in addition to the specific coke consumption. In a subsequent step, Siemens VAI introduced the MEROS® process in which dust, acidic gases and harmful metallic and organic components from sinter off-gas are removed to levels previously unattained. Design criteria and operational results of both technologies are presented.

**Key words:** Meros ; Sinter ; Environment ; Emissions.

## NOVOS DESENVOLVIMENTOS PARA ATINGIR UMA PRODUÇÃO DE SINTER AMIGÁVEL COMO MEIO-AMBIENTE

**Resumo**

Siemens VAI desenvolveu uma nova tecnologia de sinterização para redução dos volumes de gases e concentrações de emissões nocivas. O sistema de recirculação de gás seletivo-implementado juntamente com a voestalpine em Linz/Áustria faz isso ser possível para evitar cargas ambientais adicionais quando do aumento da capacidade de sinter em 30%. Concentrações de SOx e NOx foram diminuídas e concentrações de mercúrio foram significativamente reduzidas, assim como o consumo específico de coque. Em um passo subseqüente, Siemens VAI introduziu o processo Meros, no qual o particulado, gases ácidos  e componentes nocivos orgânicos/metálicos do gás de sinter são removidos á níveis previamente não atingidos. Critérios de projeto e resultados operacionais das tecnologias de ambas são apresentados.

**Palavras-chave:** Meros; Sinter; Meio-ambiente; Emissões.

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## INTRODUCTION

### eposint – Sinter Selective Waste Gas Recirculation System

eposint, an acronym for **e**nvironmental **p**rocess **o**ptimized **sint**ering, was jointly developed by Siemens VAI and voestalpine at voestalpine's steel plant in Linz/Austria. This solution enables a 30% increase in the sintering capacity without an additional environmental impact. This was a precondition imposed by the local authorities to approve the expansion project. The implementation of eposint resulted in lower absolute emissions of $SO_x$ and $NO_x$. Furthermore, dioxin and mercury concentrations in the offgas were significantly reduced. The specific coke consumption could also be reduced. Alternatively, the application of eposint allows the emission loads of existing sintering plants to be reduced by approximately 30% without a decrease in the sinter production.

The air sucked through the sintering bed provides the oxygen required for the combustion of the fuel that is added to the raw mix and which accelerates the passage of the flame front through the sinter bed. This air volume is considerably higher than required for the complete combustion of the fuel. Sinter offgas therefore typically contains approximately 12–13% residual oxygen, which is sufficient for recirculation to the sintering process after the addition of a small amount of supplementary air. This sinter offgas recirculation leads to the following advantages:

- Significantly reduced off-gas volume, thus reducing investments and operational costs for offgas cleaning. This aspect is becoming increasingly important in connection with ever stricter limit values being imposed for fine dust, heavy metals, dioxins, $SO_x$, $NO_x$, HCl and HF.
- Reduced fuel consumption as a result of waste-heat utilization and CO post-combustion
- Cost-effective solution for reusing existing sinter-plant equipment for a plant-capacity expansion by extending the length and/or width of the sinter strand

In a joint cooperation project between the Austrian steel producer voestalpine Stahl and Siemens VAI (both in Linz/Austria), a new technology – referred to as eposint – was developed to enable the recirculation of sinter offgas to the sinter strand. This system was started up in March 2005 at Sinter Plant No. 5 of voestalpine Linz in connection with a project to expand the sintering capacity by extending the sinter strand length. No modifications were required at the existing suction system, which is comprised of a 3-field electrostatic precipitator, a process fan and an AIRFINE® wet-type gas-cleaning system previously supplied by Siemens VAI.

The eposint process is also suitable for installation in existing sinter plants without a capacity expansion, in order to reduce the waste-gas volume emitted from the stack. In new plants where this process is foreseen, the dimensioning of the total waste gas flow to the stack (collecting mains, fan, waste-gas cleaning, stack diameter and height) can be fully optimized.

### Process features and design aspects at voestalpine Stahl

A series of tests were initially conducted in Linz to determine which wind boxes of the sinter strand should be selected for an optimized gas recirculation with respect to the gas volumes and emission concentrations. As can be seen in Figures 1–4, most emission values reach their peak or are at high levels in the burn-through zone of the sinter bed where the exhaust-gas temperature shows a steep increase.

Therefore, the wind boxes where the burn-through zone was at or near the bottom of the sinter bed were selected for offgas recirculation. It was also determined that the temperature of the recycled offgas should be at approximately the same temperature level as the partial gas flow to be discharged through the stack in order to prevent the temperature from falling below the acid dew point in the offgas ducts.

In comparison with other sinter off-gas recirculation processes where a partial gas flow from the total off-gas volume is withdrawn and recycled to the sintering process, in the eposint process the gas flow for recirculation purposes is only taken from selected wind boxes in the area of the off-gas temperature increase. At voestalpine Stahl this zone is located approximately in the third quarter along the sintering strand at the wind boxes 11–16 on the new extended sinter machine. Figure 5 shows a schematic diagram of the eposint process at voestalpine Stahl.

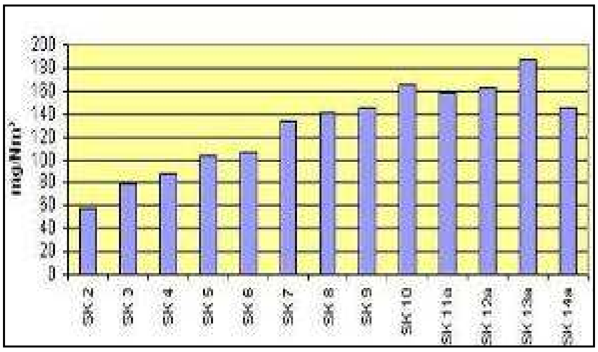



**Figure 1:** Emission trends of chloride.

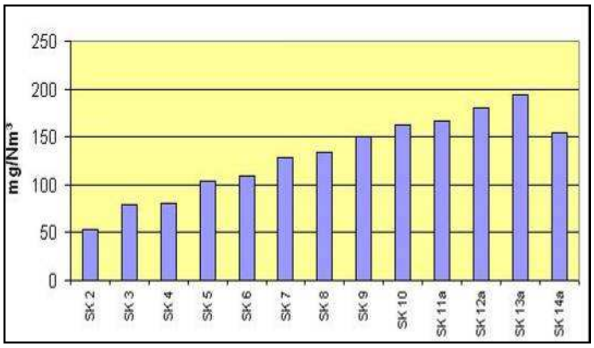



**Figure 2:** Emission trends of potassium.

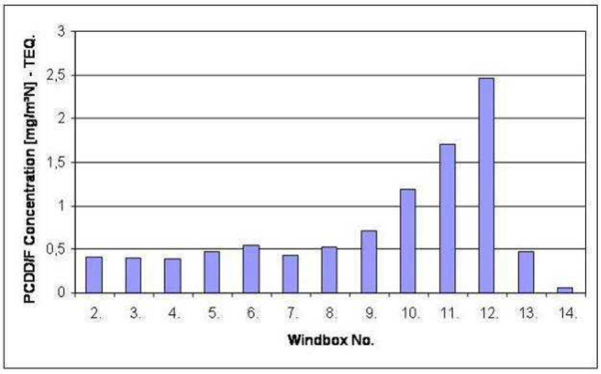



**Figure 3:** Emission trends of mercury.

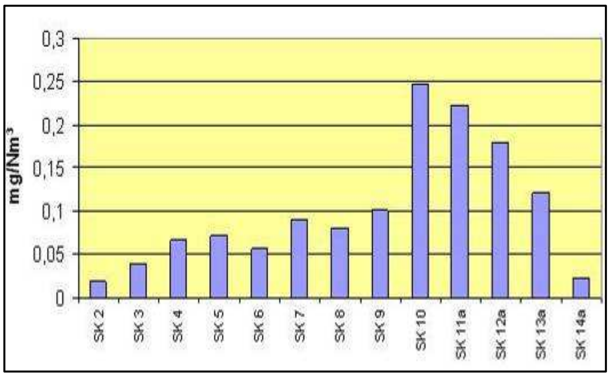



**Figure 4:** Emission trends of dioxin.

A second suction fan (off-gas recirculation fan) was installed parallel to the existing process fan to ensure the necessary suction pressure required for the sintering process. Its function is to exhaust the gases from the wind boxes where the temperature increases and to recycle it to the sinter strand. Depending on the composition of the sinter mix and other operational conditions, the area of the temperature increase along the sinter strand varies. Therefore, in order to ensure an optimized gas recirculation with respect to the burn-through curve and the concentration of dust and pollutants in the offgas stream, the offgas flow through the individual wind boxes can be independently directed either to the stack or back to the sinter strand for recirculation purposes (Figure 6). This unique feature enables optimum response to varying operational conditions and is thus a decisive factor for the high degree of flexibility of the eposint process.

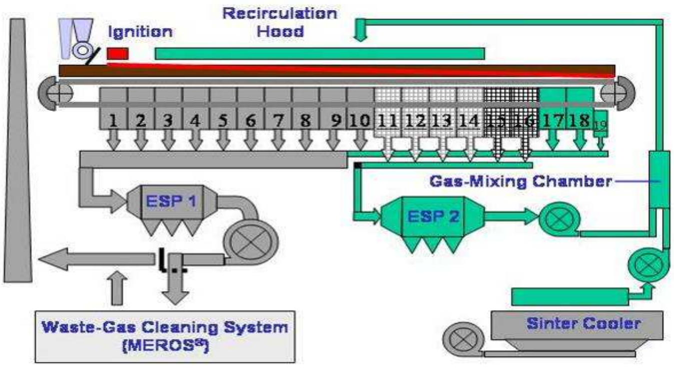



**Figure 5:** Schematic diagram of the eposint selective offgas recirculation process at voestalpine Stahl, Linz/Austria

**Figure 6:** Wind boxes 11–16 are individually switchable to optimize process conditions

Oxygen enrichment of the recycled offgas at voestalpine Stahl is achieved by adding hot exhaust air from the cooler. The cooling area of the existing circular dip-rail cooler was increased to accommodate the higher sintering plant capacity. Moreover, the cooling strand was partially covered to reduce particle emissions to the environment. This installation was thus highly effective for the extraction of hot air from the cooler for oxygen-enrichment purposes, which also contributed to a reduction in the consumption of sintering coke as well as ignition gas.

After passing through a gas-mixing chamber, the offgas is conveyed to the recirculation hood above the sinter strand (Figure 7). As a special feature of the eposint process, the sintering strand is not fully enclosed by the hood structure. It terminates at the side of the pallets where a non-contact, narrow-gap labyrinth seal prevents recycled offgas and dust from escaping from the enclosure. This provides a high degree of safety against CO gas escape to the surroundings due to the prevailing negative pressure. With this solution, only minor amounts of secondary air are drawn into the system. Furthermore, the pallet wheels are not exposed to dust – as with other recycling systems – thus preventing increased wear on moving parts.

In addition to the system-pressure control to avoid gas and dust escape, bypass lines installed between the hood and the process fan are connected to a CO warning system. Therefore, if the pressure difference within the hood approaches zero in the unlikely event of failure of the pressure-control system or for any other reasons, the bypass lines are opened and the gas is directly drawn into the waste-gas collecting mains. This prevents any gas containing CO from escaping to the surroundings.

The recycle-gas hood does not extend to the end of the sinter strand in the eposint process. This allows fresh air to be drawn through the sinter bed in the area of the last few wind boxes which cools the upper sinter layer more efficiently. The improved accessibility of the open pallets offers additional advantages for maintenance work.

**Figure 7:** Hooded sinter strand at voestalpine Linz/Austria showing offgas recirculation ducts to the right.

**Review of emission results following start-up of eposint**

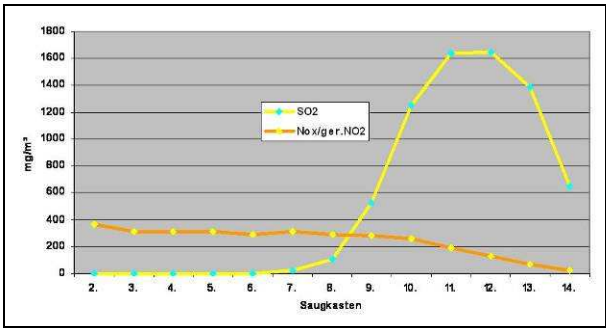
The extended sinter machine was started up on March 28, 2005, and the gas-recirculation system one week later. The emission results are summarized in the following:

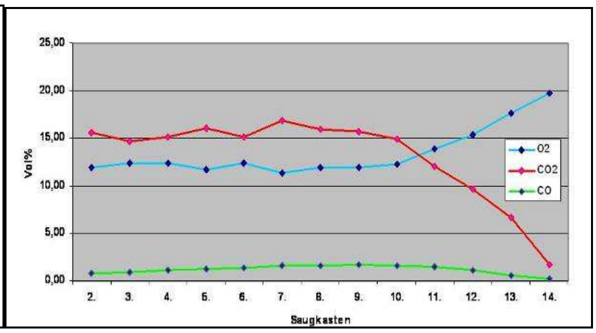
Since the eposint system is optimized in accordance with the typical concentration curves of the major gaseous and particulate air pollutants, specific emissions are considerably reduced in comparison to other offgas recirculation processes (Figure 8). Dust and particle-bound heavy metals are efficiently separated in a downstream electrostatic precipitator. The treatment of this partial offgas flow with high concentrations of dust and pollutants and the subsequent reduction of the pollutant load (high concentrations of heavy metals, alkalis, chlorides, etc. in the dust) in the partial flow discharged to the stack is an important feature of the eposint process.

It could be shown that the concentration of $SO_2$ is highest in the area of the temperature rise along the sinter strand. eposint exhausts and completely recycles this highly enriched gas to the sinter strand. Following the constant sulfur combustion ratio, sulfur is accordingly bound in the sinter itself. Contrary to conventional offgas recirculation processes with non-selective gas withdrawal, the eposint process emits less $SO_2$ to the stack while more is bound in the sinter and subsequently discharged from the sintering machine. Sulfur distribution (gas and sinter) is mainly dependent on sinter basicity and the fuel amount/quality. At voestalpine Linz the $SO_2$ concentrations to the stack with and without eposint remain the same, but a nearly 30% reduced specific $SO_2$ emission results per ton of produced sinter.

Dioxins/furans entering the sinter bed via the recycled offgas are effectively destroyed as they pass through the flame front due to the prevailing high-temperature conditions. Their concentration in the partial flow to the stack is reduced considerably. The CO contained in the offgas recycled to the sinter strand is also combusted in the flame front. The concentration of CO in the offgas exhausted from the sinter bed remains constant due to the equilibrium between C, $O_2$, $CO_2$ and CO in the flame front (Figure 9).

The concentration of $NO_x$ in the recirculation stream prevents $NO_x$ from reforming, because the partial pressure of $NO_x$ is primarily dependent on the conditions prevailing in the flame front and only to a negligible extent on the $NO_x$ contained in the recycled offgas. The $NO_x$ concentration remains practically unchanged compared to an operating mode without offgas recirculation. Thus, the specific $NO_x$ emission per ton of sinter is significantly reduced.




**Figures 8:** Emission concentration trends of $SO_2$ and $NO_x$

**Figures 9:** Emission concentration trends of $CO_2$ and CO

The main production figures before and after the start-up of eposint can be seen in **Table 1**. The targeted output was achieved within less than two months after resumption of sinter plant operations. As confirmed under operating conditions at voestalpine Stahl, fuel savings of 2–5 kg/t of sinter are achieved as a result of the higher temperature of the recirculated offgas and its inherent CO content which generates heat energy upon combustion. After more than one year of operation it was verified that the eposint process had no significant influence on the specific sinter productivity or on the sinter quality in comparison to before.

**Table 1:** Summary of sinter production and emission results before and after start-up of eposint

| | **Before** | **After** |
|---|---|---|
| Coke breeze consumption (kg/t sinter) | 45 | 40–43 |
| Ignition-gas consumption (MJ/t sinter) | 50 | 40 |
| Dust concentration (mg/Nm³//g/tSint) | 46//104 | 38//66 |
| $SO_2$ concentration (mg/Nm³//g/tSint) | 420//952 | 390//677 |
| $NO_x$ concentration (mg/Nm³//g/tSint) | 240//544 | 240 // 416 |
| HF concentration (mg/Nm³//g/tSint) | 1.0//2.3 | 0.6 // 1.0 |

### MEROS – Dry-Type Sinter Off-Gas Cleaning Process

Due to the high sintering temperatures, components with a noticeable vapor pressure such as alkali halides, volatile organic compounds (VOCs) and heavy metal chlorides (e.g., mercury and lead) are volatilized. Recondensation of these components in the off-gas system of the sinter machine results in a high fraction of PM 10/2.5 in the dust emission of sinter plants. Considerable amounts of the sulfur contained in the sinter feed exits with the offgas in the form of the acid gases $SO_2$ and $SO_3$ (sulfur oxides). Other acid gases contained in the offgas are HCl and HF.

In the past, the dust emission limit for sinter plants was 50 mg/Nm³. In the new TA-Luft 2002 (Clean Air Act Germany, which is adhered to by most European countries), the general dust emission limit was reduced to 20 mg/Nm³. However, an exception was made for existing sinter plants. Typical offgas flows of sinter machines lie in the range of 500,000 to 2,000,000 Nm³ per hour. Operational time exceeding 8,400 hours per year, together with the high fraction of PM 10/2.5 in the emitted dust, result in PM 10/2.5 emissions ranging from 200–800 tons per year for a typical sinter plant operated in compliance with actual dust emission limits. In Linz, a mid-size industrial town in Upper Austria, the sinter plant of the integrated steel mill of voestalpine accounted for 14% of the overall PM 10 emissions in 2001. Reduction of PM 10/2.5 emissions was therefore a major challenge.

Due to the high potential to reduce emissions from sinter plants, the environmental authorities in Europe are increasing their focus on emission compounds other than particulate matter, namely $SO_2$, dioxin/furan (PCDD/F), heavy metals and nitrogen oxides ($NO_x$). Therefore, parallel to the implementation of eposint technology, Siemens VAI developed the MEROS process in order to further reduce specific emissions to within the municipally prescribed values. MEROS, an acronym for **M**aximized **E**mission **R**eduction **O**f **S**intering, is capable of lowering dust, acid gases and harmful metallic and organic components present in the sinter off-gas to concentrations previously unattained with conventional gas-treatment techniques.

## General process description

The Meros Process is characterized by a series of treatment steps (Figure 10) in which dust and pollutants still present in the sinter off-gas after the electrostatic precipitator are further reduced in a series of process steps.

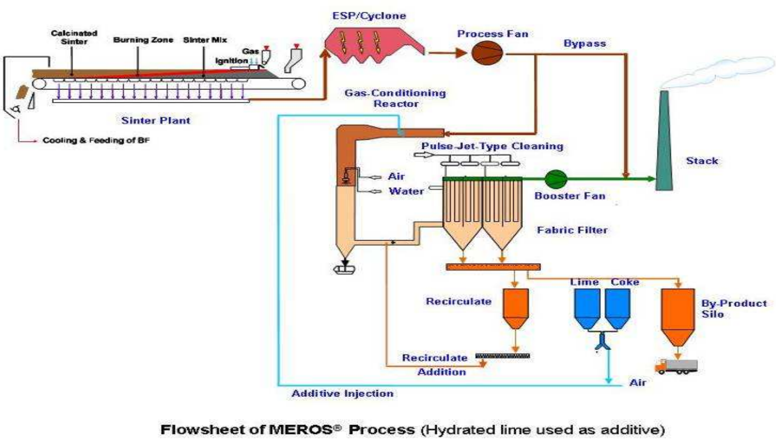



**Figure 10:** Flow sheet of the Meros Process

In the first step of the MEROS Process, adsorbents such as specially prepared lignite coke or activated carbon powders as well as desulphurization agents (sodium bicarbonate or hydrated lime) are injected into the sinter off-gas stream in the counter-current flow direction resulting in high relative velocities (particles vs. sinter gas) – exceeding 50 m/s (Figure 11 and 12). A distributor unit comprised of several injection lances installed along the circumference of the off-gas duct ensures a uniform, homogeneous injection of the adsorbents into the off-gas stream.

The carbon adsorbent physically binds (i.e. adsorbs) the heavy metals, organic complexes (dioxins/furans and VOCs – volatile organic compounds) and sulfur compounds due to its highly porous structure.

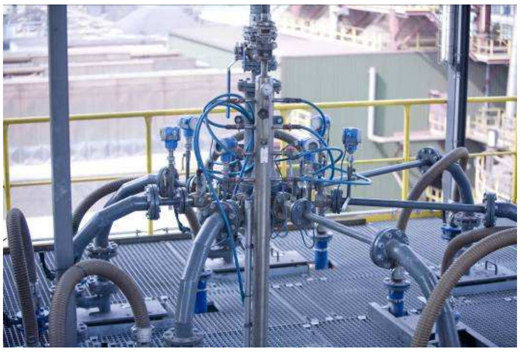


**Figure 11:** Additive distributor

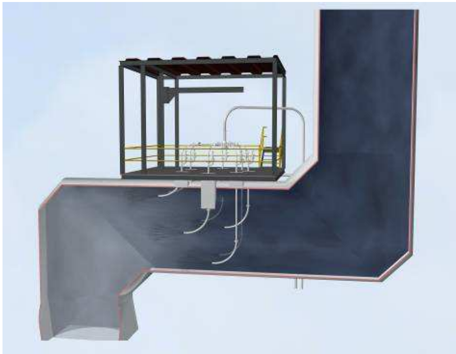


**Figure 12:** Additive injection lances

The injection of specific desulphurization agents into the off-gas stream promotes $DeSO_x$ reactions as well as reactions with other acid gases, e.g., HCl. The relative merits and disadvantages of employing either sodium bicarbonate or hydrated lime for desulphurization purposes are compared in the respective table below. It was shown that approximately 50% of the gas-cleaning activities in the MEROS process already take place during the adsorbent-injection step.

In the second step, the gas stream passes to a conditioning reactor (when sodium bicarbonate is used) where the gas is cooled and moisturized by dual-flow, i.e., water and air, nozzles (Figures 13 and 14). This accelerates the chemical reactions required for binding and removing $SO_2$ and other acidic gas components. This also ensures save and reliable operation even if temperature peakes of the raw gas appear. The off-gas temperature is cooled to approx. 100 ℃ (90-120 ℃) for efficient desulphurization conditions. The moisturized off-gas accelerates the chemical reactions for binding and removing sulfur dioxide. The water-injection rate is controlled by inlet/outlet temperature monitors in such a way that all of the injected water into the system evaporates without excess water droplets remaining.

**Figure 13:** Dual flow water mist

**Figure 14:** Water injection lances

In the third step, the off-gas stream which exits the conditioning reactor passes through a bag filter equipped with special high-performance fabrics where the dust is removed. In order to enhance the gas-cleaning efficiency and to significantly reduce additive costs, the separated dust particles are recycled to a high extent (~95%) to the off-gas stream after the conditioning reactor. A portion of this dust is removed from the system and conveyed to intermediate storage silos for subsequent use in environmentally friendly applications.

## Demonstration Plant and Industrial Application

The technical, operational and economical advantages of the Meros process were first confirmed in a number of test campaigns conducted in a 1:10-scale demonstration plant **(Figure 15)**. at voestalpine from May 2005 to July 2007. The facility's off-gas treatment capacity of approximately 100,000 m³/h was large enough to accurately assess the off-gas cleaning efficiency as well as to determine the necessary design and operational parameters for an industrial plant up-scaling.

An industrial Meros plant was installed by Siemens VAI at voestalpine Stahl (**Figure 16**) on a process-turn-key basis from April 2006 to August 2007. The entire project was carried out with minimal interference to normal sintering and gas-cleaning operations. A total shut-down period of less than five days was necessary for the modification and integration work with the existing gas-cleaning system. The plant was started up in accordance with the contract schedule and up to 1,000,000 m³/h of sinter off-gas can now be treated. However, after actually 18 month of continuous operation, overall plant availability exceeded 99%.

**Figure 15:** Demonstration plant at voestalpine


**Figure 16:** Industrial plant at voestalpine

**Table 2:** Main data of MEROS commercial plant

| | |
|---|---|
| Design gas flow | 620,000 Nm³/h (approx. 1.000.000 Am³/h) |
| Raw gas temperature | 120–160 °C (130 °C) |
| Pressure drop of plant | ~ 2.500 Pa |
| No. of filter bags | 4,760 |
| Filter area | ~ 19,000 m² |
| Cooling water flow | 8–30 m³/h (12 m³/h) |
| Process temperature | ~ 100 °C |
| Dust recirculation rate | ~ 10,000 kg/h |
| Hydrated lime injection | ~ 320 kg/h |
| Lignite injection | ~ 60 kg/h |

## Operational results

During the first 18 months of operation of the commercial MEROS plant (August 2007 to February 2009), the sinter off-gas cleaning efficiency fully met expectations. Dust emissions were reduced by more than 99 percent to less than five milligrams per $Nm^3$. Emissions of mercury and lead were reduced by 97 percent and 99 percent respectively. Organic compounds such as dioxins and furans (PCDD/F) and total condensable VOCs were eliminated by more 99 percent. $SO_2$ emissions were also considerably reduced to less than 300 mg/Nm³ as demanded by authorities.

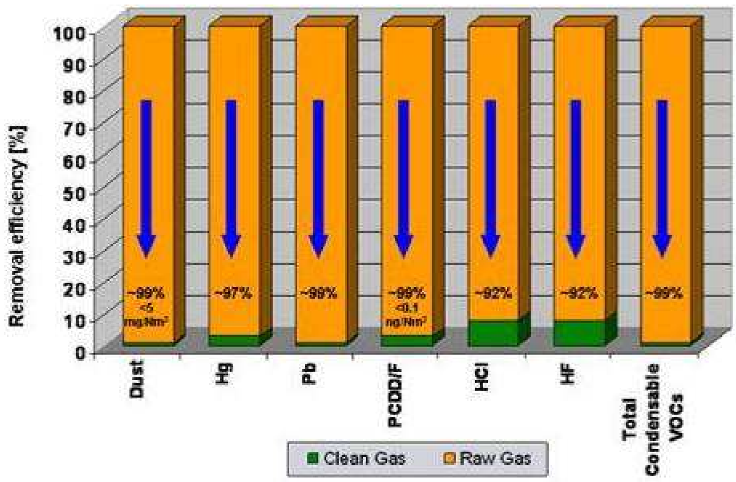



**Figure 17:** Removal Efficiency

*Desulphurization*

Depending on the local requirements and conditions, two principal desulphurization agents can be employed—either sodium bicarbonate or hydrated lime. A comparison of these two agents can be seen in Table 3.

**Table 3:** Comparison of sodium bicarbonate and hydrated lime for use as desulphurization agents

| | **Sodium bicarbonate (SBC)** | **Hydrated lime** |
|---|---|---|
| $DeSO_x$ degree | > 90% (if required)* | < 90% (40–80%) * |
| Stochiometric factor | 1.1–1.2 | 1.5 – 2.5 |
| Residual amount | ~ 70% | 100% |
| Reagent costs | ~ 200% | 100% |
| Exit-gas temperature | sinter raw gas temperature (no cooling) | ~ 100 °C |
| $DeNO_x$ (if required) | ~ 70% gas for reheating to 280 °C | 100% gas for reheating to 280 °C |

** depending on additive quality, sinter gas temperature, conditioning temperature*

- Sodium bicarbonate (SBC)

The use of sodium bicarbonate is preferred when highest $DeSO_x$ degrees are required, if a $DeNO_x$ plant is necessary (or expected in future) or where land-filling costs are specifically high.

Acid neutralization with SBC involves a stage of thermal activation, i.e., when brought into contact with the hot off-gas, the sodium bicarbonate rapidly converts into sodium carbonate with a high degree of porosity and specific surface area.

Figure 18 shows the advantage of the extremely fast kinetic reaction of SBC for DeSOx applications. On the contrary to the use of hydrated lime (Figure 19). SOx clean gas emissions can be controlled be set-point operation. With SBC each desired emission value can be fulfilled by changing the set-point level.

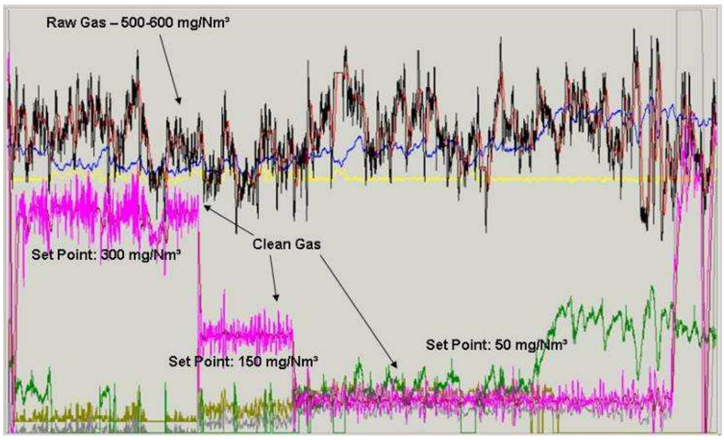



**Figure 18:** Typical DeSOx curve using sodium bicarbonate

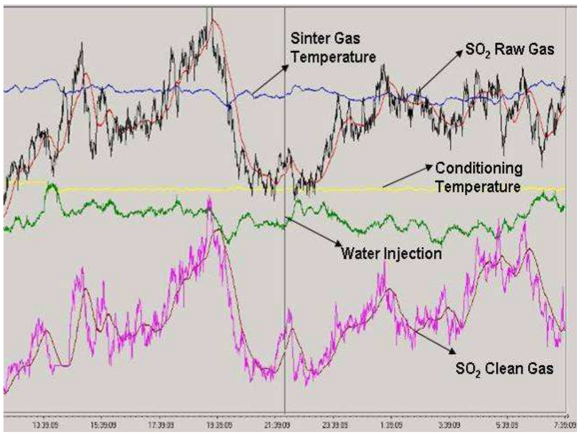



**Figure 19:** Typical DeSOx curve using hydrated lime

- *Hydrated lime (HL)*

The moisturized HL particles react with all acid gas components in the sinter off-gas to form reaction products. It was verified that different HL products show major differences in efficiency for desulphurization. In addition to chemical composition and grain size, the specific inner surface of the lime is a key factor. Advantage of HL is the low material price compared to SBC. HL can also be prepared by slaking burnt lime "in situ". Such procedure shows accelerated reaction behaviour of the HL.

Generally the disadvantage of HL is the relative slow reactivity. The consequence can be seen in Figure 19; the clean gas SOx concentration shows the same shape than the raw gas one. Concentration peaks in the clean gas lead to emission peaks in the clean gas (the removal rate is nearly constant). This fact is disadvantageous if short term emission values (e.g. half hourly values) have to be ensured.

- Sodium hydroxide (SH)

To ensure legal emission target values while optimizing operation costs, an innovative method in combination with HL was successfully implemented at voestalpine MEROS plant (Figure 20).

Whenever SOx concentration increases quick (peak concentration), SH is dosed into the conditioning water. Such increase in pH value accelerates the DeSOx reaction and the clean gas SOx emission level can be kept more or less constant ("peak shaving").

*Heavy metal and PCDD/F elimination*

Heavy metals and compounds thereof with low vapor pressure, like mercury salts, cadmium or lead, are removed as particulates at the filter bags. Since the remaining clean gas dust content is extremely low, these parts of heavy metals easily comply with the current regulations. The gaseous portion of these pollutants and metallic mercury, which has a high vapor pressure, is removed by adsorption at lignite or activated carbon. Various adsorbents have been investigated in order to assess the efficiency for mercury (Hg) elimination from the offgas stream. Removal degrees of more than 97% were obtained either using lignite or with activated carbon injection.

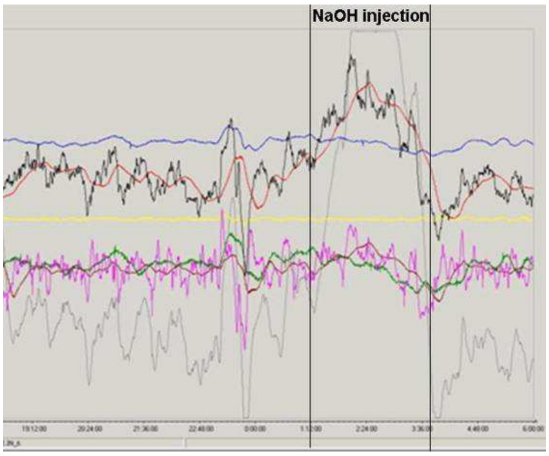



**Figure 20:** Typical DeSOx curve using hydrated lime and NaOH “peak shaving”

*Filter bag material*

A change of a complete set of filter bags is one of the major maintenance cost factors. In addition to the cost factor, an extremely low fine dust concentration of less than 5 mg/Nm³ also has to be ensured in the long term. In order to meet these objectives, attention must be paid to the type of filter bags used. The bags have to deal with submicron particulate matter, high humidity of the sinter gas (hydrolyze), acid gas compounds, high temperatures (up to 200 ℃), high dust loads and high mechanical stress (frequent pulsing cycles).

Therefore, in the pre-selection of fabric filter material, several different filter materials were investigated in the demonstration plant over more than 2 years (19,500 operation hours). Samples of used filter material were taken periodically for testing. The investigation parameters included air permeability, infiltration of dust and tensile braking strength.

It can be concluded, that a substantial difference in performance behavior was found for the different tested filter materials resulting in life times of less than 0.5 years for the poorest material up to extrapolated 10 years for the best one. Based on these investigations the filter material type for the commercial plat was decided.

Figure 21 shows the decrease of textile braking strength in warp and weft direction versus operation time which is one of the decisive criteria for the lime time of a filter bag.

The red lines indicate the minimum values for the braking strength, where the supplier recommends the exchange of the filter bags. After 18 month operation (approx. 12,000 hours) of the commercial plant the excellent results of the demonstration plant could be confirmed and even be outperformed. An extrapolation of the curve allows an optimistic outlook that the filter material could last up to 10 years.

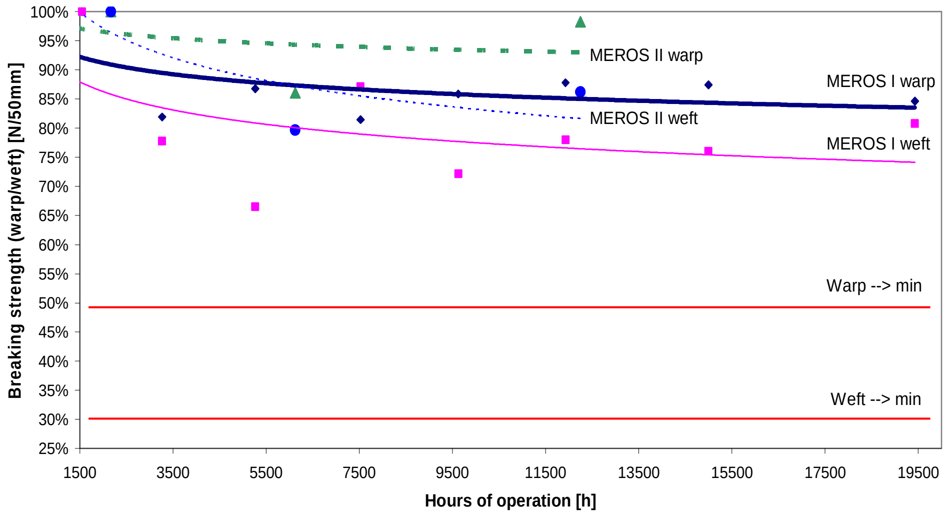



**Figure 21:** Comparison of results for textile braking strength MEROS I = demonstration plant, MEROS II = commercial plant

## Outlook

On March 28, 2008, Siemens VAI received the second order for a Meros plant, this time from the Chinese steel producer Maanshan Iron & Steel Company Ltd. (Masteel). The new facility was installed at the No. 1 Sinter Plant of the company's integrated iron and steel works located in Maanshan, Anhui Province. Up to 1,000,000 $m^3$ of sinter offgas per hour is treated per hour. Siemens supplied process technology, plant engineering and key equipment and also provided training and advisory services. Plant hot commissioning started July 17$^{th}$ without any major problems. Main focus is to remove Sox, whereby the plant is capable to remove >80% of SOx in the offgas.

A third order for MEROS was received late 2008 from Alchevsk Metallurgisches Kombinat (AMK) for two new sinter plants using SBC as DeSOx agent.

## CONCLUDING REMARKS

The installation of eposint and MEROS technologies at voestalpine Stahl Linz, represents a new milestone in the treatment of sinter offgas. As confirmed in industrial plant operations, the removal efficiency for dust, heavy metals, acid and organic compounds from a sinter off-gas stream is thus far unsurpassed in the industry. With these environmental solutions from Siemens VAI, sinter plant operators will not only be able to meet the environmental emission regulations of today, but also those foreseen in the future.

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