MEASUREMENT & ANALYTICS

ABB's Advance Optima AO2000 gas analyzers support SSAB Oxelösund in Sweden to achieve and fully meet the BAT emission requirements

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SSAB Oxelösund, Sweden

Half a decade ago, SSAB took the decision to order eight identical AO2000 systems from ABB with the benefit to be able to replace components and to continue working with trust-worthy products. SSAB also chose ABB for its good reputation and for fast service provided.

Measurement made easy

The project AMS2015 at SSAB Oxelösund was a result of BAT conclusions for iron and steel production being established on March 8, 2012. BAT conclusions contain both requirements for a plant's technical design, methodology for different parts and also emission requirements. Established BAT conclusions must be complied with no later than 4 years from the date of introduction and were complied in March 2016.

BAT, Best Available Technique, can describe that emissions should be monitored periodically (cheaper) or continuously (more expensive) where a plant can always choose the continuous option. The require-ments also differ between different substances for the monitoring method.

The project at SSAB Oxelösund included 2 systems for ladle pre-heaters, 3 systems for the coking plant with one on each battery crust, 1 system for the rolling mill ingot furnaces, 1 system for blast furnace no 4 and rebuilding of an existing system at blast furnace no 2.

Measurements have been carried through with ABB's measuring modules:
- URAS for CO
- LIMAS for NO, NO_2 and SO_2
- MAGNOS for O_2

What are the main benefits with ABB and the Advance Optima AO2000 gas analyzers?
For a general view of the AO2000-installations we ask Mr Thorsten Dormann, Process Engineer, Power Plant:

The project AMS2015 (AMS = Automatic Measurement System) at SSAB Oxelösund was the result of BAT conclusions for iron and steel production being established on March 8, 2012.

"During the AMS2015 project it has been possible to solve just about all upcoming problems with ABB's AO2000 analyzers, which is exellent."

AO2000 is a well-known product to SSAB Oxelösund and they decided to buy identical systems to be able to easily replace components. SSAB's previously installed analyzer technology is just as large as ABB's delivery of the eight systems in the AMS2015 project.

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01 Mr Daniel Andersson, Technician, Instrumentation, Steelworks/Blast furnace.
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02 Cold blast section at SSAB Oxelösund.
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03 Mr Glenn Törnqvist, Technician, Instrumentation, Rolling Mill (second left).
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04 A02040 wall mounted cabinet installed in a container cabin at the coking plant
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05 Probe measuring exhaust gas in the hot rolling mill section.
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06 Mr Per Lundqvist, Process Development, Coking Plant and Mr Thorsten Dormann.

What are the main benefits with ABB and the Advance Optima AO2000 gas analyzers?
For the steelworks/blast furnaces we ask Mr Daniel Andersson, Technician, Instrumentation, Steelworks/Blast furnace:

"In the steelworks/blast furnaces we carry through 12 or 14 analyses. ABB's analytical instruments are user-friendly, easy to work with and the wall-mounted cabinets are working fine. The AO2000 systems offer advantages of connections and now we can easily connect with remote access."

"SSAB has a service agreement with ABB including telephone support and a complete service is carried through once a year. ABB provides service via telephone and IP-address directly to the AO2040 container cabin and always with good results. We also have spare instruments in stock, which can be installed if the current ones should fail."

What are the main benefits with ABB and the Advance Optima AO2000 gas analyzers?
In the rolling mill section, we ask Mr Glenn Törnqvist, Technician, Instrumentation, Rolling Mill:

"The AO2000-system in the rolling mill section measures CO, $NO_2$and NO. AO 2040 is working very well and keep running without any problems. The cooling unit is located outside the cabinet in the rolling mill due to a really tough environment."

"The 40 cm long probe is mounted in the rolling mill. The probe measures the exhaust gas directly from the oven right next to the flue gas channel. The 1st probe in the chimney is working fine and the 2nd probe was earlier clogged, but now solved in a smooth way."

In the summer time it is very hot in the rolling mill and in the analyzer cabinet as well. In order to increase air circulation SSAB has installed a fan in the cabinet. The problems with the condensation arresters have now been solved.

The ABB roll force load cells are working very well and they provide stable roll force measurements. SSAB upgrades the load cell electronics accordingly.

What are the main benefits with ABB and the Advance Optima AO2000 gas analyzers?
At the coking plant we ask Mr Per Lundqvist, Process Development, Coking Plant:

"AO2040 is working fine and so far we have no problems with the measurement data. In an earlier situation we fixed a backup instrument installation in the coking plant in an easy way, using ABB's service support line."

The AO2000-system measures SO_2, CO, NO, NO_2 and O_2. In Oxelösund you find the world's oldest coking plant in operation supplying coke gas to the steel plant. Coke gas is very essential and if not delivered, different parts of SSAB Oxelösund will stop. To produce 10 tonnes of coke you need about 15 tonnes of coal.

"The temperature is 1030 degrees Celsius at the push-outs in the heating/combustion channels. We use strong gas heating in the 24 channel units. The gas temperature is 300 degrees Celsius going into the chimney. "

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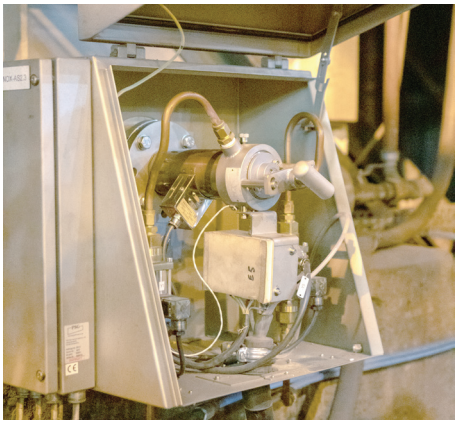

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SSAB in brief
SSAB's vision – a stronger, lighter, and more sustainable world.

SSAB is a leading producer on the global market (with approx. 15,000 employees) for Advanced High-Strength Steels (AHSS) and Quenched & Tempered Steels (Q&T), strip, plate and tubular products, as well as construction solutions. SSAB's steels and services help to make end products lighter and increase their strength and lifespan.

SSAB has a cost-efficient and flexible production system. The production plants in Sweden, Finland and the US have an annual steel production capacity of approximately 8.8 million tonnes.

Leading brands are Hardox, Strenx, Raex, Toolox, Armox and Ramor. Main customer segments and applications are Heavy transport, Construction machinery, Material handling & Agricultural and forest machines.

SSAB Special Steels
SSAB Special Steels is responsible for production of Q&T Steels in Oxelösund, Sweden (with approx. 2,800 employees), as well as for sales of Q&T Steels and AHSS made in Mobile, Alabama in USA, Raahe in Finland and Borlänge in Sweden. In total, there are nine SSAB production lines globally that can produce high-strength steels, which provides for flexibility and ability to grow volume.

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"We also get very good service from ABB. I really like ABB."

Thorsten Dormann, Process Engineer, Power Plant, SSAB Oxelösund, Sweden.

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01 Mr Thorsten Dormann, Process Engineer, Power Plant.
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02 ABB's Advance Optima process gas analyzers, model AO2020 and AO2040.

Mr Thorsten Dormann is summarizing ABB's AO2000-installations at SSAB Oxelösund plant in Sweden: "Over the years we have had very few concerns with ABB equipment. For this project SSAB chose to request uniform systems to easily maintain and replace components when needed. "

"We at the Power Plant in Oxelösund are very satisfied with the AO2000-installations and I summarize this project with – I really like ABB!"

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Overview Advance Optima AO2000

The Advance Optima process gas analyzers have a modular design that offers a long-term security in your investment. Analyzer modules can be freely combined into tailor-made solutions and upgraded or extended with new features at any time. Remote modules are easily attached and centrally operated.

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Advance Optima Series

General data	
19" rack mounted version Size AO2020 (W x D x H)	483 x 412 (597) x 177 mm
Wall mounted version Size AO2040 (W x D x H)	444 x 199 x 412 (597) mm
Housing protection	IP20 IP 54 with connection box IP 65 without power supply/display/control unit Additional housings for external analyzer modules possible
Power supply	85/115/140 VAC, 2.5 A max. 185/230/250 VAC, 1.25 A max.

Other supplied equipment to SSAB

ABB Measurement & Analytics/Force Measurement has supplied the following equipment to SSAB's heavy plate rolling mill in Oxelösund, Sweden:

- One Millmate Roll Force System
- Two circular load cells, 51.5 MN (PFVL 141C-51.5 MN)

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SSAB's heavy plate rolling mill

Mill data	
Mill builder	SMS (CVC 4 hot rolling)
No. of passes	12 to 14
Thickness, slabs	290 mm
Longest plates	43 m
Exit thickness	5 mm

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