

## CASE STUDY: DEPOSITION WATCH

SSAB Raahe plant introduced new innovative technology to extend the cleaning interval for process pipes

– The solution brings significant cost savings and improves the process reliability.

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# THE RESULTS



Number of process pipe cleaning cycles decreased by about a third

## DEPOSITION WATCH FACTUAL BENEFITS

Extending  
pipe cleaning  
interval

Easier  
pipe  
cleaning

Increased  
understanding  
of deposition  
formation

# EXTENDING THE PIPE CLEANING INTERVAL



## BACKGROUND

Deposition buildup in process pipes is a major cost challenge in the process industry, especially in processes involving large amounts of water. In ironmaking, the large material flows bring into the gas scrubbing systems a lot of metals and minerals, such as calcium, which easily forms deposits on the inner surfaces of the process pipes.

Over time the buildup of deposits will cause clogging in the pipelines, and will hinder the operation of most measuring devices. The measuring instruments are typically designed for conditions in which they are supposed to stay clean. Such instruments include, for example, conductivity-based measuring devices and mass flow meters.

At SSAB it was known that the background conductivity of the process water has a significant effect on the pipe fouling rate. This was also verified by laboratory tests on process samples.

SSAB wanted to find a solution in which the background conductivity could be measured and transferred in real time to the process control system. Therefore, a measuring device was needed to measure the conductivity of the process water through the deposit layer in order to utilise this data in process control.

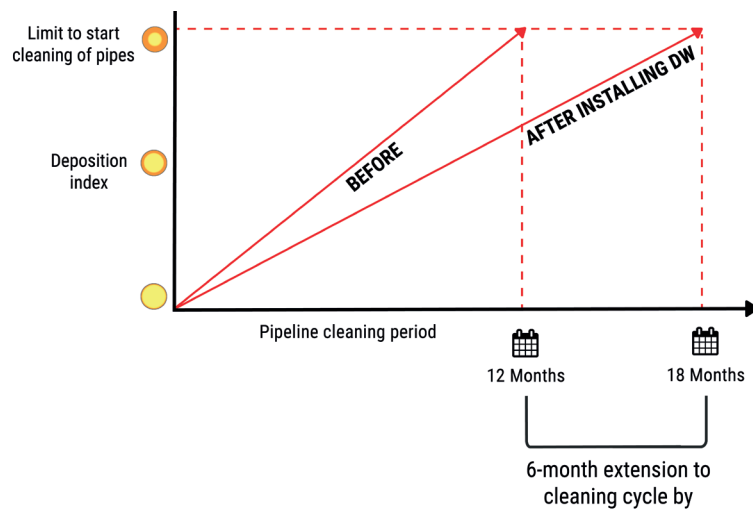
# THE INNOVATION

SSAB decided to pilot the Deposition Watch pipe sensor developed by Rocsole. The Deposition Watch pipe sensor measures the deposition trend, i.e. the change in the thickness of the deposit.



Deposition Watch pipe sensor

The principle of the deposit measurement

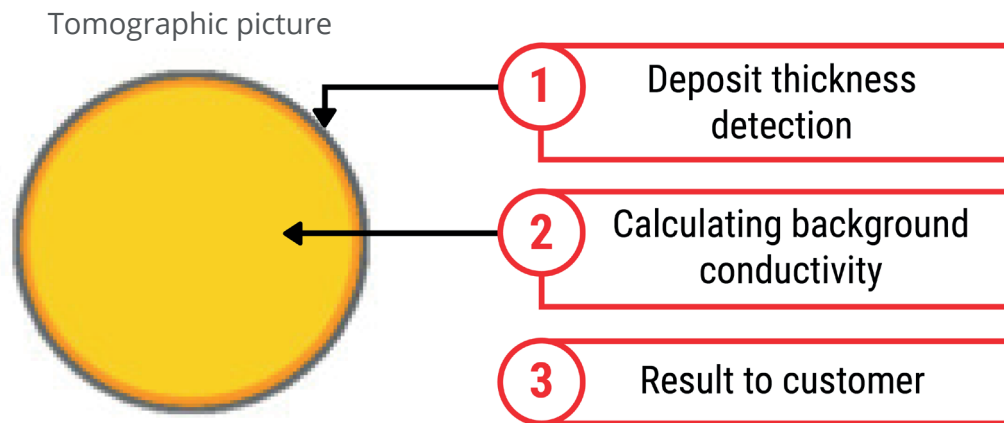


- 1 Optimize process parameters
- 2 Optimize chemical feed

To solve the problem, SSAB decided to pilot the Deposition Watch pipe sensor developed by Rocsole. The Deposition Watch pipe sensor measures the deposition trend, i.e. the change in the thickness of the deposit. The device can also simultaneously analyse, among other things, the flow conductivity through the deposit. During the commissioning phase, laboratory measurements and conductivity indices produced by the Deposition Watch sensor were compared. They were found to produce matching trends. Deposition monitoring, which until then had been carried out manually, could thus be automated.

In addition, the new system enabled a better understanding of deposit buildup in the day-to-day real-time process control. Based on the trial runs, a new model was created for the process background conductivity, with the aim of minimising the buildup of deposits. In this way it was possible to extend the cleaning interval of process pipes. As a result, the number of process pipe cleaning cycles decreased by about a third. At the same time, the process usability increased by an amount corresponding to the reduction in cleaning times. In other words, the pipeline remained productive.

# THE INNOVATION



Rocsole's See Beyond tomography technology, where a pipe-shaped measuring instrument takes a cross-sectional snapshot of the inside of a process pipe.



A 6-inch pipe sensor used at SSAB with about two millimetres of calcium carbonate deposited on the pipe wall. Rocsole's See Beyond technology measures the deposit layer and the flow conductivity trends in real time.

## STATEMENTS

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TIMO PAANANEN  
SSAB

"The Deposition Watch has been in continuous use for two and a half years. The device clearly resulted in a better understanding of process pipeline deposition management. The device enabled us to monitor the impact of various development measures on water quality and deposit buildup. In this way, we were able to find the conditions that reduced deposition, thus extending the pipe cleaning interval. In addition, we were able to influence the properties of the deposits, which made it easier to clean them. These factors create a competitive advantage for SSAB in the form of reduced process costs and increased productivity. There are now fewer scheduled process stoppages, and the pipelines are in productive use with fewer cleaning cycles."



PASI LAAKKONEN  
CEO at Rocsole

"The Deposition Watch device, which has now been introduced at SSAB, represents Rocsole's latest product with 'See Beyond' principle in terms of measuring technology and software. The solution enables simultaneous measurement of the trend of deposition on the pipe wall, as well as flow properties, such as, in SSAB's case, the background conductivity. Deposition measurement is the basis for all the measurements which allow us to see through the deposit layer in accordance with the 'See Beyond' principle."

**SSAB** is a Nordic and US-based steel company operating in the global market. The products and services offered by the company have been developed in close cooperation with customers. The company's vision is to achieve a stronger, lighter, and more sustainable world. SSAB employs about 15,000 people in over 50 countries and has production facilities in Sweden, Finland and the United States. In 2016, the company's net sales were SEK 56.4 billion. The company is listed on NASDAQ OMX Nordic Stockholm and, secondarily, on NASDAQ OMX Helsinki.

For more information, visit: [www.ssab.com](http://www.ssab.com)

**ROCsole** is the world's leading provider of tomographic equipment for the process industries. Rocsole's clients include some of the largest oil and gas companies in the world. The company's key assets include tomography, agile development of solutions in cooperation with the client, and innovative and progressive personnel. The company headquarters and technology centre are situated in Kuopio, Finland. In addition, Rocsole has a sales and maintenance company in Houston, Texas, as well as a global network of sales representatives and subcontractors.

For more information, visit: [www.rocsole.com](http://www.rocsole.com)

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SEE BEYOND.