Newsflash 2, December 1996

Section: Heat Exchangers using sea water. No 1

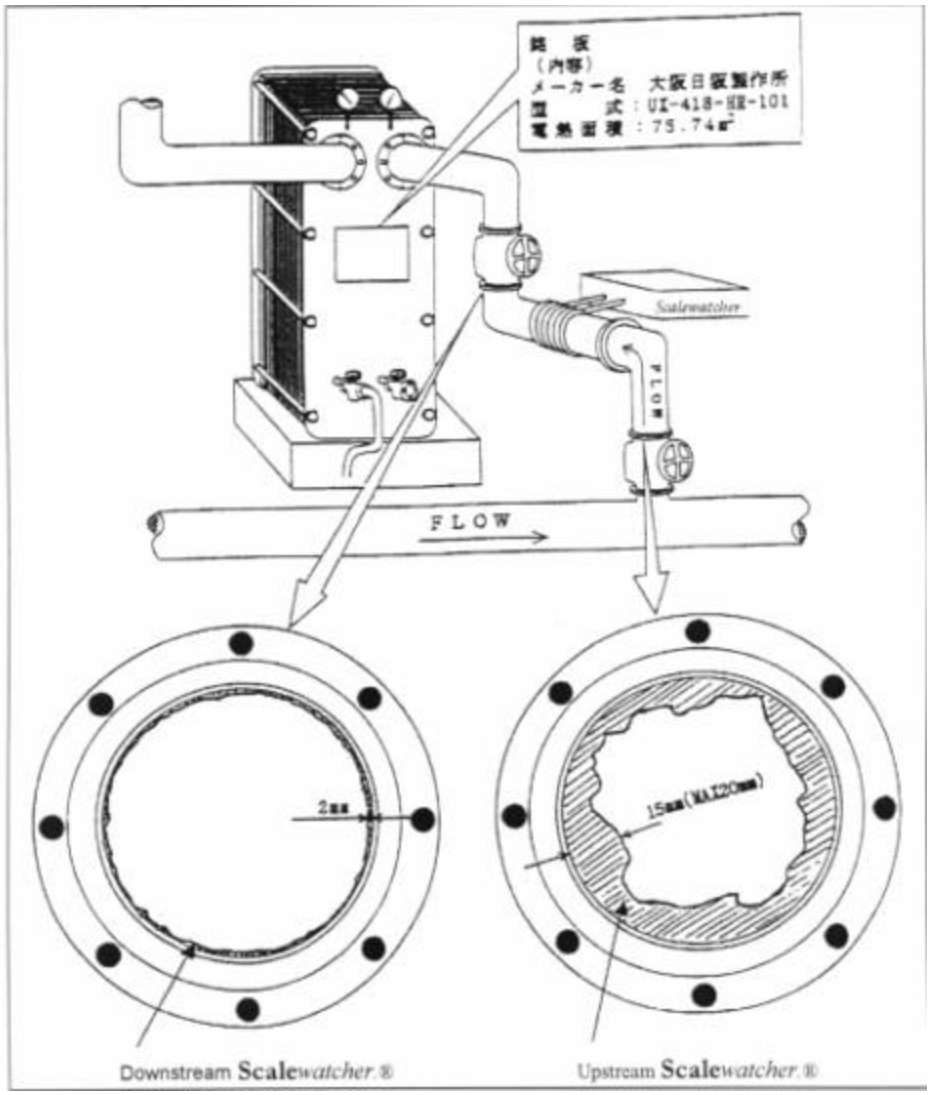
Report of experiments on the prevention and removal of scale using "**Scale***watcher*™"

The company

The end-user is Nippon Steel Chemical Co., Ltd. in Kitakyushu, Japan.

The process

The company uses sea water to cool its plate heat exchanger. See the drawing.



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The problem

The pumped sea water includes quantities of oysters and other crustaceans which adhere together with calcium inside the pipes and heat exchanger. In addition, sludge is also drawn in with sea water and settles in the holes created by the scale. Scale inside the 100 mm (4") pipe (inlet side) builds up to an average of 15 mm (0.6") but can reach a maximum of 20 mm (0.8") and reduces the pipe opening to around 70 mm (2.8"). By using sea water as a cooling agent, the inside pipe diameter has been reduced drastically, which in turn restricts the sea water supply causing less effective cooling.

The experiment

The company purchased a **Scale***watcher*® unit to protect the heat exchanger which was fitted on the water inlet pipe. See picture 1.

1

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After three months the pipe was taken down for inspection. The inlet flange just upstream of the **Scale***watcher*® is shown to be still polluted (picture 2). Downstream of the **Scale***watcher*® unit, the pollution has been significantly reduced. The scale build-up has been dramatically reduced from 15 mm (o.6") to just 2 mm (0.07") (picture 3). See also the drawing where A is downstream and B is upstream **Scale***watcher*™.

Conclusion

Scale*watcher*™ has removed the build-up of scale in the pipes and heat exchanger with the result that equipment is now working at maximum efficiency. The company does not anticipate any further problems in the operation line which will allow continuity without downtime for cleaning. Cleaning costs have been USD 14,000 per event, with a frequency of five times in two years

Source

SKA Ltd., Tokyo, Japan.