



SETTING THE HIGHEST STANDARDS

# HOW SANDVIK'S SAF 2304<sup>®</sup> DUPLEX HEAT EXCHANGER TUBES IMPROVE ON-STREAM TIMES AND PERFORMANCE

Nitrogen Fertilizer producers continuously search for better on-stream times and performance of their plants. Any unplanned shut down and lower performance is very costly.

Carbon steel and stainless steel tubes in cooling water coolers like the ammonia condensers and compressor inter-stage coolers typically suffer from several failure modes both from process as well as cooling water side. For example chlorides in the cooling water on the shell side of a heat exchanger can cause cracks in normal stainless steel tubes. In the shell side of a heat exchanger chlorides can accumulate in dead pockets or under fouling and can cause chloride stress corrosion cracks even when the average chloride levels are relatively low. Failing tubes require a shut down, need to be plugged and lead to lower performance figures.

SANDVIK SAF 2304<sup>®</sup> Duplex heat exchanger tubes are resistant to these failure modes avoiding unplanned shut downs, improving on-stream times and the performance of your plant.

Furthermore its higher strength figures allow for smaller tube wall thicknesses.

A simple re-tubing of the heat exchanger is possible due to fact that SANDVIK SAF 2304<sup>®</sup> Duplex has similar thermal expansion figures than carbon steel and stainless steels.

**SANDVIK SAF 2304<sup>®</sup> duplex heat exchanger tubes greatly reduce the life cycle costs of your failing cooling water coolers.**



SANDVIK SAF 2304® Duplex heat exchanger tubes have been already installed amongst others in an ammonia plant in India and successfully working for more than twelve years.

#### FACTS

SANDVIK SAF 2304® Duplex heat exchanger tubes

#### Function

- Replace failing carbon steel or stainless steel tubes in cooling water coolers

#### Benefits

- Avoid shut down, improve on-stream times and performance
- Allow smaller wall thickness and simple re-tubing
- Reduce life cycle costs

#### CONTACT DETAILS

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