



CASE STUDY

INDUSTRY: REFINERIES



CUSTOMER: Shell's Pearl GTL

LOCATION: Ras Laffan, Qatar

BACKGROUND: Shell's Pearl GTL is the world's largest plant to turn natural gas into cleaner-burning fuels. Armstrong International performed an audit to identify the root cause for severe erosion in the line drains of the high pressure saturated steam distribution system as reported by site maintenance.

SCOPE OF WORK: A site-wide steam trap survey conducted by Armstrong indicated extremely high condensate loads on the high pressure saturated steam distribution mains.

The high pressure saturated steam is generated by 36 Syngas Effluent Coolers (SEC) are each capable to generate 176lb/hr. (80 t/hr.) of saturated steam at 1070 psi (74 bar). For this particular audit, a special high pressure version of Armstrong's QM-1 steam quality measurement manifold was built. Measurements indicated that steam from one SEC contained more than 6% water which clarifies the excessively high condensate loads on the line drains and erosion leaks.

Additional steam quality measurements are expected to confirm whether the low steam dryness fraction is due to SEC design or due to mechanical failure of the internals of this particular SEC.

Depending on the result of additional measurements, Armstrong recommended to repair the SEC internals (demister) and/or to install additional steam separators on each SEC.

BENEFITS: The plant's safety and reliability of their high pressure saturated steam distribution system and condensate return system significantly improved. The risk for water hammer was also reduced.