CASE STUDY

Pipeline Retrofit Saves Energy and Improves Reliability

A major producer in the Russian oil market operates hundreds of locally manufactured pumps on oil pipeline duties. Various sizes cover flows of between 5000 and 10,000 m³/h. The pumps suffered poor reliability, had low efficiency and there was little parts interchangeability between the various sizes. Sulzer retrofit engineers updated the pump hydraulic and mechanical design whilst retaining the existing casings. Parts interchangeability minimized spares for the pumps.

Typical pipeline pumping station

The Sulzer difference

As one of Sulzer core business segments, the oil and gas industry runs sophisticated production and pipeline transportation processes requiring reliable pumping solutions that meet stringent industry specifications.

The challenge

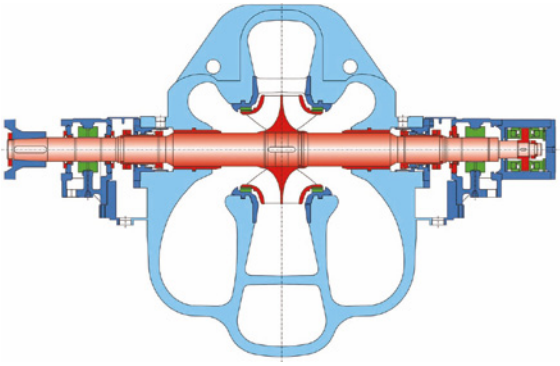
The original pumps suffered from major seal and bearing life problems with a typical life of only 12 months. The hydraulic performance of the pumps was below the level Sulzer would expect for this type of machine. As the cost of running the pumps is the most significant operating cost of a pipeline there were potential major savings to be made by reducing power consumption. The various pump sizes had little or no common parts which added to the cost of maintenance and increased complexity.

The solution

5 new impellers and 4 casing inserts cover the specified range of flows. The parts were custom designed to fit the existing casings using a 3D model that was generated from Faro arm measurements. The new hydraulics improved efficiency by nearly 10% reducing power consumption by up to 600 kW per pump. New bearings and mechanical seals coupled with a more robust shaft design reduced vibration and provided an improved environment for the new mechanical seals.

Customer benefit

Sulzer hydraulic upgrades reduced power consumption by between 500 and 600 kW per pump resulting in a significant saving in operating energy costs. In addition to this a full mechanical redesign by retrofit specialists improved seal and bearing life, increasing reliability and extending maintenance intervals. Common component parts and modular sub assemblies provided a significant simplification in spares stock holding to further reduce maintenance times and complexity.



The upgraded Sulzer pump design using the existing casings

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Applicable markets
PRN, oil and gas

Applicable products
Retrofit