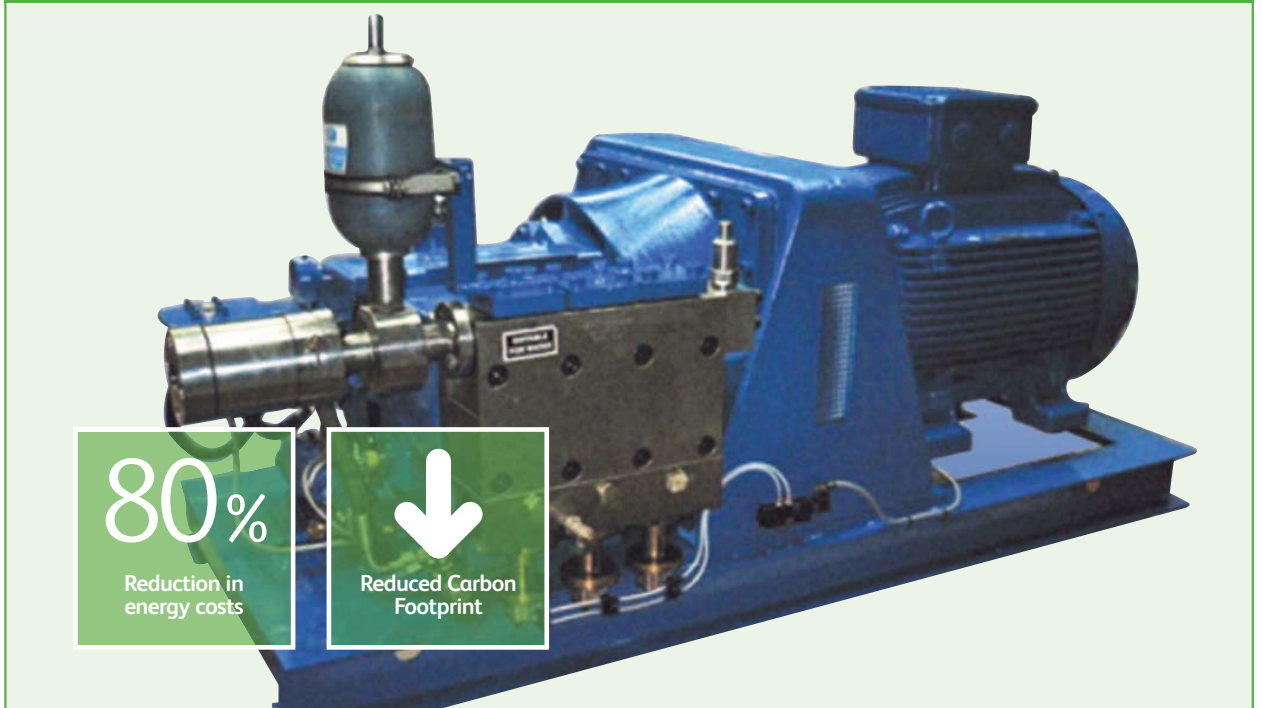


Vallourec Mannesmann

Cuts energy costs and reduces
Carbon Footprint



Vallourec Mannesmann Oil and Gas (UK) Ltd. (VMOG UK) is the only manufacturer of oilfield country tubular goods (OCTG) in the UK, and the largest supplier to the United Kingdom Continental Shelf (UKCS). The VMOG Lanarkshire facility has a modern heat treatment and threading production line, where it performs quenching and tempering, tube threading operations and produces couplings with diameters ranging from 5" to 14".

Project Background

Investment in a new tube production line required delivery of high pressure water at 220 Bar and flows of 500 L/min to the de-scaling jets. The process water had to be supplied at varying flow rates depending on the pipe size. De-scaling of the tubes takes approximately 16 seconds and on average, there is a 90 second delay period before the next tube is processed when there is no demand for jetting.

The VMOG management team outlined the criteria the investment had to fulfil to meet its group policy to minimise the environmental impact. These criterias included: improve energy efficiency, reduce maintenance time and costs, reduce waste water and treatment requirement.

The engineering team stressed the importance of response time to the jetting process, and the change in flow demand due to nozzle wear were critical to maintain high quality tubes and the ultimate success of the installation.

1. Tube manufacture

De-scale process cleaning surface prior to threading.

2. Stock Tubes at Lanarkshire

Tubes ready for shipment.

3. RMI's S300 Pump

As supplied complete with variable speed drives and controls.



Solution

The RMI design team worked with VMOG engineers to determine the most efficient flow and pressure requirements using high pressure pumps from the S200-300 range.

A detailed examination of the process cycle demonstrated that the addition of RMI VSD variable speed drives and controls would deliver significant additional annual savings and environmental benefits over the full life of the installation.

Benefits

In a traditional system, installation pumps will run continuously, irrespective of the de-scaling jet actual requirements and the excess (surplus) pressure is dissipated through a pressure relief valve. Therefore, even running at idle speed the installation continues to use up to 18% of the full motor power. A traditional installation would also be designed oversized by 10% to allow for nozzle wear. In this instance that would not have been possible due to the site power restrictions.

Energy Savings

Using variable speed technology RMI achieved two power savings. First, when the production facility is processing smaller tubes, the demand for flow reduces from 508 L/min to 382 L/min which requires only 147.4kW as the pump is running at a reduced speed. Secondly, between de-scaling runs, the pump is put to a sleep mode function when it is switched off completely and as such, draws no power at all.

When all the additional costs of installing variable speed drives and the associated controls are taken into account, the payback period is very impressive being less than two years. Not only has the installation significantly reduced the energy savings and resultant carbon footprint, but as the pumps are held in the sleep mode for much of the time there are hidden savings in pump repair and maintenance costs. The demand for treated water was also reduced providing an additional saving of 4kw/hr.

Energy Savings

Energy cost fixed speed	£35,122
Energy cost variable speed	£7,105
Cost saving per annum	£28,107

Service Savings

Maintenance time	£2,500
Spare parts	£5,750
Water treatment	£2,304
Total cost savings	£10,554

Installation Costs

Drives	£50,000
Controls	£1,500
Total additional costs	£51,500

Payback Period

1.3 years

Carbon Footprint

Reduction in CO2 emissions:
(using Carbon Trust Calculator)
151 tonnes/annum

Equipment Installed

- S300 Pumps c/w 80mm rams
- 220kW Electric motors
- 220kW Control panel complete with variable speed drives and auto change-over facility
- Water Filtration system

“We selected Armstrong RMI pressure systems to complete the supply and commissioning of the equipment after carefully studying their power savings proposal which has proved to be a great success. We will look to install variable speed driven pumps in future systems.”

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