Badger Meter Europa

Application brief

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Flexible and reliable solution for dosing low flow rates of refinery feed stocks at elevated pressures

"The removal of nitrogen and sulfur from refinery feedstock is one of the most critical processes in the production of transportation fuels. The global trend towards increasingly-stringent emissions standards places a great burden on refiners and catalyst suppliers to develop new and improved hydrodesulfurization (HDS) and hydrodenitrogenation (HDN) catalysts and processes.
The ILS-Integrated Lab Solutions Company based in Berlin was approached by a major European refiner to develop a highly flexible, 6-paralleltesting unit capable of performing benchmark testing on HDS and HDN catalysts.

Task

The client specified that the unit had to be capable of operating with a wide variety of feedstocks ranging from light components like straight-run gasoil (SRGO) up to much heavier and viscous vacuum gasoil (VGO). The latter requires heating the dosing section to above 100 °C to reduce the feed viscosity sufficient to pump.
Very low-feed flowrates on the order of 0.1-5ml/min and high pressures of up to 200 barg were required as well. The presence of sulfur- and nitrogen-containing organics places additional constraints on the choice of elastomers as classic seals like Viton will typically degrade with these feedstocks.

Solution

Badger Meter was able to provide fine-dosing valves for this application, capable of covering this viscosity flow-range. By using recycle membrane pumps to generate the necessary pressure head and controlling the Badger valves in combination with Coriolis mass-flow controllers, ILS could provide a robust dosing solution to this client providing maximum flexibility and reliability. Additionally ILS was able to use Badger valves for precise liquid level control in the stripping section of this unit.
By using Badger valves both in the upstream feed section and downstream stripping section, the client has a solution which can easily be maintained and service, requiring a minimum number of replacement parts on stock.
Close collaboration with Badger's competent service group was elemental to the successful implementation of this solution. The unit has been successfully commissioned and the client is very pleased with the performance."