

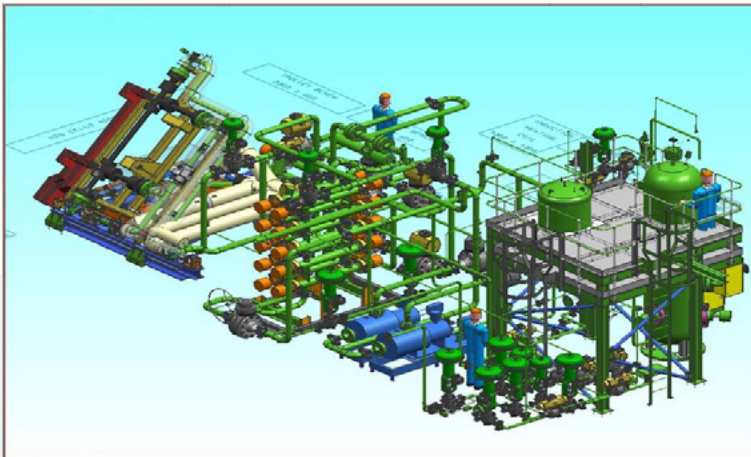


FLUIDFLOW
PRESSURE DROP SOFTWARE

Assystem

Project Overview:

Assystem is currently responsible for the design, procurement, installation and commissioning of a series of process facility test rigs. The first and largest of these development rigs was the Safety Component Rig. The rig is used to validate the performance of a safety critical component. The purpose of the rig is to validate flow conditions through various test pieces within a test chamber. The rig supplies water at very high pressures and temperatures from a pressurised loop which is then passed through the test chamber, which is capable of being manipulated to simulate sea conditions.



The Challenge

To size/select a complete set of control valves and circulation pumps to ensure the full range of required flow conditions were achievable, and identify any required changes to the initial rig layout.

The test rig was fitted with a bank of integrated electrical heaters, which can heat the rig up to temperatures in excess of 300 °C, and can be pressurized up to 150 bar with the attached high pressure low volume pump. These extreme operating conditions proved to be very restrictive in the range of available components that would be suitable for the rig.

Due to the significant range in required flow conditions, from 0.8 kg/s right down to 0.02 kg/s, it was identified that a pair of circulation pumps in parallel would be required, such that only one pump in isolation would be used to meet low flow conditions with two pumps operating in parallel for high flow conditions. In addition, a bypass loop was introduced so that any surplus flow could be diverted away from the test section without risk of dead heading the circulation pump.

An initial pass of the rig layout was performed in FluidFlow by using generic valve data based on the

Customer Profile

ASSYSTEM MARINE BUILDING

Challenge -

To size and select a complete set of control valves and circulation pumps to ensure a full range of required flow conditions were achievable and identify any required changes to the initial rig design layout.

Solution -

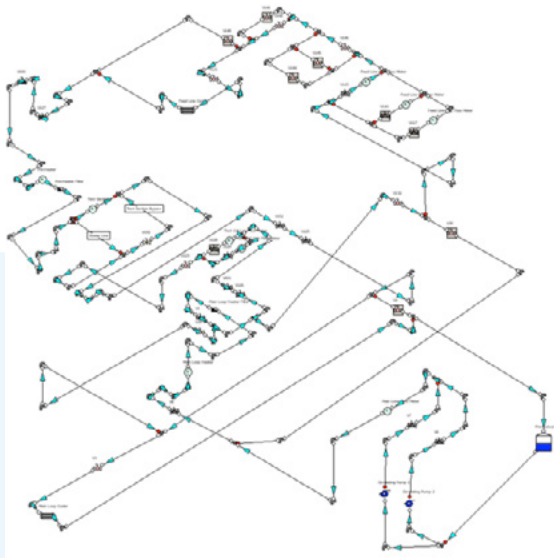
The Assystem team was able to develop a baseline design to determine pump duties, line sizes, valve performance requirements and understand the overall plant performance. From this analysis, Assystem was then able to liaise with their valve suppliers to obtain Cv data for off-the-shelf valves and pumps. This data was then added to the FluidFlow database allowing Assystem to verify that the selected components would allow them to achieve the range of flow requirements set out by the customer.

Benefits of using FluidFlow -

- Accurate prediction of valve and pump performance.
- Fact & efficient design development.
- Easy to use.
- Saved significant amount of design & analysis time yielding cost savings to customers.

connecting pipework size and pressure loss coefficients representing other equipment (e.g. heater banks) within the main circulation loop. In combination with the auto pump sizing feature, this allowed Assystem to obtain a basic duty curve for the circulating pumps across the range of operating scenarios. They were then able to liaise with their suppliers and obtain a pump curve that was sufficient for their flow requirements.

Assystem modelled the suppliers pump curve data within the FluidFlow database, and re-ran the analysis to verify the suitability of the pump and determine whether the generic valves could be optimised to increase efficiency and performance of the rig. With the results from this analysis iteration, Assystem were able to liaise with their valve suppliers to obtain Cv data for off-the-shelf valves. This data was then fed back into the FluidFlow database so that they could verify that the range of valves and circulation pumps selected would allow them to achieve the range of flow requirements set out by the customer.



Conclusion -

Due to the high cost of components and tight time-scales, it was vital that the component selection process was efficient and accurate. With the aid of fluidflow, Assystem were able to select a range of valves and circulation pumps necessary to achieve the demanding range of flow conditions identified by the customer in a timely and efficient manner.

Testimonial

"I have used fluidflow on a number of occasions across a wide range of projects. I find the user interface easy to use, and the general analysis process is laid out in a logical manner. Using fluidflow has saved us significant amount of analysis time, which we are able to pass on to our customers as a cost saving."

Jonathan Hughes, Senior Stress Engineer, Assystem.

About FluidFlow

FluidFlow is the software to design any pipe flow system. With FluidFlow, you can quickly design and analyze; incompressible, compressible, two-phase, non-Newtonian, settling slurry, pulp and paper pressure drop systems within one single package. Thermal analysis is also included with comprehensive databases. FluidFlow typically saves engineers 80% time vs Excel and 40% time vs competitor packages



FluidFlow Headquarters

Toll Free: +1 888 711 3051
Telephone: +44 28 7127 9227
Fax: +44 28 7127 9806

Sales

inquiries@fluidflowinfo.com

Support

support@fluidflowinfo.com

Training

training@fluidflowinfo.com

Consulting

consulting@fluidflowinfo.com