Sterling Fluid Systems test one of the largest cooling water pumps in the world

One of the world's largest cooling water pumps is built and tested by Sterling Fluid Systems. It will be used in a new power plant in Neurath, run by one of the Germany's largest power producer -RWE.

The test was performed at Sterling's works in Ludwigshfen, Germany, on 29th November 2007. The test was performed under strict conditions with more than 50 candidates from the power industry present to witness it. The vertical pump weighs 82 tons and pumps a flow rate of 50,000 m^3/h.

The cooling water pump will be used in the new power plant at Neurath, in the region of Grevenbroich. The plant is run by RWE Power – one of Germany's largest power producer, and the third largest in Europe. Together with the nearby RWE Frimmersdorf power plant, the plants between them have an output of 4,600 MW, making Grevenbroich the largest power producing district in the whole of Germany.

Figure 1. The RKZA pump during assembly

RWE have successfully commissioned a total of 16 units at the Frimmersdorf power plant between 1955 and 1970, and a further 5 units in Neurath between 1972 and 1976. Their order for Neurath consisted of four cooling water pumps and ten condensate pumps in total. They will be installed in the lignite fired section of the plant, each block having a capacity of 1,100 MW. It is predicted that it will save six million tonnes of carbon dioxide every year compared to the old facilities.

Figure 2. RWE Neurath

Power Generation

The cooling water pumps sit close to the 128m high cooling towers in the Neurath power plant. These towers signify the final stages of the cycle, following on from heating, evaporating, superheating and turbine work. The pumps come into play when the superheated steam from the boiler flows through the turbines, losing pressure and heat in the process – falling to a temperature of about 35°C at a pressure of circa 0.05 bar. Once this steam reaches the condenser it turns into water again by emitting its weak residual heat to the cooling water via the cooling coils.

However the heated cooling water must be cooled yet again, this time inside the cooling towers. This is done with a flow of cold air circulating from the openings at the bottom of the towers. In the process, some of the cooling water evaporates and rises with the flow of cold air which produces the plume of smoke that can be seen escaping the cooling towers. This is only a small amount of water however, as the majority of the water is pumped back into the condenser, the cycle starts over.

The Test Run

The test run was started by Dr Seimetz, and Mr Arnold, president of the Sterling Fluid Systems Group. The candidates at the event could follow the test results of the cooling pumps, by viewing a large display showing the values and measurements the pumps achieved. All values

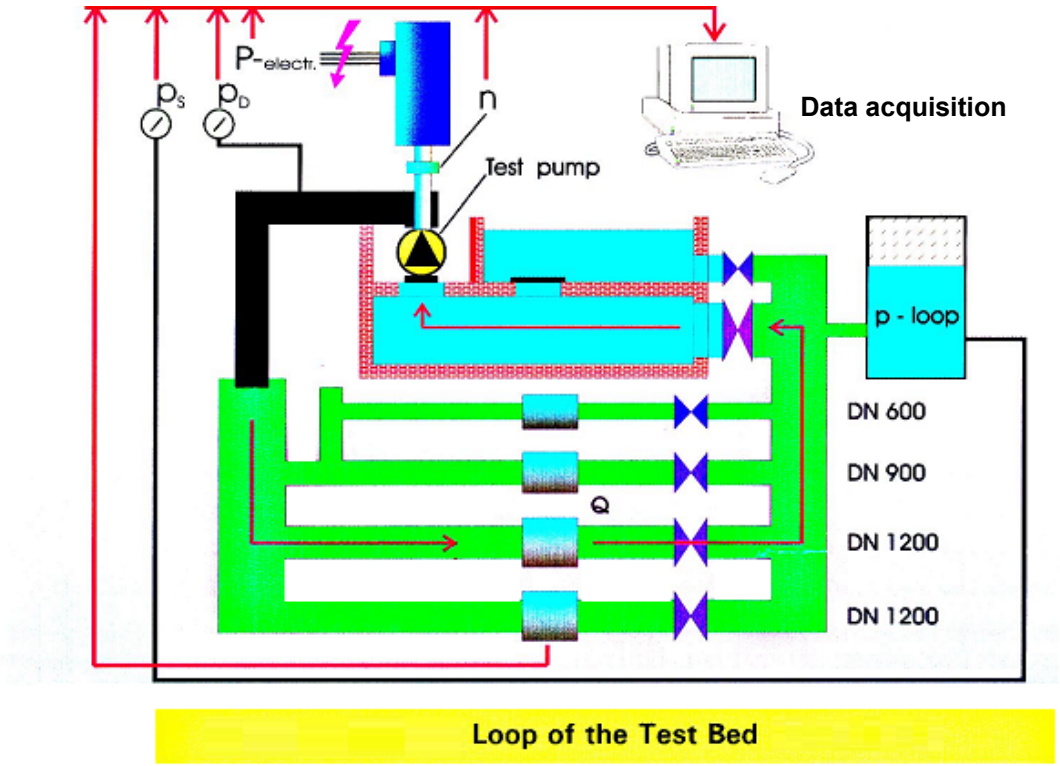

Figure 3. An overview of the test procedure.

reached the estimated levels, proving the event to be a great success.

All the participants were very impressed with the performance of the pump as well as the competence and expertise of Sterling Fluid Systems. Mr Hofmann, Managing Director of the Energy Division, Sterling Fluid Systems Germany, then concluded the evening by thanking all of the employees involved in the project, and presenting the company's strong intentions within the power market.

Figure 4. Mr Arnold and Dr Seimetz at the test run.

If you would like any further information regarding the test run or Sterling's capabilities within the power market, please contact Sterling Fluid Systems (UK) Ltd on 0161 928 6371.