The client’s site is an independently owned gas processing facility consisting of two gas processing trains, which supplies around 6% of the UK’s demand for natural gas.

Following a recent major upgrade the client was looking to perform a SAT in order to confirm the plant process operation was as per the design basis and to fulfil the requirements of their insurer.

The client needed external support for the SAT and engaged ABB in a project to:

- Provide engineering support to perform the SATs
- Interpret and develop procedures for the SATs
- Co-ordinate with the operating personnel and provide supervision during the tests
- Perform plant analysis based on the test data
- Validate the process performance and product specification against the original basis of design
- Issue full reports for all tests and provide recommendations for any issues raised during the tests

Solution
ABB worked closely with the client to develop the test procedures detailing the methodology of the SATs. The procedures were developed in accordance with the GPA guidance. The tests covered the slug catcher system, feed gas heater, gas / gas exchanger, gas chiller, dewpointing separation, liquid stabilisation system, flash gas compressor, tanker condensate and water loading system as well as fired heater and heating medium system.

At the initial phase, an ABB process engineer was seconded to the gas terminal to gather plant and contract information in order to prepare the test procedures. Active interaction with the client on site improved work efficiency and enhanced the relationship between ABB and the client. ABB’s proactive project management kept the project on budget and on time, which satisfied the client’s expectation.

A 72-hour SAT, which covered the entire gas processing plant, was carried out by the collaboration between ABB engineers and the client. During the test, ABB engineers worked closely with the plant operators to record local instrument data, DCS logging data and collect samples from the sampling points. ABB engineers provided supervision to ensure the test was performed in accordance with the procedures.
The collated plant data from the tests was tabulated in spreadsheets and analysed for any discrepancies. A simulation model was created using Aspen HYSYS to reflect the plant operation and further extrapolated to the maximum plant capacity to validate its design capability.

Full reports were developed and checked by ABB at the end of the project. The reports consisted of executive summary, improvement recommendations, methodology of analysis, performance calculations, results and discussions. The work was conducted within the agreed budget and time frame.

**Extended support**

ABB assisted the client to determine the process conditions for the gas chiller (refrigeration package) during different operations using Aspen HYSYS prior to an actual plant trial. Detailed plant trial procedures and expectations were developed to help the plant operator to carry out the trial on the newly commissioned gas chiller.

**Benefits**

The project was successfully implemented within the agreed time frame with the following benefits:

- The gas processing plant was validated against the basis of design
- Any process performance issues were identified from the tests
- The EPC contract requirements were satisfied allowing the take over the gas processing plant from the EPC teams
- Meeting the insurer requirements
- Conformance with the Gas Processing Association (GPA) guidance