

Energy World  
April 2018  
Circulation: 16,000

# ENERGY WORLD

**Also in this issue:**

Gas matters – from UK shale to replacing gas mains

Second coming for UK solar on the way?

Energy research and development – solar glass for local power

The magazine for energy professionals

April 2018



## Network innovation

Improving electricity distribution through access to data

**INFRASTRUCTURE**

# Making the gas connection



Gas pipeline connection work for Selby Power Plant

**Gas infrastructure company Squire Energy has completed many projects in recent years – here, Director Mark Halsey describes one, for a new peak power plant.**

governor/meter unit. This new pipeline was to be supplied via a 'hot tap' – an under-pressure connection from the existing 6" steel pipeline.

The required gas demand of this particular project was significant, triggering the possibility that Squire would need to reinforce the gas network to support the new development. Fortunately, initial checks were conducted during the quote-building process.

After carrying out the checks with the relevant gas transporter, Northern Gas Network, the team identified the intermediate pressure (IP) gas main which would supply sufficient pressure and capacity for the development.

However, this highlighted additional challenges. The IP main was located 0.5 km away from the site, with the route for the proposed new pipework requiring installation down a busy access road. An added difficulty was the pressure that an IP main operates up to; IP mains can operate at up to 7 bar, which meant that it had to comply with the Pressure System Safety Regulations or the gas industry equivalent.

Designs were drawn and plans submitted to the local authorities, but before excavation could officially begin, Squire had to prove the viability of the route of the proposed works. This was done by digging trial holes at periodic points along the route to ensure they didn't clash with existing utilities.

#### Ultrasonic scan

The plans proposed welding a split tee onto the live 'parent pipe' and drilling the main to connect the new pipeline. However, before the engineers could put flame to metal, Squire carried out an ultrasonic scan to determine the exact thickness of the existing steel pipe to ensure its suitability for the welding process. The parent main was given the OK and the team made a live connection onto the existing steel main, successfully joining 2 m of new 150 mm steel

pipe to make the connection.

For additional reinforcement for the steel pipes, a Cathodic Protection (CP) system was fitted, with a CP plate welded to the buried steel pipework and two cables extended from the pipework to the anodes, via the fitted lug. Rigorous examination followed, with the strength and quality of the welding undergoing both hydrostatic and pneumatic pressure testing, as well as the usual visual examinations and non-destructive testing inspections.

The new gas installation was predominantly made from PE100 polyethylene, 18 mm thick and 180 mm in diameter. The new 500 m IP pipe was installed over a five-week period to connect the Selby Power Plant to the gas mains. Through close collaboration with the local authorities and negotiations with the highways authority, the installation was carried out with minimal disruption along the existing access road.

As well as installing the new incoming supply to Selby Power Plant, Squire was also tasked with the supply and installation of a gas meter operating at a pressure of 200 mbar. Based on the load requirements of the plant, with its 16 MW generating capacity, the company designed an IP turbine meter, which was delivered to site and commissioned to ensure that the site could use the required amount of gas as soon as works were concluded.

The usage of peak power plants is increasing around the UK, as the country shifts towards a low carbon economy. National Grid is keen to develop a smart, flexible system of supplementary services that make optimum use of the peaks and troughs of energy demand. System balancing services are key and smaller, decentralised power stations like Selby Power Plant are one solution. ●

Mark Halsey is a Director of Squire Energy, [squireenergy.co.uk](http://squireenergy.co.uk)

**S**quire Energy was approached by Welsh Power for the installation of the gas infrastructure for the new Selby Power Plant in 2016. Nestled in the green pastures of the North Yorkshire countryside, the Selby site is a peak power plant. With the date of coal's official demise already in the diary – 2025 – energy providers are progressively looking towards renewable energy in the form of wind and solar power. However, environmentally superior but intermittently reliable, renewable energy alone can't fully supply the UK with the power it needs.

Enter peak power plants that generally run only when there is a high demand for electricity. Being built around the country, they play an important role in balancing the UK electricity network, which is growingly increasingly reliant on renewable energy sources. Natural gas neatly bridges the gap between fossil fuels and solar and wind power, acting as an instantaneous reserve when a lack of sunshine and wind render the renewable resources unable to meet demand.

Work began on the project in late September 2016, with a team from Squire Energy tasked with constructing a 180 mm PE100 pipeline to facilitate a supply to a