



Selby Power Plant Case Study

Location
 Selby, Yorkshire

Project duration
 5 weeks

Background

Scheduled to celebrate its 15th anniversary this year, Squire Energy began 2018 with its flame burning brighter than ever before, having been awarded the construction and installation of its 1000th complex industrial/commercial gas meter in January 2018. With a steady stream of exciting new projects in the pipeline, this upwards trajectory follows an already prosperous run, with the gas infrastructure provider completing dozens of successful projects in recent years.

One of these projects was Selby Power Plant. Not to be confused with the historic northern powerhouse of coal-fired energy – now renamed Drax Power Plant – Squire Energy were approached by Welsh Power for the installation of the gas infrastructure for a brand-new power plant, in 2016. The two companies are no strangers; with more than 20 successful project completions in the last two years, Welsh Power are clearly confident in Squire Energy's abilities to deliver, and to deliver well.

Peak Power Plants

Nestled in the green and leafy pastures of the North Yorkshire countryside, the Selby site is what has been coined a 'Peak Power Plant'. With the date of coal's official demise in the diary – 2025 – energy providers are progressively looking towards renewable energy in the form of wind and solar power. Environmentally superior but intermittently reliable, renewable energy alone can't fully supply the UK with the power it needs.

Enter, Peak Power Plants; plants that generally run only when there is a high demand for electricity. They play an important role in balancing the UK electricity network, which is growingly increasingly reliant on renewable energy sources, and are being built around the country to enable more solar and wind power

generation. Natural gas neatly bridges the gap between planet-poisoning fossil fuels and unreliable solar and wind power, acting as an instantaneous reserve when a lack of sunny and windy days render the renewable reserves depleted and unable to meet demand.

The project

Set in the idyllic surroundings of Selby, work began on the project in late September 2016, with a hand-picked team from Squire Energy tasked with constructing a 180mm PE100 pipeline to facilitate a supply to a governor/meter unit. This new pipeline was to be supplied via a Hop Tap under pressure connection from the existing 6 NB steel pipeline.

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The required gas demand of this particular project was significant, triggering the possibility that Squire Energy would need to reinforce the gas network to support the new development. Fortunately, thorough capacity checks are ingrained in the way that Squire Energy operates, with initial checks conducted during the quote-building process. John Burke, Construction Manager at Squire Energy says, "Within the gas infrastructure industry, one of the most frequent – and serious – issues is a lack of gas capacity checks built into a quote. If you're looking for a gas connection quote and it seems too good to be true – a cheaper cost and a compressed timescale, it most likely is.

"The new gas installation was predominantly made from GIS approved PE100 SDR11"

Certainly, some companies attempt to cut costs and time by eschewing capacity checks, which are essential in determining the cost and timescales of the project and crucially, whether reinforcement work is required. A lack of clarity in the beginning can easily result in a delayed project and additional costs. This wasn't and never is the case with Squire Energy; 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.

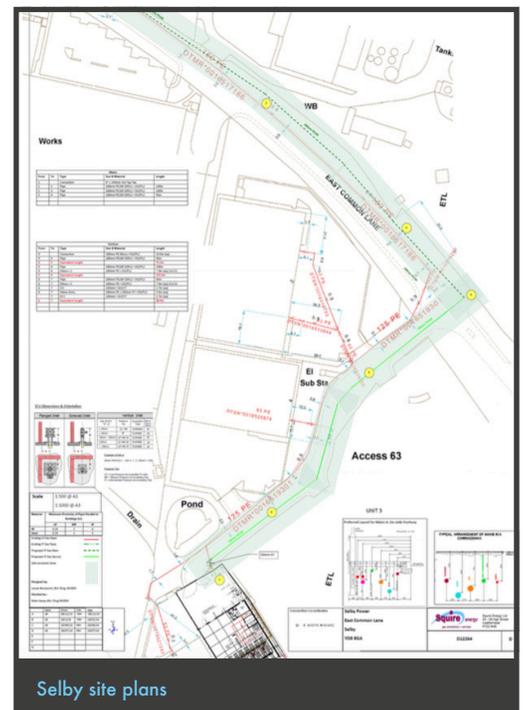
The Challenges

However, this highlighted additional challenges. The IP main was located half a kilometre 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 pressures of up to 7bar, which is particularly onerous as it meant that it had to comply with the Pressure System Safety Regulations or the gas industry equivalent – IGEM/GL5.

Designs were drawn and plans submitted to the local authorities, but before excavation could

officially begin, Squire Energy 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, and meant that Squire Energy got the final go-ahead to start digging.

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 Energy 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 thumbs up and as is standard, the team made a live connection onto the existing steel main, successfully joining two metres of new 150mm steel pipe to make the connection.

For additional reinforcement for the steel pipes, a Cathodic Protection System was fitted, with a CP plate (lug) welded to the buried steel pipework and two cables extended from the steel pipework to the anodes, via the fitted lug. Rigorous examination followed, with the strength and quality of the welding undergoing both

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hydrostatic and pneumatic pressure testing, as well as the usual visual examinations and NDT inspections.

The new gas installation was predominantly made from GIS approved PE100 SDR11, 18mm thick and 180mm in diameter, with the new 500 metre IP pipe installed by Squire Energy's engineers over a five-week period to connect the Selby Power Plant to the gas mains.

“Thorough capacity checks are ingrained in the way that Squire Energy operates.”

Through close collaboration with the local authorities and negotiations with the highways authority, as well as careful planning from Squire Energy's Operations team, the installation was carried out with minimal disruption along the existing busy access road.

As well as installing the new incoming supply to Selby Power Plant, Squire Energy were also tasked with the supply and installation of a gas meter operating at a pressure of 200mbar. Based on the load requirements of the plant of 16MW, Squire Energy used these parameters to design 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.

Despite the challenges faced in this project, Squire Energy completed works in time and to budget, much to the satisfaction of its client Welsh Power and the end user, Selby Power.

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