

Powering up UK gas transmission asset reliability and efficiency in partnership with National Grid



National Grid, United Kingdom

BEAMEX
CASE
STORY

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■ National Grid owns the high-voltage electricity transmission network in England and Wales and owns and operates Great Britain's gas national transmission system (NTS). The company, which employs around 23,000 people, is responsible for transporting these vital sources of energy safely and efficiently from where they are produced to where they are needed, balancing supply and demand on a day-to-day basis from its network of control rooms across the country.

Natural gas is a critical energy source in Britain, keeping over 80% of households warm and fueling much of the nation's industrial activity. It is transported through steel pipelines from coastal reception terminals and storage facilities to large consumers and distribution networks via the high-pressure NTS. A critical part of this network are the 25 gas compressor stations, mostly driven by gas turbines, located at strategic intervals on the network. From here, gas is fed to the eight distribution networks that supply domestic and industrial consumers across Britain.

Significant room for improvement in asset performance visibility

The volume of calibration data generated at the compressor stations is huge, with everything from pressure and temperature switches to flow transmitters and vibration sensors requiring regular calibration to ensure accuracy and reliability.

National Grid was facing challenges on a number of fronts, with islands of data siloed across disparate systems making it difficult to monitor and accurately assess asset performance. What's more, there was no established, standardised process for recording and

storing calibration data, with technicians at individual sites often improvising their own solutions and relying on time-consuming, paper-based methods.

"Without a centralised and standardised solution for gathering, recording, storing, and analysing instrument calibration data it was very challenging for us to build a true picture of how our assets were operating, optimise our ways of working, and build business cases for investment," says Andy Barnwell, Asset Management Systems Owner, National Grid. "Instead of a rich data lake that we could easily interrogate, we were dealing with individual databases built up from information gathered on paper or inputted into Excel spreadsheets and time-consuming calibration processes with multiple steps," he continues.

James Jepson, Control & Instrumentation Systems Officer at National Grid, echoes these thoughts: "As well as lacking a common repository for calibration data, we also had no commonality with regards to the hardware and software we were using to perform calibrations. From the point of view of training, knowledge sharing, and efficiency this was not the ideal situation because technicians moving between sites constantly had to adapt to the 'local' ways of working instead of following a streamlined, standardised national process."

Automated, paperless calibration to the rescue

National Grid and Beamex already had a shared history, with Beamex calibration solutions having been in and around the National Grid's operations for several years. "Over the years we have developed an excellent working relationship with National Grid and, based on our knowledge of their assets and operational process for calibration, we were confident we could supply them with a fully automated and integrated calibration solution that would improve both access to and visibility over asset data through a centralised database," explains John Healy, Director of Sales, UK & Ireland, Beamex.

This package comprised the Beamex MC6-Ex Intrinsic Safe Field Calibrator and Communicator – which can be used in hazardous areas and offers calibration capabilities for pressure, temperature, and various electrical signals – and Beamex CMX Calibration Management Software.

"We already had some experience with the Beamex MC5 documenting multifunction calibrator, which was and still is a fantastic piece of kit, so when Beamex launched the MC6 we purchased a few units to deploy at various sites as part of a trial alongside other manufacturers' offerings," says James Jepson. "After that it became clear that the Beamex solution was the way we wanted to go based on its performance in the field, the feedback from the technicians, and the business benefits of combining it with the cloud-based CMX software."

Covid no obstacle to a collaborative implementation process

Just like every other business, both Beamex and National Grid had to navigate the hurdles thrown up by the Covid pandemic, which meant remote scoping meetings and planning workshops instead of face-to-face gatherings.

Nikita Anosov, Project Manager & Scrum Master, National Grid, is highly complimentary about the support he received from the Beamex team: “Despite the challenges and the need to adapt to new ways of working, things went very smoothly. Aside from having to do everything remotely, it’s important to remember that this was something of a leap of faith for our organisation in terms of moving to a cloud-based solution for calibration management. The Beamex team were really helpful and supportive from day one of the project.”

Andy Barnwell echoes these sentiments: “It has been a phenomenal journey, and we have maintained an open, honest dialog and a collaborative way of working throughout, which has certainly helped the team on our side demonstrate the true value of the Beamex solution to our management team.”

Matthew Sanders, Calibration Solution Specialist at Beamex, agrees wholeheartedly: “The collaboration was brilliant from both sides. We had detailed discussions with the systems team and end users to make sure all the risks were considered, which is critical in a project of this size. The adaptations we made to the solution rollout – including to the data integration technicalities with National Grid’s BI infrastructure and in terms of user roles and accessibility – have led to increased benefits across the board at National Grid. Our aim from day one was to deliver the best possible solution, and the whole Beamex project team is very proud of the result.”

Sometimes it’s good to put all your eggs in one basket

Centralising all their asset data in a single system would provide National Grid with the ability to thoroughly interrogate their assets and make informed decisions about maintenance procedures



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JAMES JEPSON
CONTROL AND INSTRUMENTATION SYSTEMS OFFICER
NATIONAL GRID

and schedules. “With more and better-quality asset data at our fingertips we have been able to look at saving time and costs by, for example, extending the time between inspections,” highlights Andy Barnwell.

In terms of concrete savings, the numbers speak for themselves, as James Jepson points out: “With the Beamex solution in place, thanks to automation we have been able to cut the number of steps needed to perform a calibration, saving 15 minutes per device. While this might not sound like much on its own, it adds up to a time saving of over 4,000 hours per year – and a financial saving that runs into millions of pounds, which is astonishing,” James Jepson says.

National Grid plan to further expand their use of the CMX system to include the execution of maintenance inspection tasks using the Beamex bMobile application running on iOS tablets. bMobile is an application for smartphones and tablets that allows field calibrations to be executed offline with step-by-step guidance. This enables technicians to create calibration scripts to make their work easier and faster, and everyone can follow a standardised process. “Commonality of scripts is really important for us because we need to make sure technicians’ work is compliant with our policy and procedures. When everyone is following an established, standardised process and all the information is kept in one place, their work is faster, the data it generates is far more reliable, and we can make better decisions about how to manage our assets,” explains James Jepson.

A bright future ahead for a constantly evolving partnership

The intuitive nature of the Beamex solution means it has not been a hard sell at the compression station sites, with technicians seeing the benefits as soon as they got their hands on the equipment and



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CALIBRATION SOLUTIONS

- Beamex MC6-EX Intrinsically Safe Field Calibrator and Communicator
- Beamex CMX Calibration Management Software

MAIN BENEFITS

- Centralised and standardised processes for recording, storing and analysing calibration data
- Greater asset performance visibility and reliability
- Significant efficiency improvements
- Automated and paperless calibrations
- Considerable time and cost savings

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IN BRIEF

software. “Beamex was very proactive in organising online training for our teams, but the uptake was less than we expected because they are so easy to use that instead of asking basic questions during the training, our technicians were teaching themselves and quizzing the Beamex team on some fairly in-depth issues instead,” James Jepson says.

This shallow learning curve has been particularly advantageous given the age profile of National Grid employees, with everyone from young apprentices to seasoned veterans finding the equipment and software easy to get to grips with. And there is plenty more to come from this ever-evolving relationship, as Andy Barnwell explains: “The great thing about the Beamex solution from a development perspective is that it’s flexible and offers us a lot of options. In the short term we still have some hard work to do to gather more and more asset data and identify where we can simplify ways of working for our technicians and engineers. In the medium term we’ll be looking at how to further integrate Beamex solutions into our systems landscape and take advantage of even greater asset management functionalities as and when they are developed in collaboration with Beamex.”

James Jepson concludes by discussing what the future may hold from the point of view of calibration technologies and processes: “The days of sending technicians out to perform things like pressure calibrations with manual pumps are numbered. Automation is the future, and I can see a not-too-distant future when we will have a Beamex solution that will allow us to do everything remotely while still performing periodic on-site spot checks with highly accurate portable devices. The sky really is the limit!”



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