



Cadent
Your Gas Network

FLOW TEMPERATURE SENSOR - FT-2

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Case study

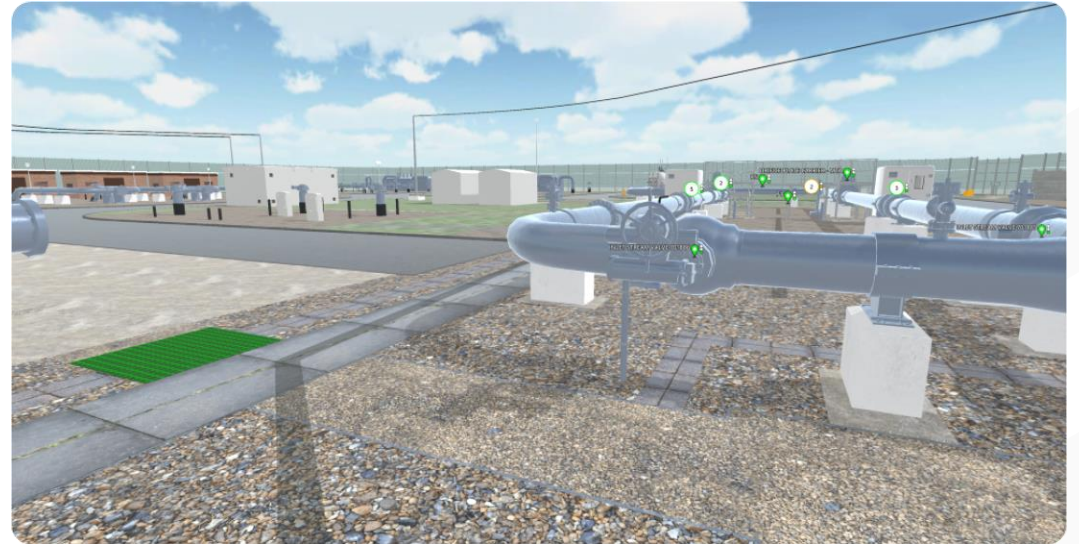
Keep at the forefront of innovation with 'real-time' 3D digital twins

Line Path
Flow Temperature on
Line to be found



Background

Cadent is the largest gas distribution company in the UK. It delivers fossil gas to 11 million homes and businesses throughout the North West, West Midlands, East Midlands, South Yorkshire, East of England and North London.



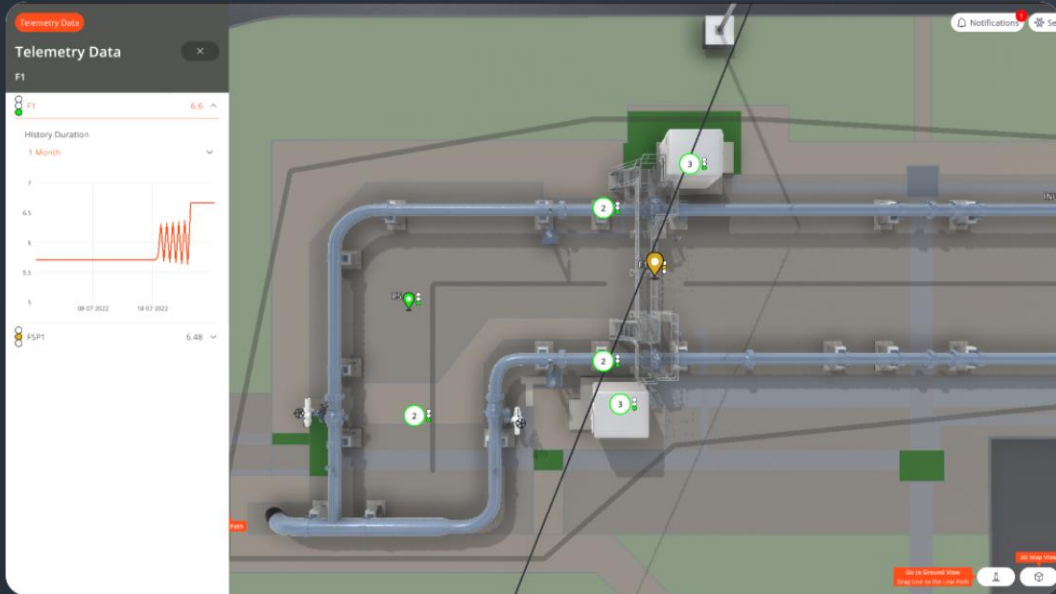
Digital twin environment

Challenges

MX Reality, a provider of advanced technology-enabled solutions was commissioned to develop a Proof of Concept (POC) trial based on Cadent's ME/2 metering system to explore its immersive 3D digital twin platform, mXvision. A total of 15 staff at various levels (including asset managers, delivery supervisors and control engineers) took place in the trial in June 2022.

By deploying mXvision it would enable Cadent's staff to visualise and interact with ME/2 telemetry and maintenance data in a more contextual manner while making it more accessible to its wider workforce. If successful, Cadent would then expand on this development by adding the full complement of ME/2 data to further sites.

Dr Majid Al-Kader, Founder and Chief Executive Officer, MX Reality, explains: "The aim of the trial was to visually connect ME/2 telemetry data and 'real-time' or historical Internet of Things (IoT) data via our digital twin so the workforce can remotely monitor operations and gain fresh insights in a 3D environment, so they get more done in less time."



Telemetry data of site

Solution



An online browser-based cloud-hosted platform, mXvision was developed around a 3D environment of Cadent's Whitwell site. The key project deliverables were:

- A UK level map view with "Pins" showing some of Cadent's site locations with an indicator for site status showing the various ME/2 assets
- Widgets showing any relevant telemetry associated with that asset and whether the asset is in an alarm state
- Clicking on an asset's "pin" brings up data on the asset (e.g. model, serial number), any relevant documents, and current and historical data
- Notifications indicating a change in state based on acceptable value ranges

MX Reality was also asked to integrate its interactive digital twin technology and 3D assets into Cadent's legacy training and learning provision as an additional project. It responded by custom-building two immersive virtual environment learning scenarios for the ME/2 metering system and procedures to provide a safe, effective and engaging learning experience for new recruits.

These virtual scenarios offered workers guidance on site familiarisation, correct maintenance procedures, increased their health and safety awareness and supported them with how to tackle common system faults.

"A lot of the knowledge around Cadent's ME/2 metering system and procedures was held by experienced engineers who are in the latter stages of their careers, so bridging the 'skills gap' was another challenge that we addressed by combining digital twin technology with learning." Said Dr Majid Al-Kader, Founder & Chief Executive Officer, MX Reality.



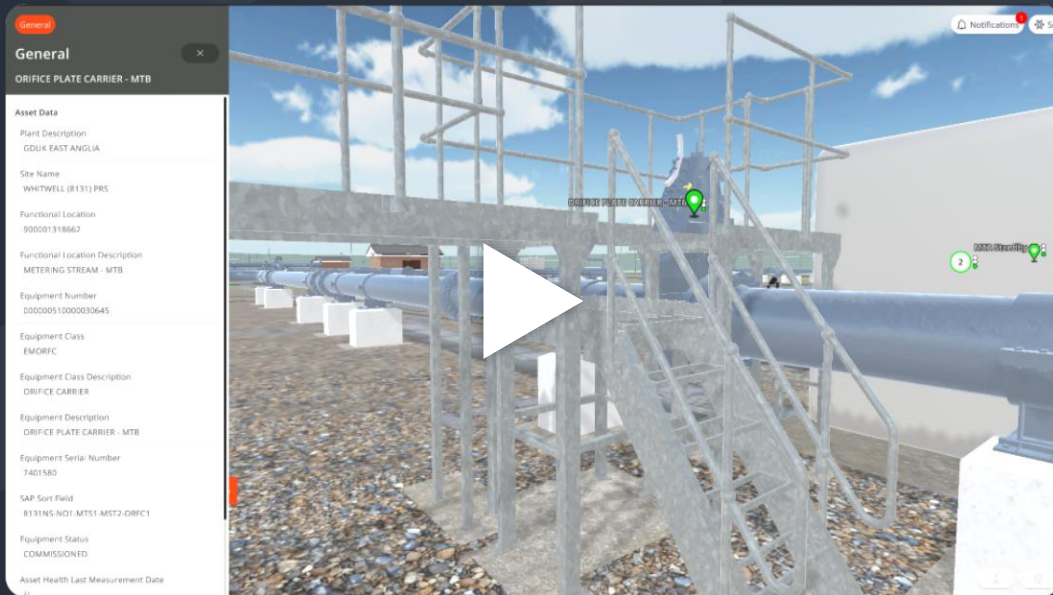
Demo video of how Cadent gas uses mXvision

Benefits



The project was extremely positive and the benefits of using this type of learning were highlighted and additional use cases were identified including:

- Remote condition monitoring to save time and costs for delivery supervisors
- Assist decision-making when technicians attend faults or maintenance issues
- Visualising the location of faults when upgrading the site
- Viewing asset and historical data to provide insights before attending the site
- Using field data to inform asset investment priorities
- Play out scenarios for business continuity planning
- View asset volumes for asset class investment/link to asset class strategies
- Use for non-routine operations analysis
- Analyse site condition pre and post-incidents



Demo video of mXvision

Dr Majid Al-Kader, Founder and Chief Executive, MX Reality, said:

“

This trial has demonstrated that Cadent can easily educate its workforce on how to forecast and predict asset maintenance activities and where to locate and inspect equipment before they even arrive on site with mXvision.

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