



NIIFTA: Non-Intrusive Inspection Field Trial Accelerator

*TLB session hosted by TotalEnergies at OE25
4th September 2025*

Harry Ford - Kellas Midstream
Mike Laws - ESR Technology
Mike Richardson - px



Agenda

	Subject	Presenter	Company
1	Introduction to NIIFTA	Harry Ford	Kellas Midstream
2	Trial structure and outcomes	Mike Laws	ESR Technology
3	Hosting field trials - the Operator's perspective	Mike Richardson	Px / North Sea Midstream Partners
4	Future plans	Harry Ford	Kellas Midstream



What is NIIFTA?

- NIIFTA is the Non-Intrusive Inspection Field Trial Accelerator and is a TLB initiative led by Kellas Midstream.
- A collaboration of 5 onshore terminal Operators, which collectively have 9 onshore sites to host field trials.
- Supported by the North Sea Transition Authority and the Net Zero Technology Centre.
- Its objective is to accelerate the piloting and testing of non-intrusive inspection technologies at lower cost and level of risk in comparison to what would otherwise be incurred offshore.
- Aim is to deliver industry with verification data to evaluate field performance, facilitating acceptance of multiple NII technologies by Operators and regulators.
- Fundamental to NIIFTA is that each Operator will host field trials, will cover their own costs (for scaffolding, supervision etc.) and will share the results of each trial with the other NIIFTA members. Technology developers are required to cover their own costs for each trial.



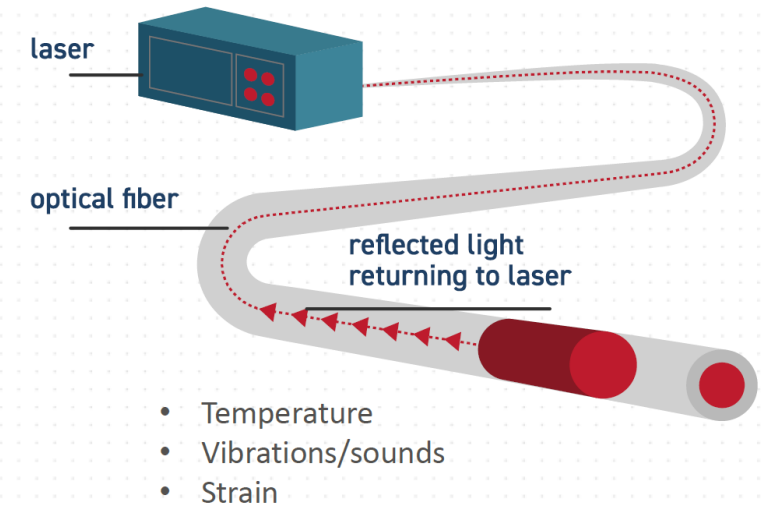
NIIFTA's Initial Focus

- NIIFTA's initial focus is on Corrosion Under Insulation (CUI) which has been a significant safety and cost issue for industry for decades. (Plan to consider other NII areas, e.g. Vessel Inspection later).
- Current practice involves stripping insulation to inspect, repairing/replacing where required, and then reinstating.
- Deciding which insulation to remove can be risk based but often involves targeting a given percentage each year, but with no guarantee that all CUI is found and dealt with.
- Our objective is to seek out technologies which can detect CUI more simply and contribute to plant integrity and safety at reduced cost.
- Initial trials at NSMP's St Fergus plant considered wall thickness loss & moisture detection and involved Subtera (sub-terahertz photons) & Fluves (DTS/DAS).
- NIIFTA has secured the services of ESR Technology to devise trial methodologies and provide independent oversight and reporting.



Trial Planning

- ESR Technology was selected through competitive tender to define and oversee the practical trials;
- ESR have managed the HOIS programme for over 40 years, evaluating inspection technologies, making them well placed to do this;
- Responsible for defining the requirements of the trials, identifying an appropriate location, overseeing the trials and assessing the results of the trials;
- Each of the technologies were reviewed to understand the claimed capabilities to allow a trial to be tailored to specifics of the system selected;
- Two technologies in the initial round:
 - **Subtera – Pi360:** Uses terahertz waves to detect the presence of moisture or corrosion under insulation;
 - **Fluves Corrosion:** Uses a fibre optic cable attached to the outside of cladding to monitor temperature and infer the presence of moisture.



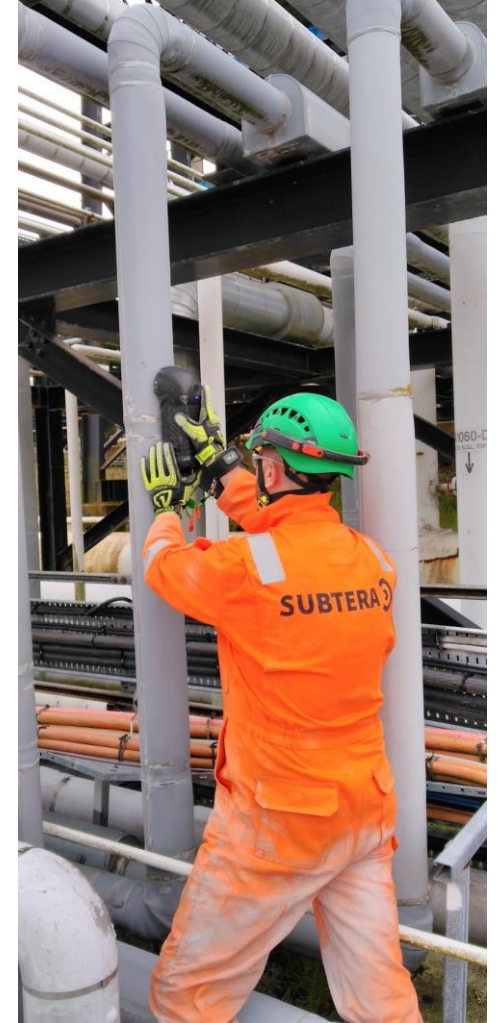
Trial Requirements

- Some differences between the two requirements of the two systems, but the fundamental requirements are broadly similar in terms of pipe specification;
- Complementary techniques – one for monitoring and the other for localised inspection
- As such it was decided to perform both trials at the same site;
- A selection of pipes were identified at the NSMP-px operated St Fergus terminal;
- The trial was planned for July 2025 with Subtera performing an inspection and the Fluves monitoring system being installed in adjacent pipes in the same pipe trench.

Requirements Summary	Subtera	Fluves
Pipe OD	> 75 mm	>50 mm
Fluid Temperature	>±20 °C from Ambient	>±20 °C from Ambient
Insulation types	Most experience with mineral wool but compatible with others	Shorter calibration period with mineral wool but compatible with others
Other	No conductive cladding or vapour barriers	Minimum of 100 m of pipework to be monitored Minimum 3-month monitoring period Weather data required over duration of monitoring 4G connectivity needed

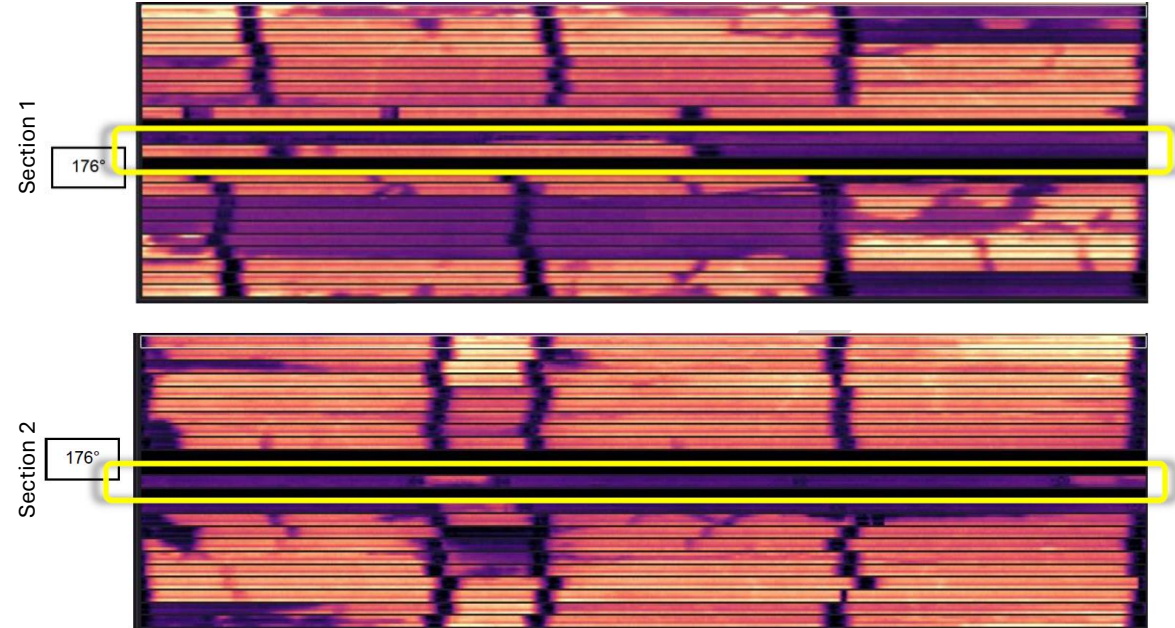
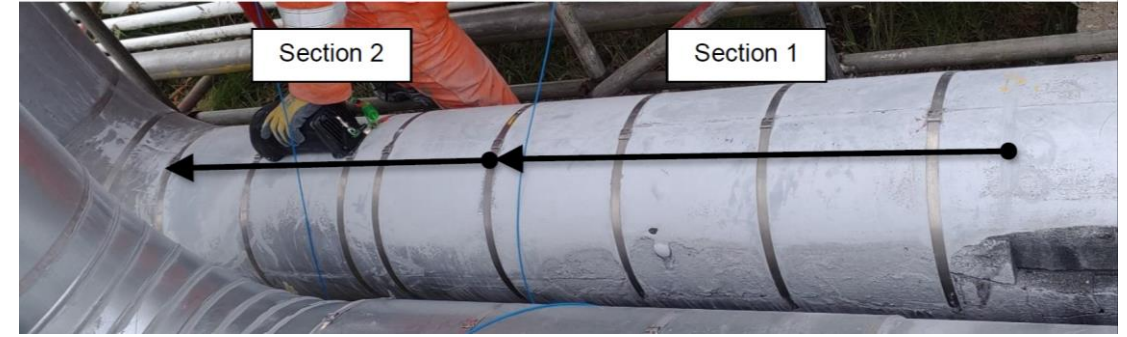
Performing the Trial

- The **Fluves** system was installed on a series of hot oil lines with diameters of 10”, 14” and 16”, including straights and expansion loops;
- Installation took 2 people approximately 2 days to instrument 100 m of pipe;
- Once installed, an aerosol “cold spray” was used to align the monitoring data with the physical asset;
- An initial start-up period of 1 month is needed to calibrate the systems;
- **Subtera** inspected four lines, a 2”, two 3” lines and the same 10” hot oil instrumented by the Fluves system;
- Full coverage of the lines was not feasible, with a sampling approach taken, targeting likely areas for CUI of the four lines over 2.5 days.



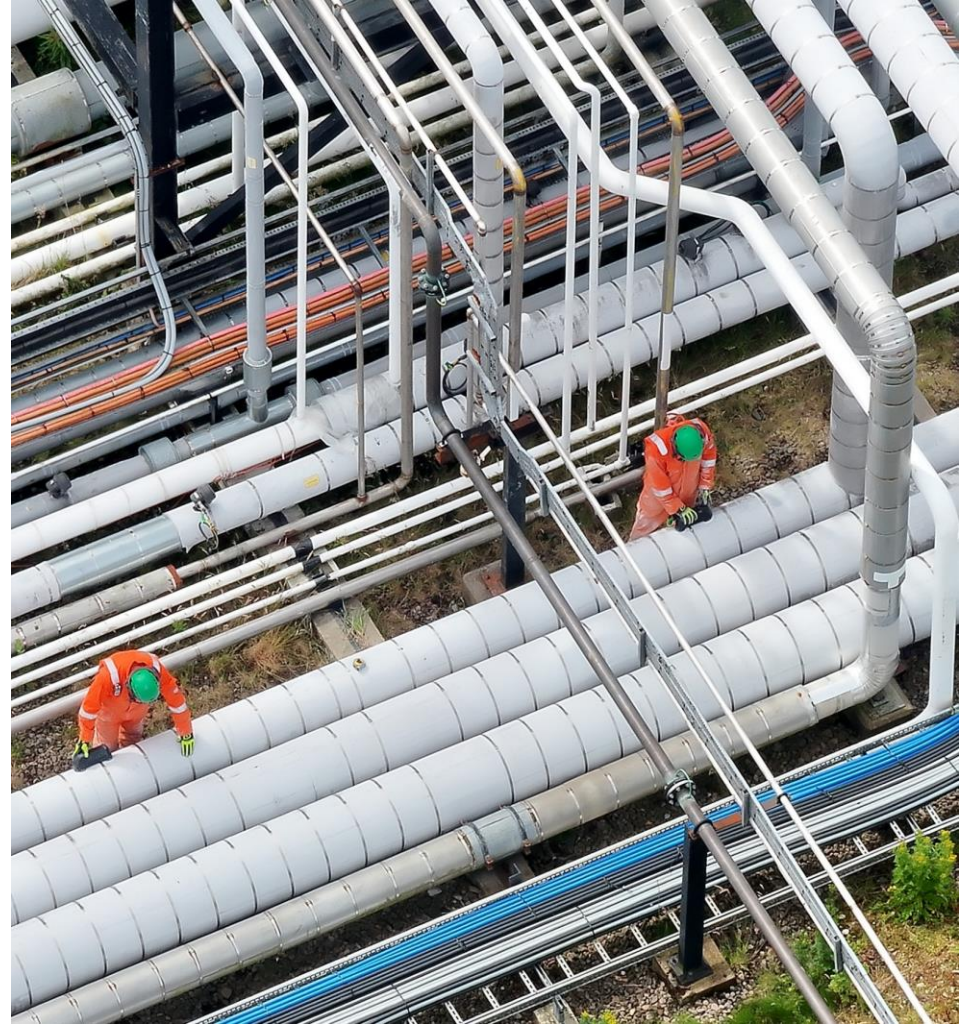
Initial Results

- No results yet from **Fluves** as it is still going through the calibration phase;
- **Subtera** have begun processing the inspection data;
- Scans are performed axially at a number of points around the circumference of the pipe;
- During processing the line scans are stitched together to make an “unwrapped” view of the pipe;
- Dark regions correspond to either moisture or corrosion;
- Metallic strapping also appears as dark vertical bands due to blocking the terahertz signals;
- Moisture detected along the bottom of the pipe (~180°) position on many of the lines and some other indications corresponding to potential corrosion, but analysis is ongoing.



Next Steps

- Data from **Fluves** is expected imminently, with updates to be provided over the monitoring period;
- **Subtera** will be delivering their final report in the coming days;
- From analysing these results target areas will be identified for benchmarking;
- The pipes inspected using the Pi360, which are not being monitored with the Fluves system, will be stripped and inspected, with all moisture and corrosion noted;
- ESR will review both the Subtera inspection and benchmarking results to provide an independent evaluation of the performance of the technique;
- A similar analysis will be performed for the Fluves system at the end of the monitoring period and cross referenced with the Subtera data where they overlap.



Over to Mike Richardson from



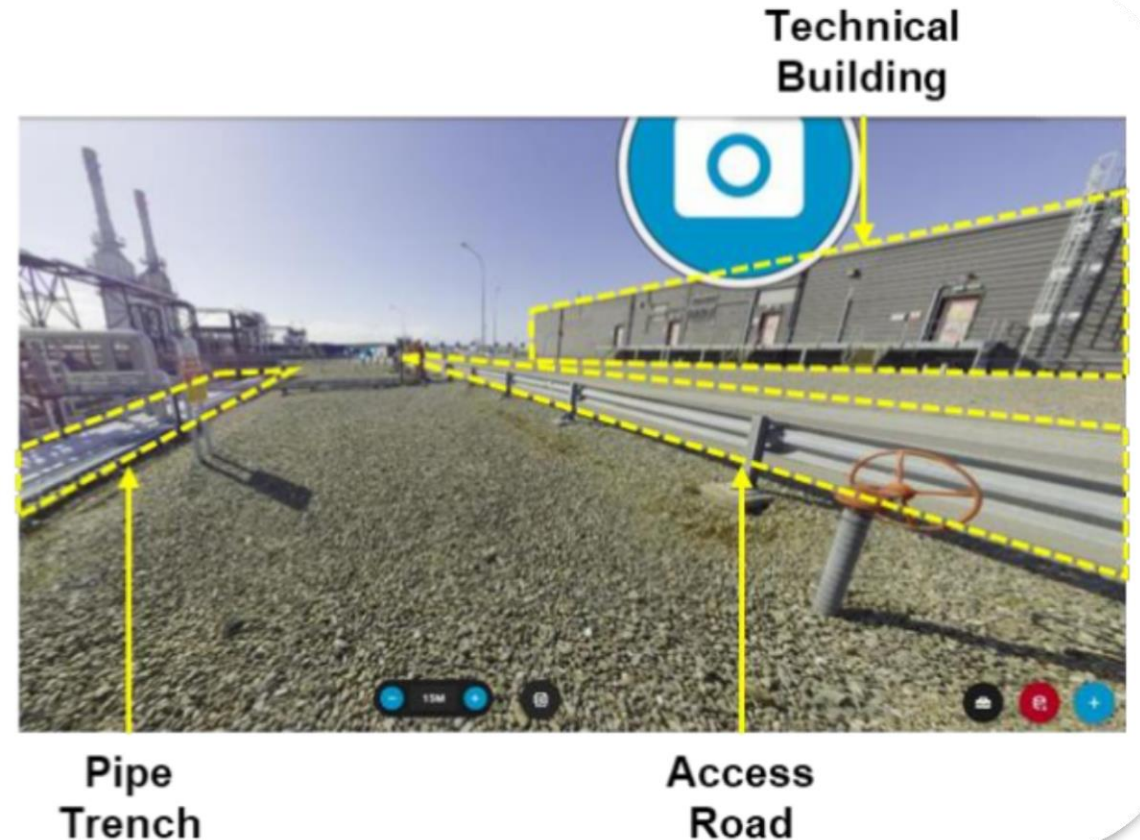
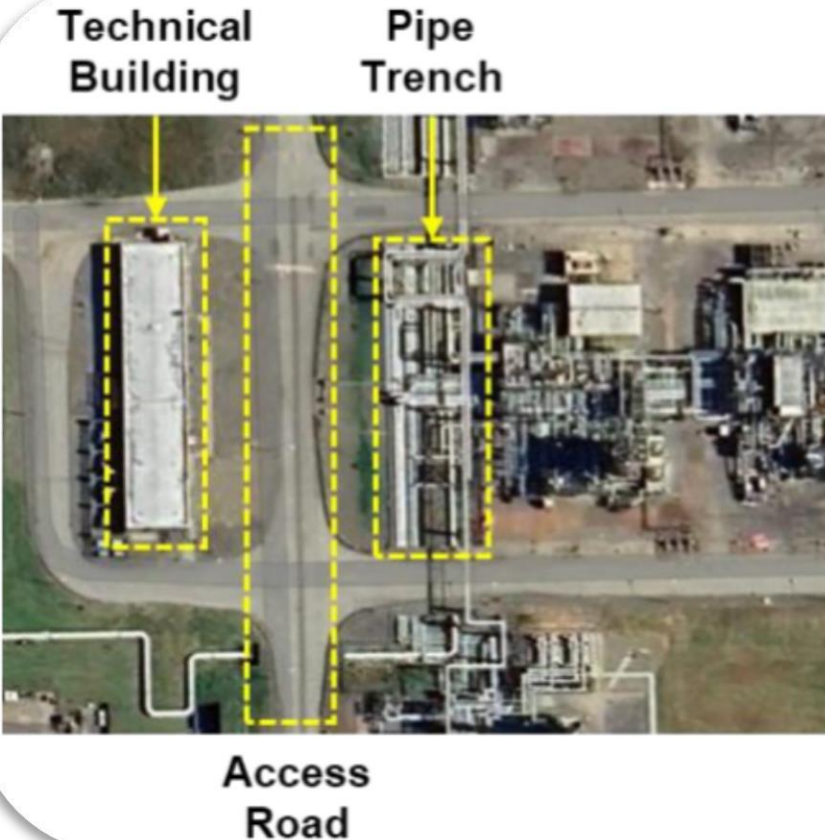
NIIFTA Trials at St. Fergus Gas Terminal July 2025



- Introducing NSMP, px Group, and St. Fergus Terminal.
- Why px/NSMP joined NIIFTA.
- How was it to host the NIIFTA trials:
 - Cost and effort
 - Benefits
- What's next.

NIIFTA Trials at St. Fergus Gas Terminal July 2025

- Identifying suitable equipment to trial on
- Effort
- Costs
- Benefits



NIIFTA Trials at St. Fergus Gas Terminal July 2025

- What's next



General View of Pipework in Track



Subtera at Work



FLUVES at Work

NIIFTA: Future Plans

Activity

- Complete initial trials, share results with NIIFTA members
- Additional NZTC project management resource from May 2025
- Call for technologies managed by NZTC – closed 25th August, applications being assessed
- Target is for ~5 technologies/hosts – trials started or completed in Q3-Q4 (2025)
- Confirm funding requirements and provision for 2026 activity
- Target is for ~5 more technologies/hosts - trials started or completed in Q1 – Q3 (2026)
- Seek additional NIIFTA members with trial hosting capability / capacity



Questions?

To contact us: info@the-tlb.com

Website: <https://www.the-tlb.com/sponsored-projects/niifta>