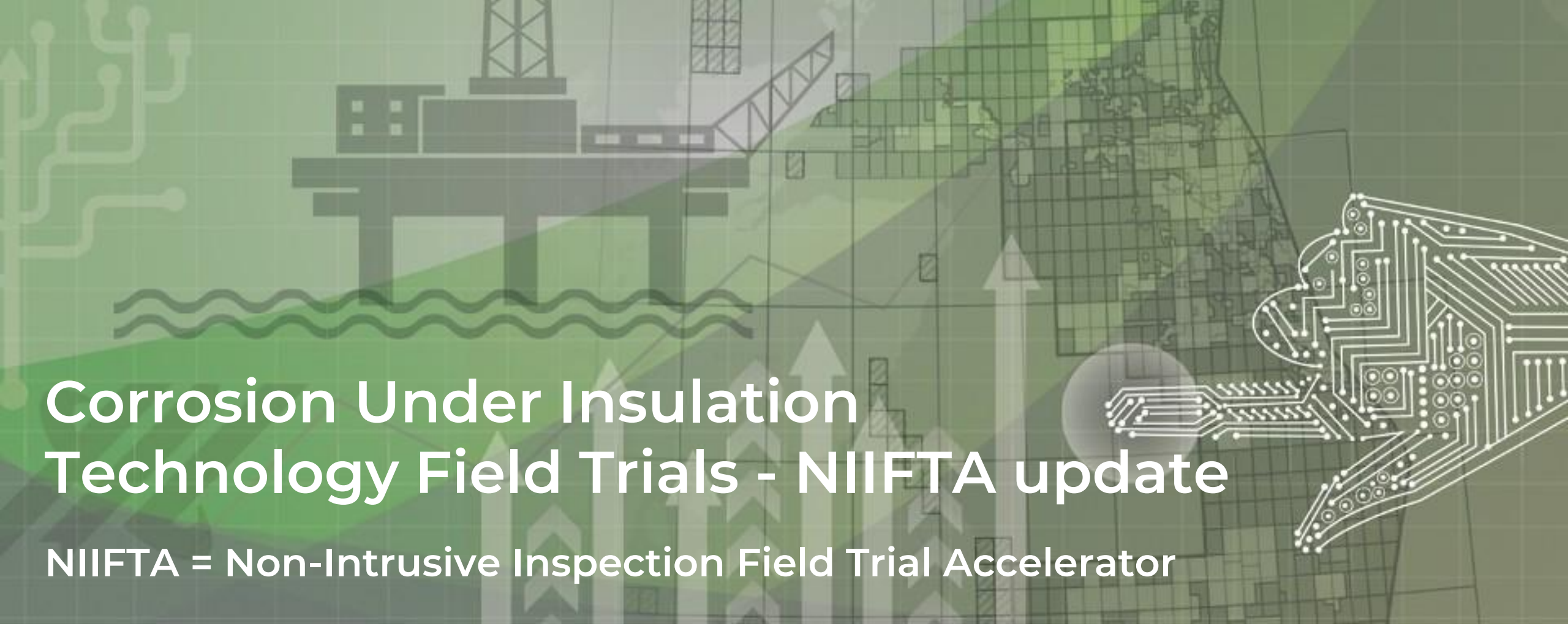

Corrosion Under Insulation Technology Field Trials - NIIFTA update

NIIFTA = Non-Intrusive Inspection Field Trial Accelerator

Topsides UK 2026
17th November 2026

Ernie Lamza – Technology & Engineering Manager

North Sea Transition Authority

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NIIFTA

Non-Intrusive Inspection Field Trial Accelerator

What is NIIFTA?

- A Technology Leadership Board industry collaboration led by Kellas Midstream, supported by NZTC and NSTA.
- 5 onshore terminal Operators, with 9 onshore sites to host field trials.
- **Accelerates piloting and testing** of NII technologies at lower cost and level of risk versus offshore.
- Delivers **verification data to support acceptance** of multiple NII technologies by Operators and regulators.
- Each NIIFTA member:
  - Hosts field trials
  - Covers their own costs (scaffolding, supervision etc.)
  - Shares trial results with other NIIFTA members.
- Technology developers cover their own costs



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NIIFTA's Initial Focus

- Initial focus is Corrosion Under Insulation (CUI) - a significant safety and cost issue for industry for decades
- Other NII areas, e.g. Vessel Inspection to follow later
- Current CUI practice – strip, inspect, repair/replace, reinstate
- Often risk based, targeting a given percentage each year, but no guarantee all CUI is found and dealt with
- NIIFTA is seeking technologies to detect CUI more simply to contribute to plant integrity and safety at reduced cost
- ESR Technology providing trials support:
  - Methodologies
  - Independent oversight and reporting





ESR Technology
Engineering, Safety & Risk

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NIIFTA's Progress – Phase 1 (2025/26)

- Phase 1 trials complete, independent reports (by ESR Technology) shared with NIIFTA members and respective technology provider.

NIIFTA stage	Company	CUI Technology	Detecting	Trial Location	Host
Pre-Phase 1	Subtera	Sub-terahertz photons	Corrosion & moisture detection	Mossmorran	
Pre-Phase 1	Fluves	Distributed Temperature Sensing (DTS)	Moisture detection	Mossmorran	
Phase 1	Subtera	Sub-terahertz photons	Corrosion & moisture detection	St Fergus	
Phase 1	Fluves	DTS	Moisture detection	St Fergus	

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NIIFTA Phase 1 Technologies

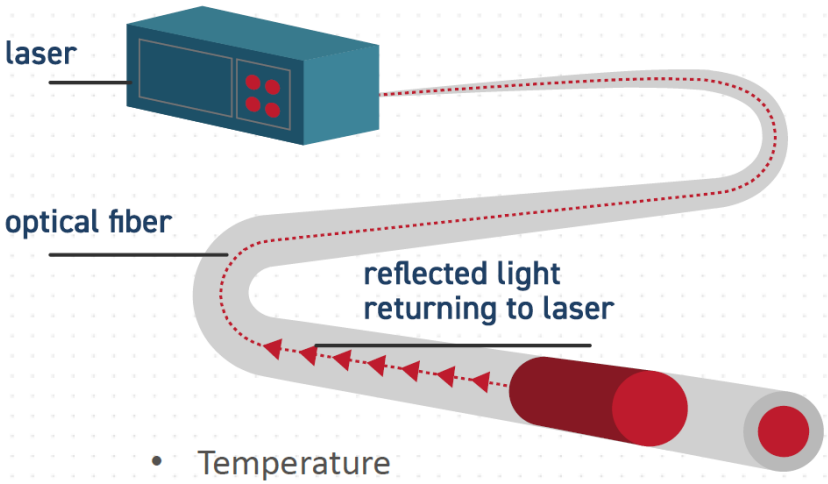
Subtera

- Uses terahertz waves to detect the presence of moisture or corrosion under insulation.
- Pi360 device with integrated IR sensors, optical and thermal cameras and voice controls via a headset.
- Designed for ATEX Zone 2.



Fluves

- Fibre optic cable attached to the outside of cladding, monitors temperature to infer moisture presence.
- Pulses laser light along fibre allowing the surface temperature of the pipe to be measured.
- Local changes in temperature allow regions of moisture to be identified.



- Temperature
- Vibrations/sounds
- Strain

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NIIFTA Trials at NSMP's St. Fergus Gas Terminal Summer 2025



General View of Pipework in Track



Subtera at Work



FLUVES at Work

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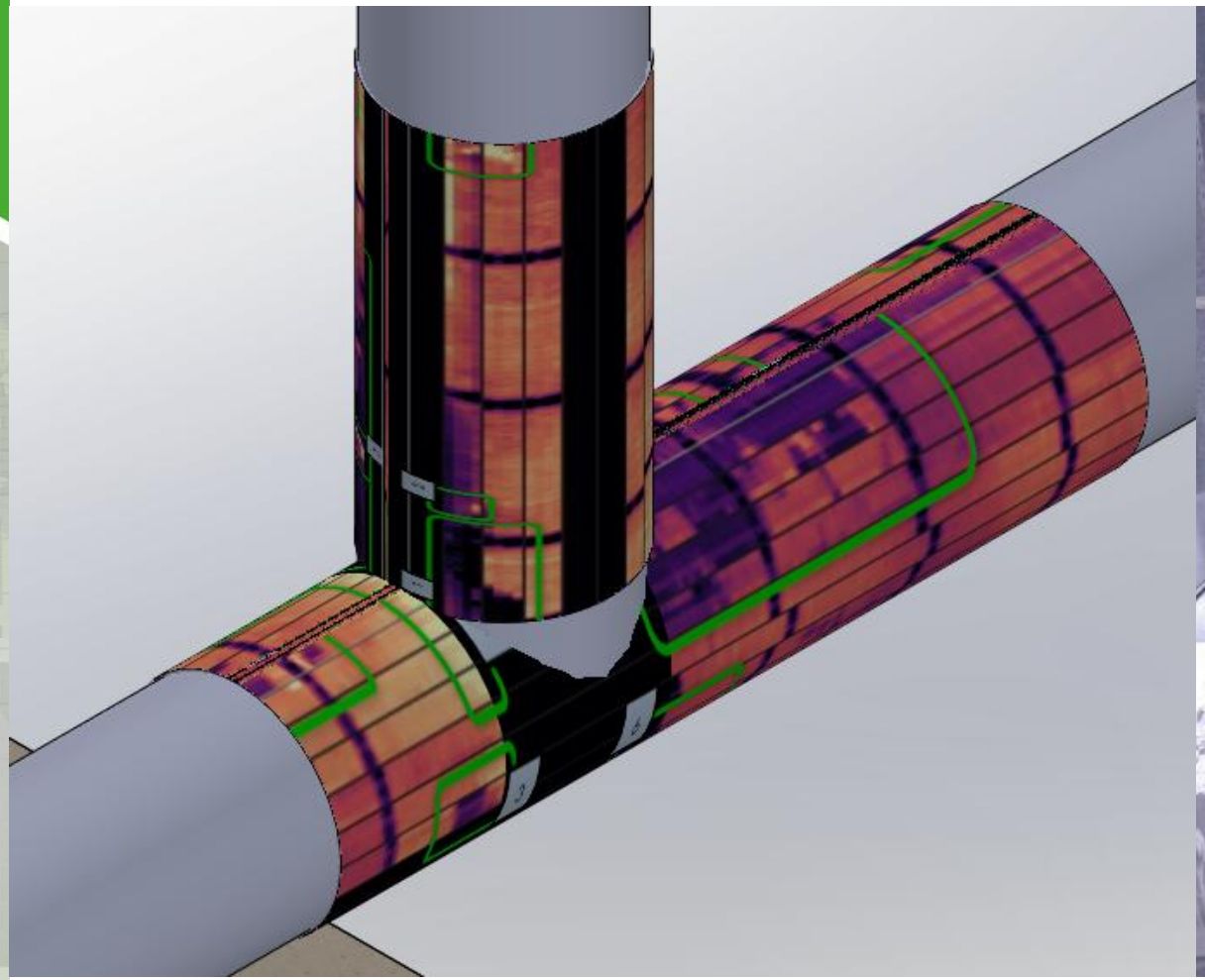
NIIFTA Phase 1 – Results / Benchmarking: Subtera





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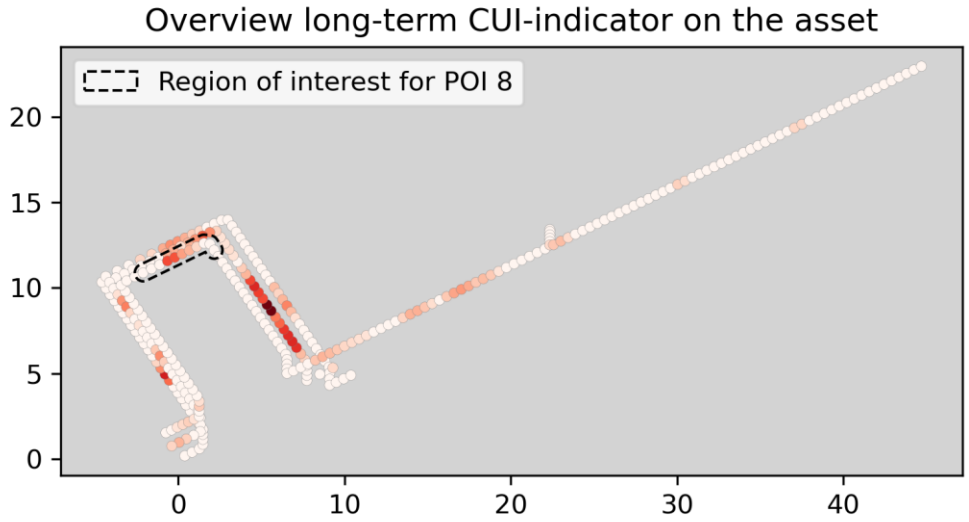
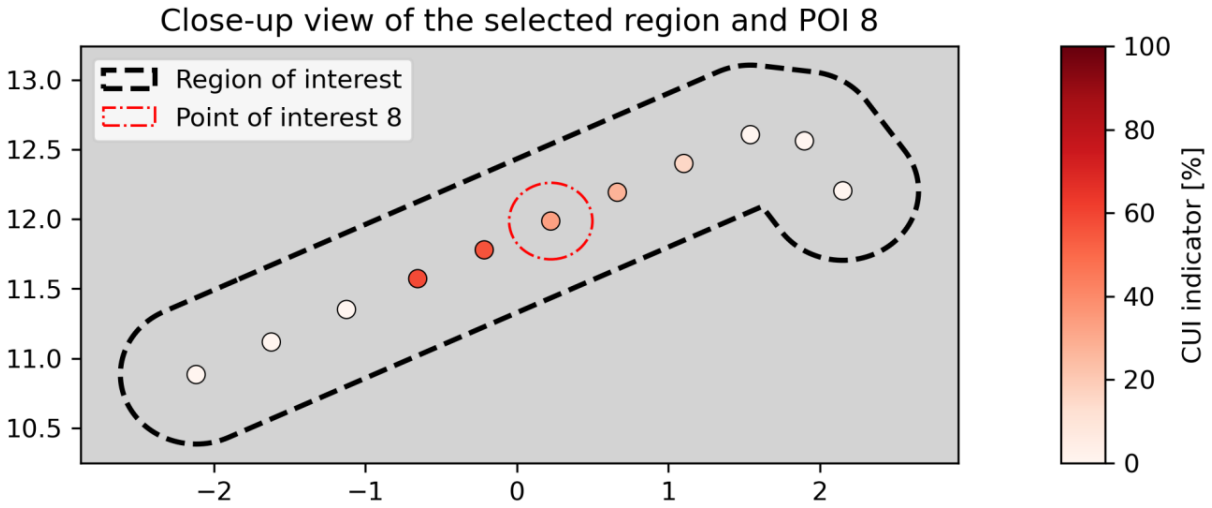
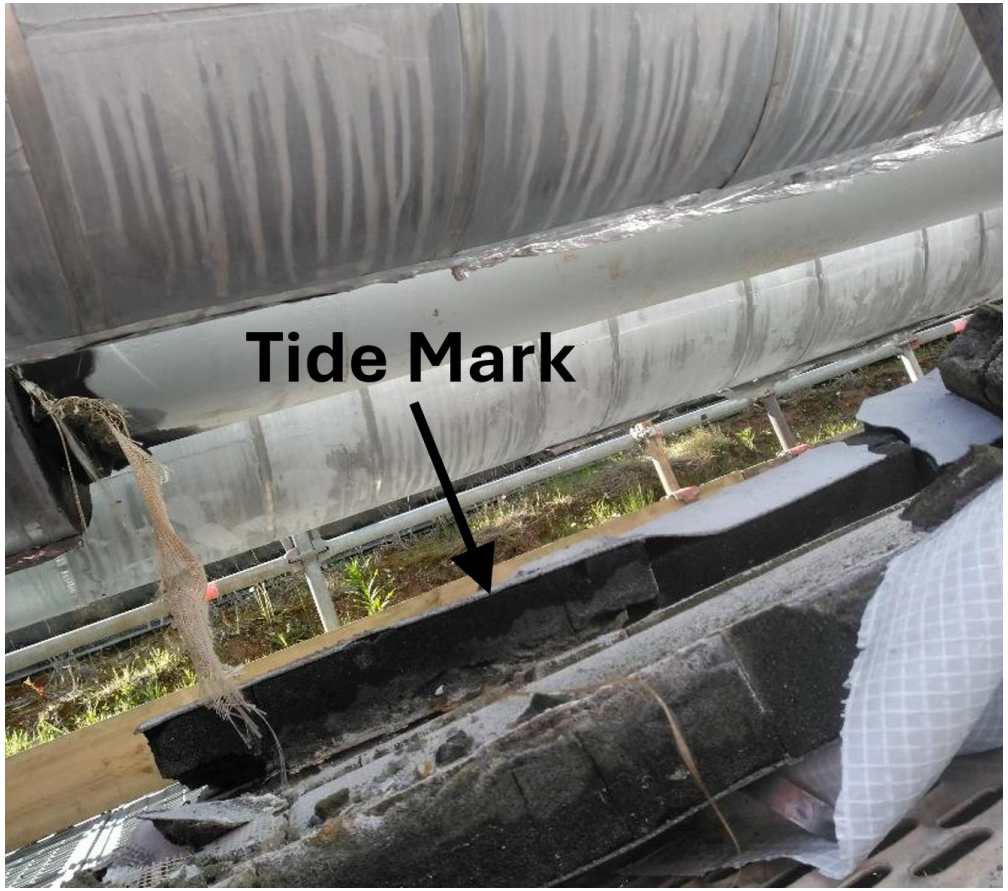
NIIFTA Phase 1 – Results / Benchmarking: Fluves







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NIIFTA's Progress & Plan – Phase 2 (2026/27)

- Phase 2 in progress, trials due complete late'26 / early '27, then benchmarking & reporting.

NIIFTA stage	Company	CUI Technology	Detecting	Trial Location	Host
Phase 2	Intertek	Radiography	Direct corrosion & moisture detection	St Fergus	ANCALA MIDSTREAM wood.
Phase 2	Copsys	Intelligent Digital Skin	Indirect monitoring of coating degradation	St Fergus	NSMP NORTH SEA MIDSTREAM PARTNERS px
Phase 2	Corrosion Radar	Humidity & sacrificial wire	Indirect monitoring of moisture and corrosive environments	Flotta	NEO NEXT+
Phase 2	Trisense	Rel. humidity, temperature, and surface wetting monitors	Indirect moisture sensors	Flotta	NEO NEXT+

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Non-Intrusive Inspection Field Trial Accelerator

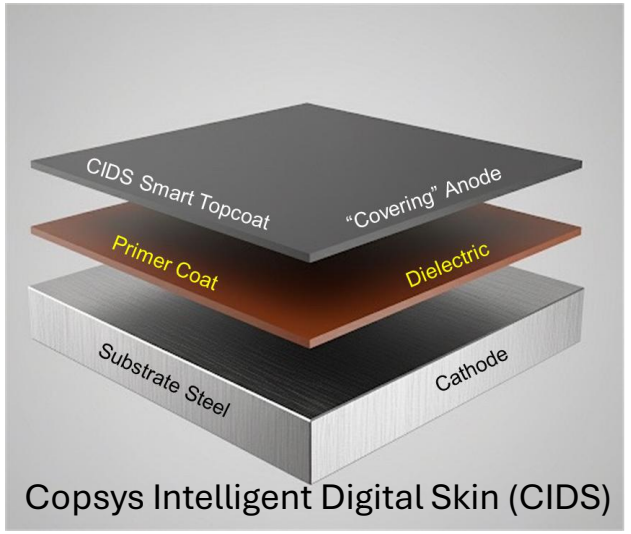
NIIFTA Phase 2 Technologies

Intertek - St Fergus; Ancala (Wood)

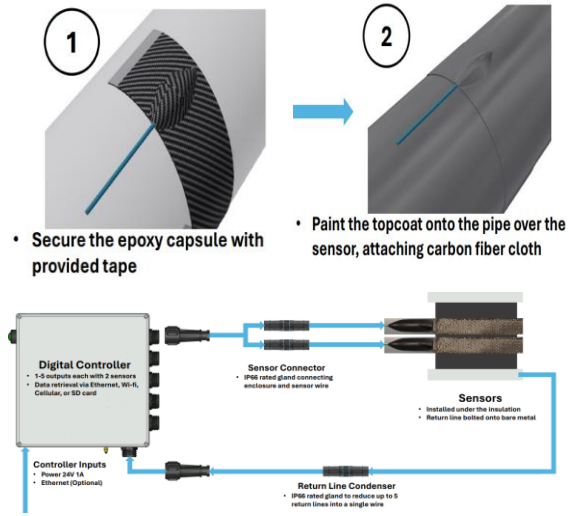
- OpenVision radiography digital system.
- Combines a low energy x-ray source and detector to provide “real time” inspection of insulated pipework.
- Reduced hazard and disruption.
- Scan the pipe to provide a profile view.
- CUI indicators such as corrosion scale, wall loss, pitting or regions of wet insulation are detected.







Copsys Intelligent Digital Skin (CIDS)



Copsys - St Fergus; NSMP (px)

- Surface coating in place of conventional epoxy.
- Applied in two layers, an electrically insulating primer and then the conductive coating (method as for epoxy).
- Electrical connections are made from a controller and a low amplitude electrical signal applied.
- Changes in the electrical response locates the axial position of any coating damage or degradation along the pipe – a precursor to CUI.

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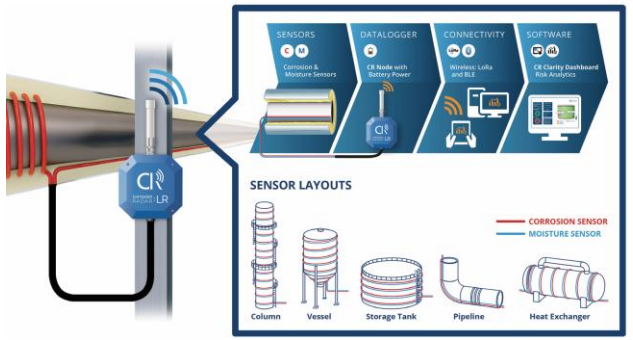
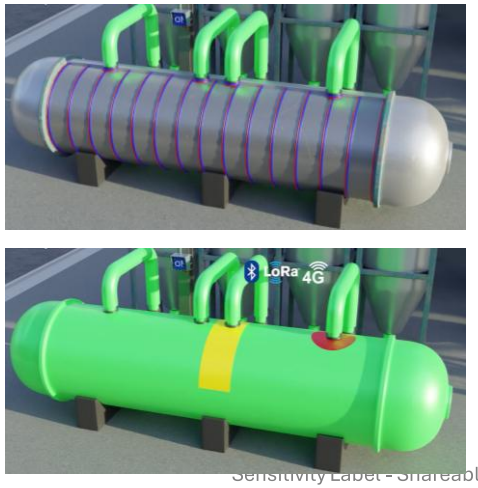
NIIFTA Phase 2 Technologies

CorrosionRADAR – Flotta; NeoNext+

- CorrosionRADAR LR monitoring system utilises a pair of wires installed below the insulation, adjacent to the pipe.
- One wire acts as a moisture sensor.
- The second, sacrificial wire, is designed to corrode and provide an estimate of corrosivity below the insulation.
- Existing insulation removed, wires installed in close contact with the asset being monitored.
- The wire can either be wrapped around the asset or along the asset - trade-off between resolution & range.





Trisense – Flotta; NeoNext+



- CirruSense CUI monitoring system utilises a distributed network of sensors, penetrating directly into the insulation.
- Each sensor measures relative humidity, temperature, and surface wetting.
- Measurements from all sensors are uploaded wirelessly to a cloud portal.
- Installation requires perforations to be made in existing cladding to allow the sensors to be inserted.
- Wide range of insulated pipe diameters 2” - 22”.
- Each sensor is capable of monitoring a radius of 1 m, so a spacing of 2 m is typical.

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NIIFTA's Progress & Plan – Phase 3 (2027)

- Phase 3 – tentative trial scope:
  - Select 1 or 2 CUI technologies (from 6 already trialled)
  - Extended trials to widen the envelope of applicability:
    - Line sizes, tees, bends; vessels; structural
    - Insulation types & thicknesses
    - Cladding / external covering
  - Gather independent trial data through benchmarking to satisfy end users of validity of the technology
  - Engage with HSE to demonstrate same
  - Achieve / raise confidence of applicability as an alternative to current practice
- Participation commitment for Phase 3 – in progress



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WANTED

New NIIFTA members for

Trial hosting

Onshore or offshore

Questions?

Contact: info@the-tlb.com **Website:** https://www.the-tlb.com/sponsored-projects/niifta

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