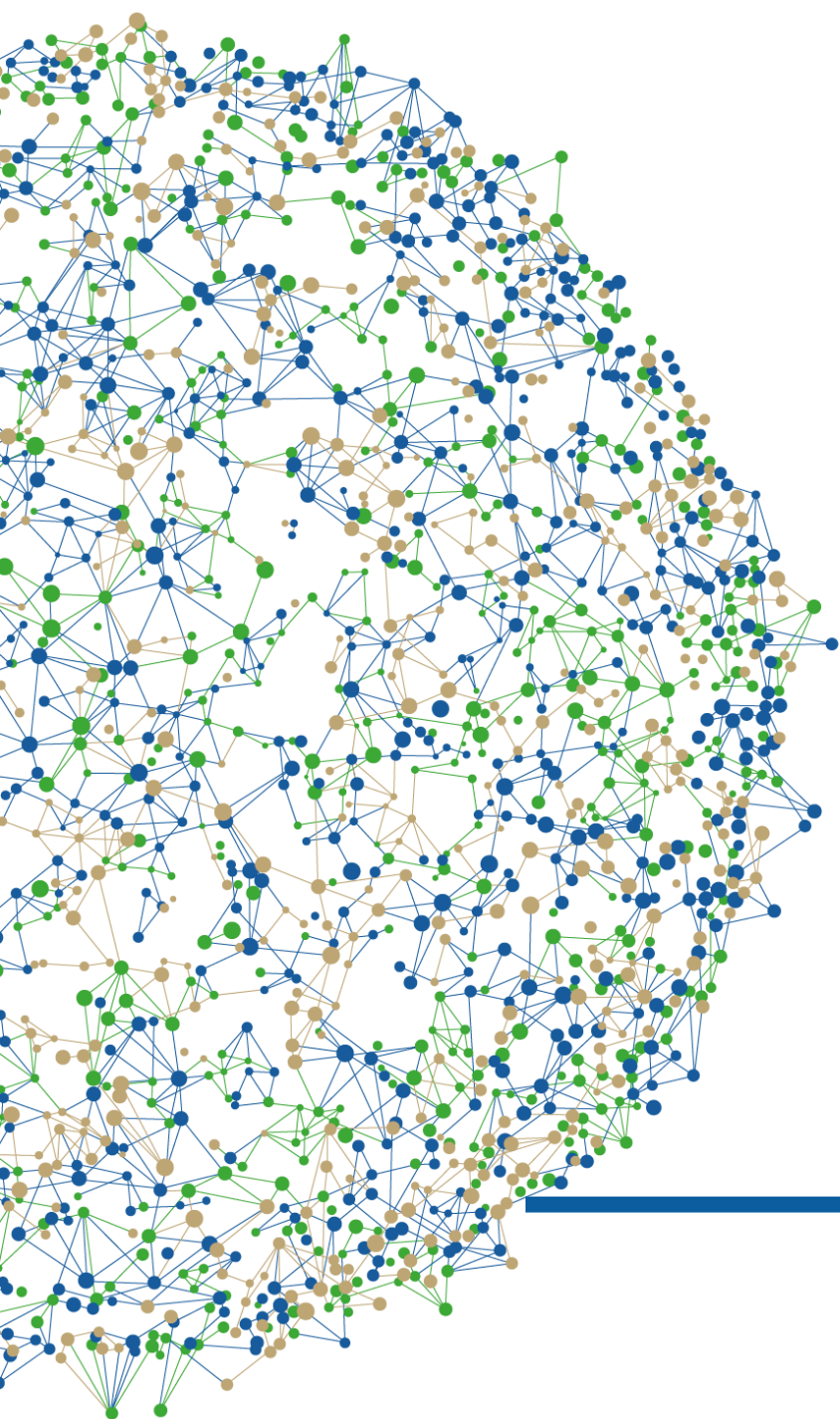




UK Energy Technology Platform helping to “Accelerate Deployment”

Colin Black

Managing Director, Carjon-NRG Ltd

UK Partner, UK Energy Technology Platform

Former Vice Chairman, OGUK Led Efficiency Task Force (ETF)

GlobalScot



Vincent van Beusekom

Co-Founder, TechnologyCatalogue.com



26th July 2022

UKCS Energy Technology Landscape & Focus



NSTA

MER & Net-Zero Strategy / NSTA Technology Survey & Insights / Energy Pathfinder / Supply Chain Action Plans (SCAPs)



TLB

Technology Managers Forum / "Accelerate Deployment"



NZTC

Technology Roadmaps / TechX Accelerator / "Technology Development" & supporting Field Trials



UK Energy Technology Platform

Focused on NSTA Domains & Sub Domains

Supporting Technology "Adoption, Deployment & Replication"

Global Online Community Connecting End User Challenges to Innovative Technology & Tech-Experts 24/7



OEUK

Operator, Contractor and Supply Chain Members

"Representation, Guidelines & Knowledge Sharing"

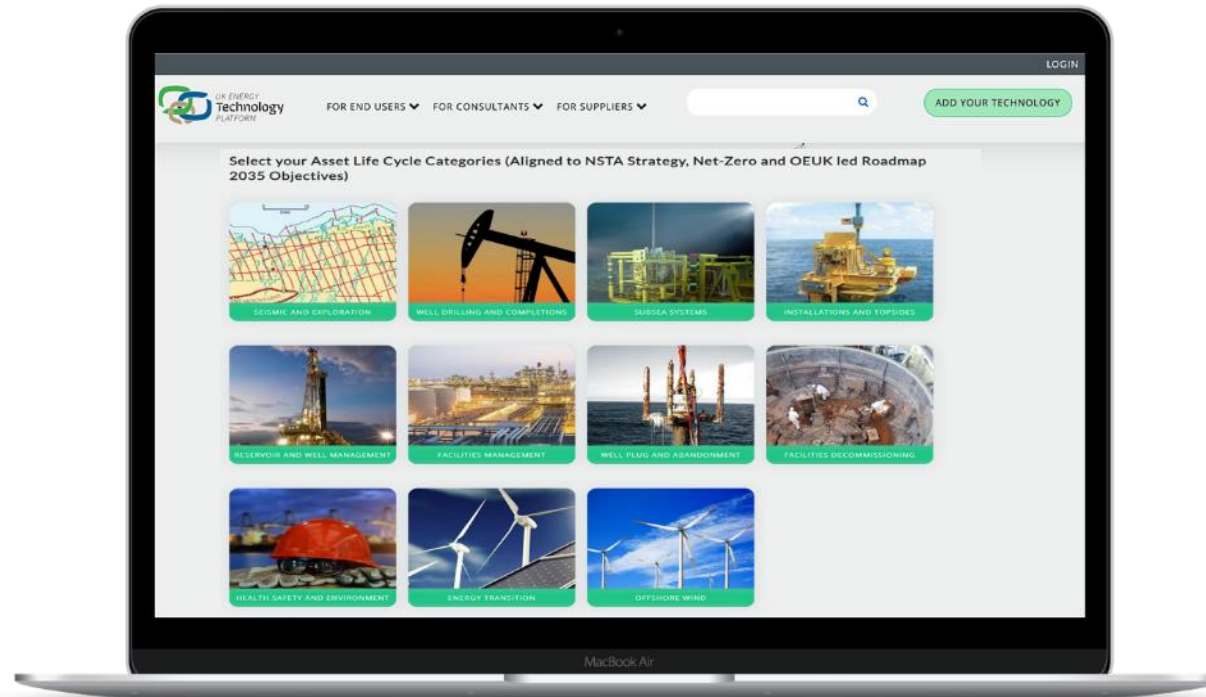
Leading Roadmap 2035 , North Sea Transition Deal , ETF , CIN, Wells/SCM/SME/ESG/Skills Forums etc

Areas of Focus	HSE	Seismic & Exploration	Well drilling & completions	Subsea systems	Installations & topsides	Reservoir & well management	Facilities management	Well plug & abandonment / decommissioning	Facilities decommissioning	CCUS	Hydrogen -Blue -Green	Renewables & Offshore Wind
Knowledge sharing Conferences & Exhibitions	OGUK HSE Conf Step Change	OGUK Wells SPE Devex	OGUK Wells SPE Devex SPE / ICOTA	Subsea UK Expo	SPE Topsides UK EI Asset Integrity	OGUK Wells SPE Devex SPE / ICOTA SPE Sand Mgt	SPE Topsides UK EI Asset Integrity	SPE Well Abandonment SPE / ICOTA	Topsides UK Decom North Sea	SPE	TBC	All-Energy
Industry Support Organisations	HSE / STEP CHANGE / ACHILLES / SEQUAL / ONE / ETZ / NSC / NDC / SE / SDI / DIT / SPE / ICOTA / EI / EIC / GUH / DECOM NORTH SEA / AGCC / ABERDEEN CITY & SHIRE COUNCILS / NOF / EEEGR etc											

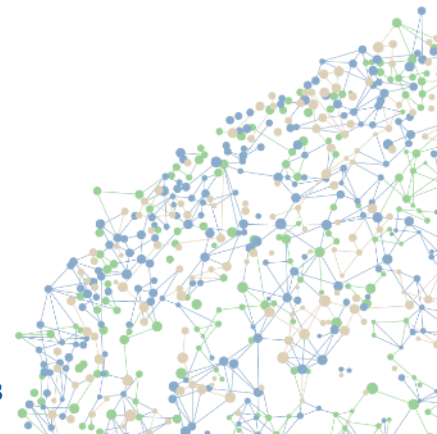
NSTA STRATEGY
ENERGY SECURITY
ENERGY TRANSITION
OGUK LED ROADMAP 2035
FOCUS
SAFETY
ESG
NET-ZERO

UK Energy Technology Platform

Proven technologies at your finger tips



www.uk.energytechnologyplatform.com



UK Energy Technology Platform



North Sea Transition Authority

NSTA Technology Survey & Insights

Technology Insights 2020 – Summary findings

Technology Priorities for the Industry

Lifecycle Categories

Seismic and Exploration

Well Drilling & Construction

Subsea systems

Installations and topsides

Reservoir & Well Management

Facilities Management

Well Plugging & Abandonment

Facilities Decommissioning

Functional Categories

Data and Digital

Net Zero



Select your Asset Life Cycle Categories (Aligned to NSTA Strategy, Net-Zero and OEUK led Roadmap 2035 Objectives)



SEISMIC AND EXPLORATION

13 x Technologies



WELL DRILLING AND COMPLETIONS

27 x Technologies



SUBSEA SYSTEMS

22 x Technologies



INSTALLATIONS AND TOPSIDES

249 x Technologies



RESERVOIR AND WELL MANAGEMENT

36 x Technologies



FACILITIES MANAGEMENT

171 x Technologies



WELL PLUG AND ABANDONMENT

27 x Technologies



FACILITIES DECOMMISSIONING

33 x Technologies



HEALTH SAFETY AND ENVIRONMENT

103 x Technologies



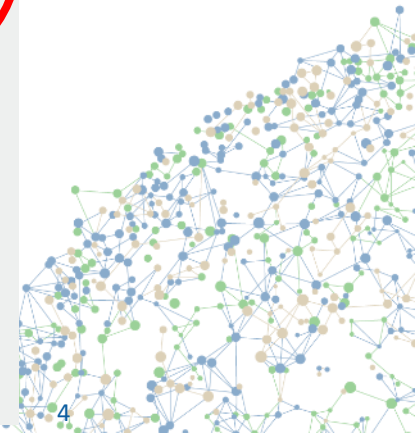
ENERGY TRANSITION

110 x Technologies



OFFSHORE WIND

22 x Technologies



UK Energy Technology Platform

Facilities Management



EQUIPMENT MONITORING AND
RELIABILITY



INTEGRITY MONITORING AND
INSPECTION



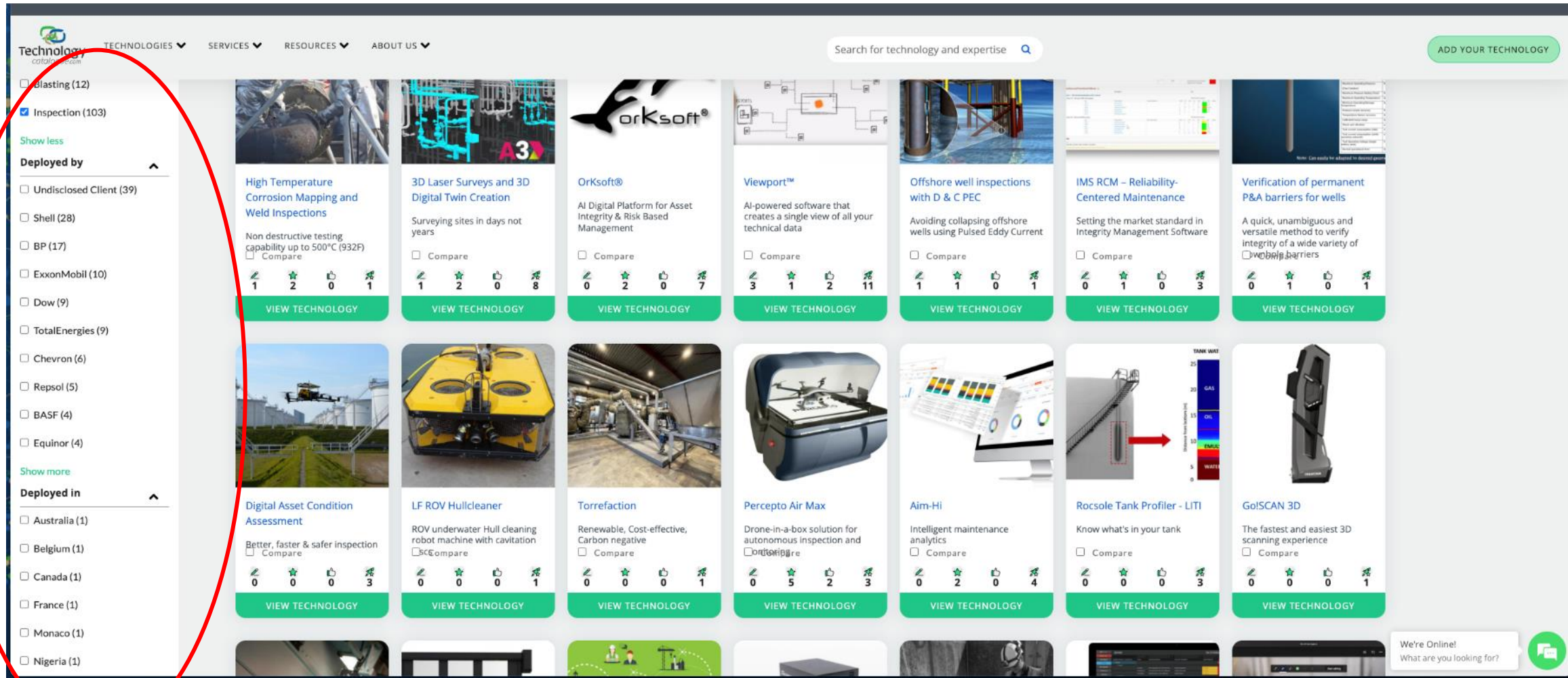
MAINTENANCE AND OPERATIONS



FACILITY INTEGRITY REPAIRS

UK Energy Technology Platform

 Premium functionality



The screenshot displays the UK Energy Technology Platform website. The main content area features a grid of technology cards, each with a title, description, and a 'VIEW TECHNOLOGY' button. The sidebar on the left contains filters for 'Deployed by' and 'Deployed in'. A red oval highlights the 'Deployed by' filter section, which includes a 'Show less' link and a list of clients with their respective counts. The 'Deployed in' filter section is also visible below it.

Deployed by:

- ☐ Blasting (12)
- ☒ Inspection (103)
- [Show less](#)
- Deployed by**
- ☐ Undisclosed Client (39)
- ☐ Shell (28)
- ☐ BP (17)
- ☐ ExxonMobil (10)
- ☐ Dow (9)
- ☐ TotalEnergies (9)
- ☐ Chevron (6)
- ☐ Repsol (5)
- ☐ BASF (4)
- ☐ Equinor (4)
- [Show more](#)
- Deployed in**
- ☐ Australia (1)
- ☐ Belgium (1)
- ☐ Canada (1)
- ☐ France (1)
- ☐ Monaco (1)
- ☐ Nigeria (1)

Technology Cards:

- High Temperature Corrosion Mapping and Weld Inspections**
Non destructive testing capability up to 500°C (932°F)
☐ Compare
1 2 0 1
- 3D Laser Surveys and 3D Digital Twin Creation**
Surveying sites in days not years
☐ Compare
1 2 0 8
- Orksoft®**
AI Digital Platform for Asset Integrity & Risk Based Management
☐ Compare
0 2 0 7
- Viewport™**
AI-powered software that creates a single view of all your technical data
☐ Compare
3 1 2 11
- Offshore well inspections with D & C PEC**
Avoiding collapsing offshore wells using Pulsed Eddy Current
☐ Compare
1 1 0 1
- IMS RCM – Reliability-Centered Maintenance**
Setting the market standard in Integrity Management Software
☐ Compare
0 1 0 3
- Verification of permanent P&A barriers for wells**
A quick, unambiguous and versatile method to verify integrity of a wide variety of well barriers
☐ Compare
0 1 0 1
- Digital Asset Condition Assessment**
Better, faster & safer inspection
☐ Compare
0 0 0 3
- LF ROV Hullcleaner**
ROV underwater Hull cleaning robot machine with cavitation
☐ Compare
0 0 0 1
- Torrefaction**
Renewable, Cost-effective, Carbon negative
☐ Compare
0 0 0 1
- Percepto Air Max**
Drone-in-a-box solution for autonomous inspection and mapping
☐ Compare
0 5 2 3
- Aim-Hi**
Intelligent maintenance analytics
☐ Compare
0 2 0 4
- Rocsole Tank Profiler - LITI**
Know what's in your tank
☐ Compare
0 0 0 3
- Go!SCAN 3D**
The fastest and easiest 3D scanning experience
☐ Compare
0 0 0 1

Technology page Example

Terra UT Drone - Ultrasonic Thickness Measurements with drone

1 Review

4 Favorites

0 Likes

8 Deploys

For a safer workplace and a lower downtime

Page last modified: Thursday, July 14, 2022 - 15:41

Terra Inspectioneering executes ultrasonic thickness (UT) measurements using drones. With the Terra UT drone it is possible to execute certified steel thickness measurements at hard to reach places at height, such as storage tank walls, roofs and rafters or boiler tubes.

The UT drone is Terra's proprietary development and is based on patented technology that enables the drone to firmly and precisely clean the spot to be measured and press the UT probe against the surface. The drone has been specially developed for indoor use in industrial confined spaces and can be controlled in the presence of steel and concrete.

Pro/con

Reduced HSE risk by mitigating work at height and confined space entry

Eliminates scaffolding and rope access costs

Fast deployment, automatic UT data cloud storage

Reduced downtime of assets

Cleaning brush for optimal surface preparation

Detailed monitoring of UT A-Graph live on screen

Support for tank shell, roof, floor and rafters

If surface is too heavily corroded, UT measurements are not possible

Specification

Accuracy

Visual inspection: details until 0,1mm are distinguishable. UT measurements: 0,1 mm accuracy.

Areas of Application

Storage tanks (carbon steel, stainless steel, aluminium). All other steel equipment that need thickness measurements.

ATEX certified

The UT drone can be equipped with certified LEL meter for ATEX zone 1 application.

Capabilities

Integrated couplant (gel) dispenser for optimal contact between UT probe and surface. Integrated surface cleaning brush. Calibrated UT measurement device with certified calibration report.

Certifications / licences

EEMUA159, API653, Level II NDT engineers, Calibration report of UT sensor available, VCA*, Terra UT Drone operator certificate.

Compliance

Inspection and reporting in oil and gas industry compliant with EEMUA159, API653, API510 codes or equivalent.

In-service inspection possible

Yes, from outside.

Output

Raw UT Data is stored in cloud for optimal traceability of data. Deliverable is certified UT report.

Redundancy

Redundant ground station, flight controller and battery.

Speed

Max. 300 UT measurements per day.

Technology Readiness Level

[9/9]

Development Technology demonstration Mature / Proven

Book a Demo

TODAY

July 21, 2022

<

>

6am 7am 8am 9am 10am 11am 12pm 1pm 2pm

N/A

BOOK A DEMO

About Terra Inspectioneering B.V.

Terra Inspectioneering

VISIT WEBSITE

Terra Inspectioneering started as RoNik Inspectioneering at May 13th, 2016. Since then, Terra Inspectioneering is known for their inspections using aerial robots, also known as drones.

Our specialty is the non-entry inspection of industrial, hazardous and enclosed spaces, such as storage tanks, chimneys, boilers, furnaces, pipelines, etc. Our focus is on ultrasonic thickness measurements, visual inspections and thermal inspections. Terra Inspectioneering delivers certified inspection reports conformant to standards like API-653 and EEMUA-159.

+31-653158321

Ask the supplier a question *

L.S., I came across your technology on TechnologyCatalogue.com. I am interested to learn more about Terra UT Drone - Ultrasonic Thickness Measurements with drone. Please contact me to discuss further.

Kind regards,

Vincent van Beusekom, Deployment Matters

SEND MESSAGE

Technology deployed by:

Redundancy

✓

Redundant ground station, flight controller and battery.

Speed

✓

Max. 300 UT measurements per day.

Technology deployed by:

Shell

ExxonMobil

TotalEnergies

bp

BASF

NESTE

Oil tanking

Technique Leaders Cricklaan

Relative Business Impact

CO2 footprint reduction

One workstation

Production

Safety improvement

Reviews

Martin van den Heuvel

Principal Consultant-MSI-Consultancy

CONTACT

5

Terra Inspectioneering is the founder of the Ultrasonic Testing drone and patent holder. The UT measurements are executed by a Level II NDT operator and measurements can be done internally in tanks and vessels above a diameter of 800 mm. Equipment and NDT operator are certified by Mistras. For flying in confined space Terra has developed an internal "Terra UT drone operator qualification system". Terra Inspectioneering is specialised in developing custom hardware and software solutions fulfilling asset owner specific desires.

Deployed in: July 2018

Would recommend: ★★★★★

Do you have experience with this technology?

Share your review to help other technology users. Thanks!

ADD REVIEW

Invite people to review your technology

Email address *

ADD ANOTHER EMAIL ADDRESS

SEND REVIEW REQUESTS

People also viewed these technologies!

LOBO Advanced Work Platform Systems

10 times faster to assemble compared to traditional scaffolding

VIEW TECHNOLOGY

HUNTER

Advanced modular robotic platform

VIEW TECHNOLOGY

VISICS Digital Confined Space Monitoring

Increase safety and efficiency during turnarounds and shutdowns

VIEW TECHNOLOGY

Remotely controlled aquatic drones

Your smart pair of eyes on the water!

VIEW TECHNOLOGY

7

Example: turnaround optimisation

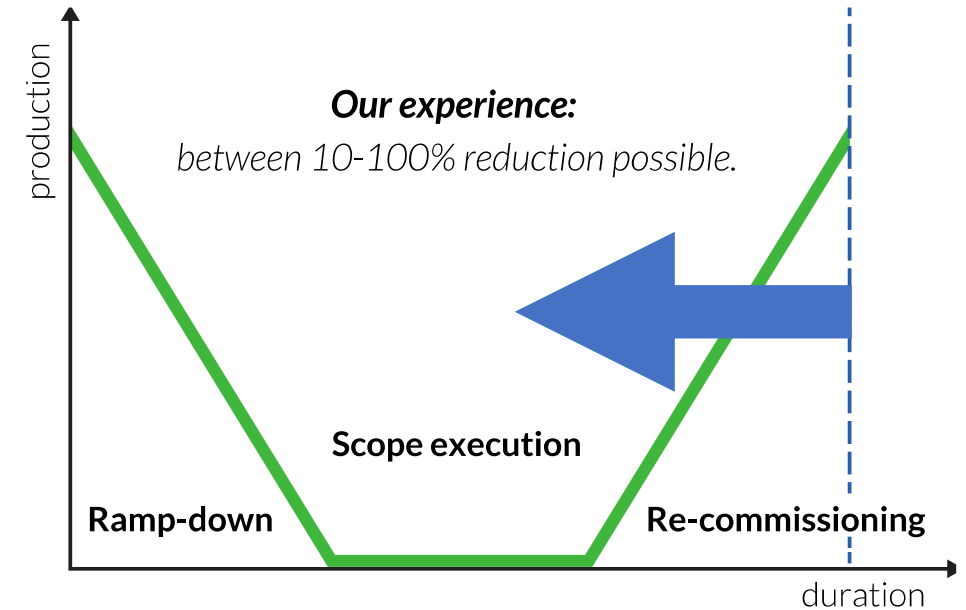
Turnaround optimisation through deployment of proven technologies, selected from TechnologyCatalogue.com

Our experience: between 10-100% duration reduction is possible.

See case study:

<https://www.technologycatalogue.com/case-study-how-uk-operator-optimises-turnarounds-technology>

Example: Minimum Intervention Strategy for Inspection → optimise your inspection scope

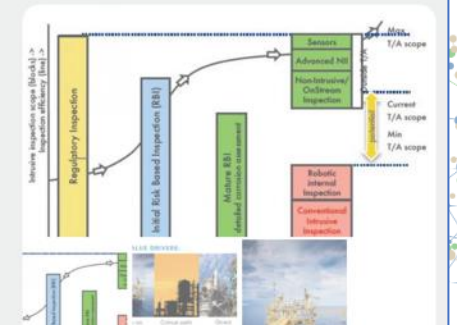


Minimum Intervention Strategy for Inspection (MISI)

☆ SAVE AS FAVORITE

Reduce your turnaround time by optimising your inspection scope

Minimum Intervention Strategy for Inspection (MISI) is a methodology aimed at reducing turnaround time. It proposes 4 maturity phases for Risk Based Inspection and focuses on improving the inspection effectiveness as well as the inspection efficiency.



Technologies for Non-Intrusive Inspection

Case study

Industry

Location

Project Life Cycle Stage

Area

Core Tech

Theme/Discipline

Deployed by

Deployed in

Technologies



AXIS Asset Management Software

Efficient decision-making in one database

☐ Compare

0

0

0

1

VIEW TECHNOLOGY



High Temperature Hydrogen Attack Inspection

By signal processing and imaging

☐ Compare

0

0

0

1

VIEW TECHNOLOGY



MONPAC

Acoustic Emission (AE) technology package for evaluating the structural integrity of metallic pressure equipment

☐ Compare

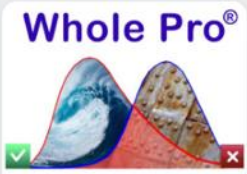
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6

VIEW TECHNOLOGY



Whole Pro®

Wholly Probabilistic Integrity Assessment Solutions for Cost/Benefit based decision making

☐ Compare

0

1

1

1

VIEW TECHNOLOGY



Inspection of partly filled welds at pre-heat temperature

Inspection during welding, to avoid costly and time consuming repairs

☐ Compare

0

0

1

1

VIEW TECHNOLOGY



HTHA Inspections

Full integrity approach for your pressure equipment for High Temperature Hydrogen Attack

☐ Compare

1

0

1

0

VIEW TECHNOLOGY



IMS PEI - Pressure Equipment Integrity

Manage equipment integrity through RBI and advanced risk calculations

☐ Compare

2

1

2

5

VIEW TECHNOLOGY



High Temperature Corrosion Mapping and Weld Inspections

Non destructive testing capability up to 500°C (932F)

☐ Compare

1

2

0

1

VIEW TECHNOLOGY



TOFD, PAUT & C-scan at high temperature

The solution for your corrosion mapping and weld inspections

☐ Compare

0

0

1

1

VIEW TECHNOLOGY



CUI Monitoring and Prediction System

Permanent, long range, wireless monitoring

☐ Compare

0

2

0

10

VIEW TECHNOLOGY



Mistras PHAT Scan®

In-service storage tank inspection

☐ Compare

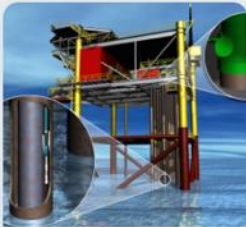
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0

0

5

VIEW TECHNOLOGY



Offshore well inspections with PEC technology

Avoiding collapsing offshore wells using Pulsed Eddy Current (PEC)

☐ Compare

1

1

0

1

VIEW TECHNOLOGY

Copyright | Deployment Matters Netherlands B.V.

26 July 2022

9

Technologies for Non-Intrusive Inspection

Example

Mistras PHAT Scan©

0 Reviews 0 Favorites 0 Likes 5 Deploys

In-service storage tank inspection

Page last modified: Thursday, July 14, 2022 - 15:40

PHAT Scan© is a NDT examination technique used for non-invasive and in-service inspection of the internal shell-to-bottom connection (corner weld) on above ground storage tanks and/or the annular critical weld region of the annular plate.

With PHAT Scan © local corrosion damage caused by a tear-shaped storage medium and crack like indications, in which the crack orientation perpendicular to the vessel wall is due to low cyclic fatigue, can be recorded. (On-stream / NII technology)

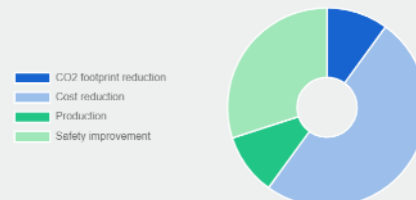
Pro/con

- + With PHAT Scan © the storage tank still remain operational
- + PHAT Scan© has a high level of reproduce ability, measurements from the past can be compared with current measurement data
- + With aid of PHAT Scan© reports and plots, local repairs can be scheduled in advance of planned "out-of-service" inspection
- + With PHAT Scan © crack-like indications, pit shaped corrosion and pitting of shell plate can be detected and sized from an indication depth/height of approximately 1,5 mm (0,06")
- + With PHAT Scan © local corrosion damage caused by a tear-shaped storage medium and crack like indications, in which the crack orientation perpendicular to the vessel wall is due to low cyclic fatigue, can be recorded. (On-stream technology)
- A level of cleanliness is required
- Not ATEX proof

Specification

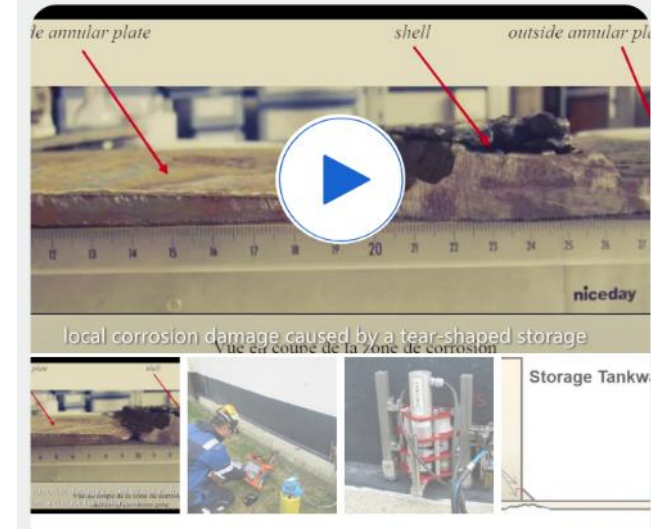
Application	✓	Above ground storage tanks.
Inspection	✓	The internal shell-to-bottom connection (corner weld) and/or the annular critical weld region of the annular plate
In-service inspection possible	✓	Yes, in-service inspection available with PHAT Scan©
Accuracy	✓	Accuracy of the remaining annular plate thickness measurement is 10%. Crack-like indications, pit shaped corrosion and pitting can be detected and sized from an indication depth/height of $\pm 1,5$ mm (0,06")
Temperature	✓	From 5°C till 50°C.
Areas of Application	✓	Shell and annular plates within the storage tanks.
Repeatability	✓	Measurements from the past can be compared with current measurement data.
Compliance	✓	EEMUA 159 / API 653

Relative Business Impact

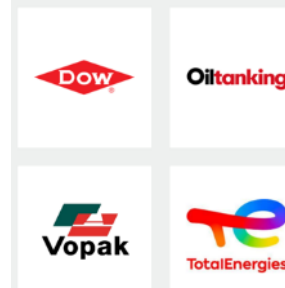


Technology Readiness Level

[9/9]

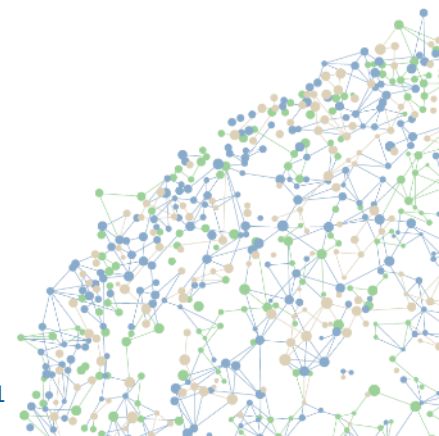
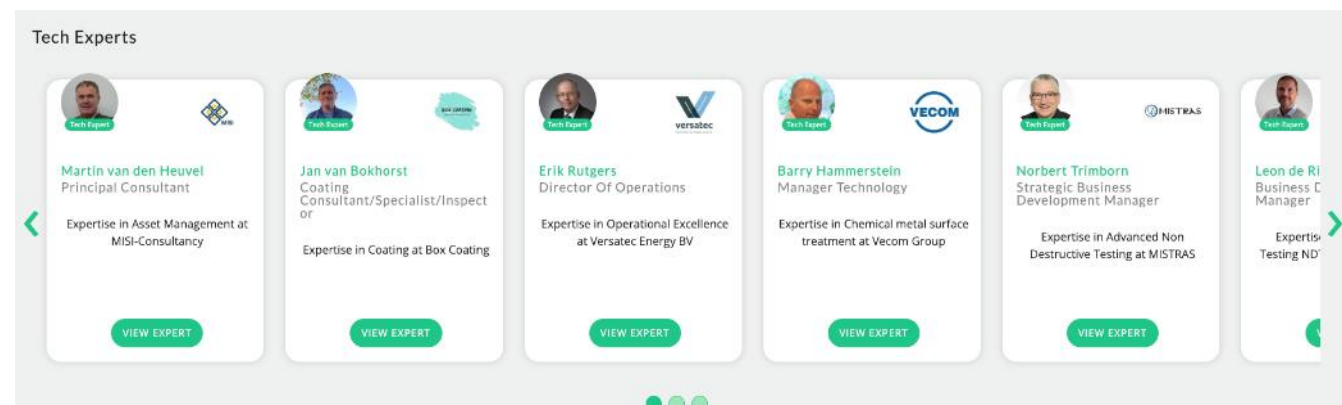
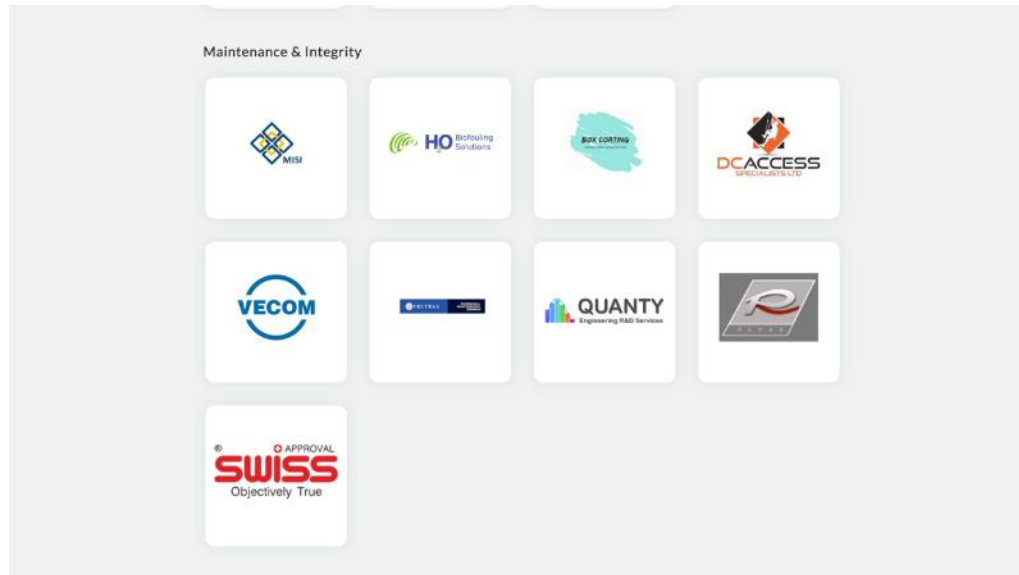


Technology deployed by:



Tech-Expert support for Non-Intrusive Inspection

Not limited to technologies: Access to experts



Tech-Expert support for Non-Intrusive Inspection

Not limited to technologies: Access to experts

status: published

Scope optimisation for Turnarounds

Page last modified: 15/07/2022

Development and implementation of Minimum Intervention Strategy for Inspection (MISI) has resulted in cost reductions for shutdown related inspection work of up to 50%. The MISI concept was launched at the API Inspection Summit in Galveston USA in January 2015 and has been very successfully applied in many installations since.

MISI-Consultancy can deliver a review of your existing maintenance & inspection strategy with a focus on data quality, the status of Risk Based Maintenance analysis and the specification of an optimised maintenance & inspection scope.

Although developed for the Oil and Gas industry the concept and principles can easily be applied for other industries as well.

MISI-Consultancy can execute these activities for you and guide the implementation. We collaborate with reputable companies in non-destructive testing, robotic applications and inspection data analytics.

Our expertise

- ✓ **Inspection:** RBI & Minimum Intervention Strategy for Inspection
- ✓ **Inspection Strategy 4.0:** Reach up to 50% cost reductions for your turn arounds
- ✓ **Maintenance optimisation:** Application of Reliability Centered Maintenance strategies

Countries where we can support you

- Belgium
- Germany
- Netherlands
- Norway
- United Kingdom

Our Technical Experts



Martin van den Heuvel
Principal Consultant

Expertise in Asset Management at MISI-Consultancy

[CONTACT](#)

About MISI-Consultancy

 [VISIT WEBSITE](#)

MISI-Consultancy

MISI-Consultancy delivers services for improvement of Maintenance- and inspection strategies with a specific focus on MISI, a Minimum Intervention Strategy for Inspection.

The objective of MISI is change of the inspection scope from intrusive to non-intrusive by applying advanced non-destructive examination. The remaining intrusive scope is optimized by using robotic technologies and LEAN principles.

+31 6 14288215

Ask the Tech Expert a question *

Please contact me to discuss further.

Kind regards,

Vincent van Beusekom, Deployment Matters

[SEND MESSAGE](#)

Read our reviews for these technologies

 Thermal Imaging Thermal imaging can detect hot spots and leaks in process equipment and piping.	 Ultrasonic Testing Ultrasonic testing can detect corrosion and wall thickness measurement.	 Acoustic Emission Acoustic emission can detect leaks and process equipment and piping.	 Vibration Analysis Vibration analysis can detect mechanical faults in rotating equipment.
 Infrared Thermography Infrared thermography can detect hot spots and leaks in process equipment and piping.	 Thermal Imaging Thermal imaging can detect hot spots and leaks in process equipment and piping.	 Ultrasonic Testing Ultrasonic testing can detect corrosion and wall thickness measurement.	 Acoustic Emission Acoustic emission can detect leaks and process equipment and piping.
 Vibration Analysis Vibration analysis can detect mechanical faults in rotating equipment.	 Infrared Thermography Infrared thermography can detect hot spots and leaks in process equipment and piping.	 Thermal Imaging Thermal imaging can detect hot spots and leaks in process equipment and piping.	 Ultrasonic Testing Ultrasonic testing can detect corrosion and wall thickness measurement.
 Acoustic Emission Acoustic emission can detect leaks and process equipment and piping.	 Vibration Analysis Vibration analysis can detect mechanical faults in rotating equipment.	 Infrared Thermography Infrared thermography can detect hot spots and leaks in process equipment and piping.	 Thermal Imaging Thermal imaging can detect hot spots and leaks in process equipment and piping.

Technologies for which we can support deployment



References:

Reduce Turnaround Duration & Cost

Our clients:

UK Energy Technology Platform

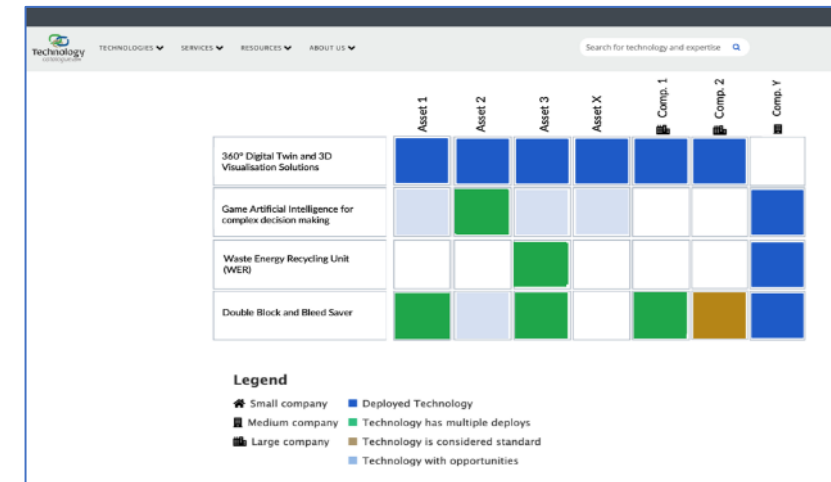
Summary of access options

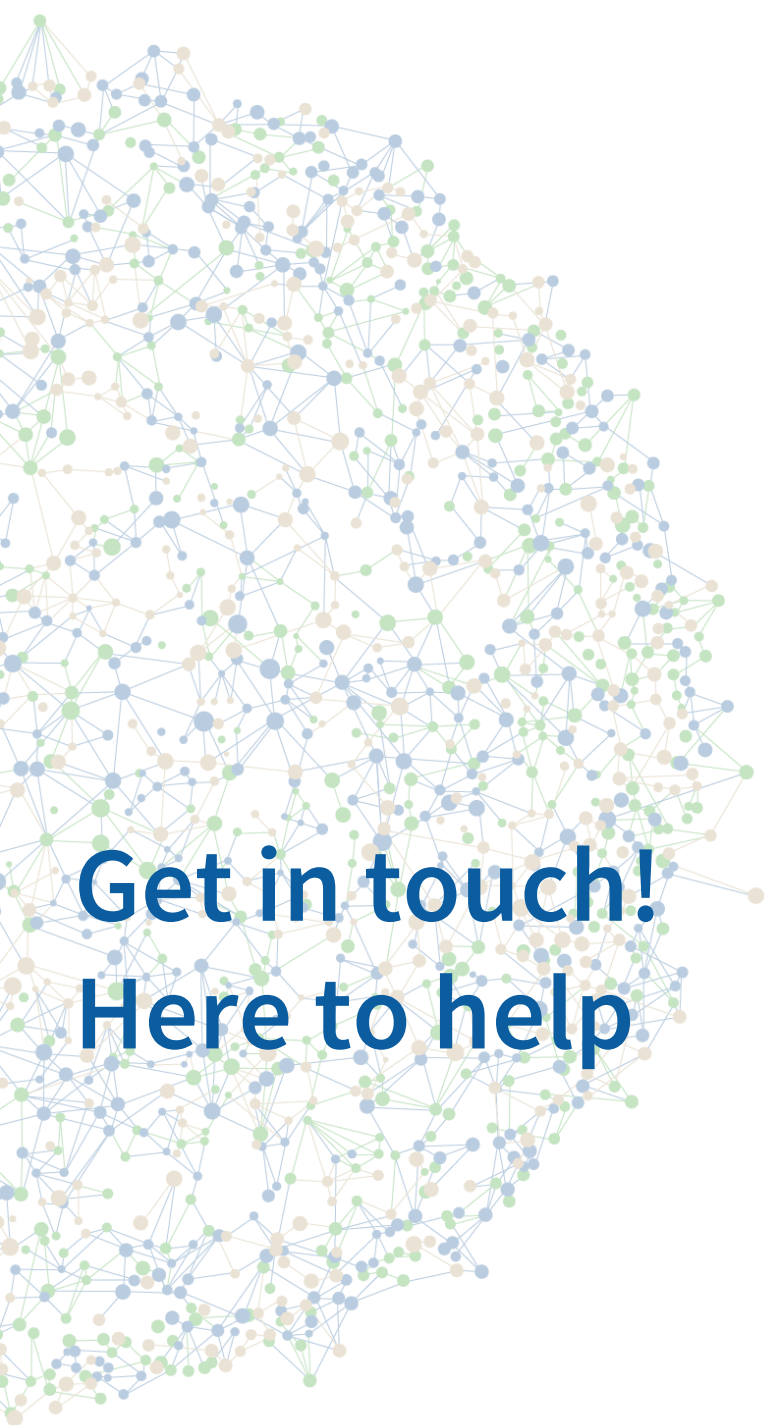
Basic access (Working with NSTA to provide this level of access to all UK operators)

- Access to technologies in line with structure as used in UK by NSTA
- Access to reviews and deployment references
- Access to Insightful Knowledge sharing Blogs , Webinars, Newsroom & Tech Features
- Working with NSTA to increase no. of UK suppliers
- Potential to create a “UK Technology Company” filter (depending on NSTA requirements)

Premium access (Through company subscription)

- Secure and private technology platform powered by TechnologyCatalogue.com
- Custom modules based on your company’s needs, with relevant tech mapped against your needs
- Scouting support to find technologies to address your company’s needs
- Access to advanced data & insights:
 - Track the technologies deployed by other Operators
 - Discover what technologies were deployed in your country/region
 - Share your business needs
- Share technologies with your colleagues
- Optional additional features include:
 - Deployment tracker
 - Internal technology reviews
 - Uploading internally developed technologies





Get in touch!
Here to help



EMAIL

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Vincent van Beusekom: vincentvanbeusekom@technologycatalogue.com

Erik Nijveld :- eriknijveld@technologycatalogue.com

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