How Delivering Accurate, Real Time Flow Data Using Calibration Free Cross Correlation Helped Facilities in the UK and Germany Increase Resource Efficiency.



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ADB ASIAN DEVELOPMENT BANK

German Water Partnership

ADB E-Marketplace
11 June 2026

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Visibility Is The First Step To Improvement



NIVUS GmbH



- Specialist in Flow and Level Measurement
- Founded in 1967 – in Germany
- All the products are engineered, designed and manufactured in Germany
- Footprint to more that 100 countries in the world
- 10+ offices and subsidiaries worldwide
- 60+ partners worldwide
- 220 Employees
- Research and Development

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Field of Activites

Sewer Channel Networks



Surface Water Bodies



Hydropower





WTPs & WWTPs



Drinking Water Supply



Digital Services

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Product and Services

Sensor Technology / Measurement Methodologies



Cross Correlation

Doppler

Radar

Transit Time

Level

Transmitter/RTU



Web Portal / Digital Services



Intelligent Data Transmission



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Five Fords Wastewater Treatment Plant - UK

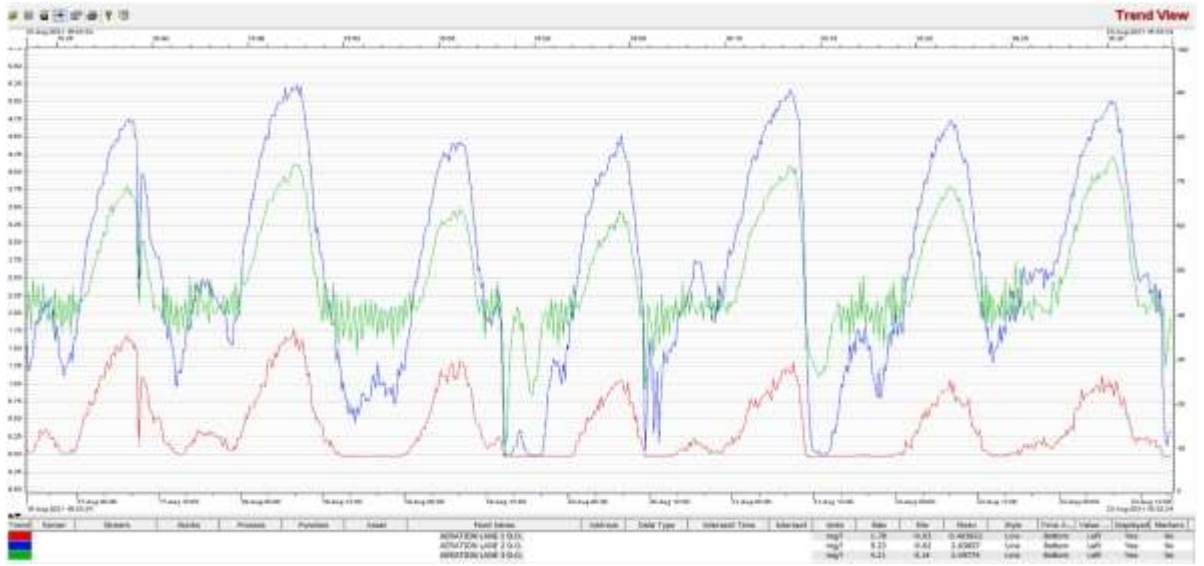
Carbon Reduction in Construction and Management

Challenge Statement

- 3 Aeration tanks with 3 different flow intake.
  - Overloaded
  - Normal
  - Underloaded
- Not using the capacity of aeration process
- Mott MacDonald Bentley to provide mitigation methods to optimise the existing plant with a limited budget.
- Flume… Weires… Penstock

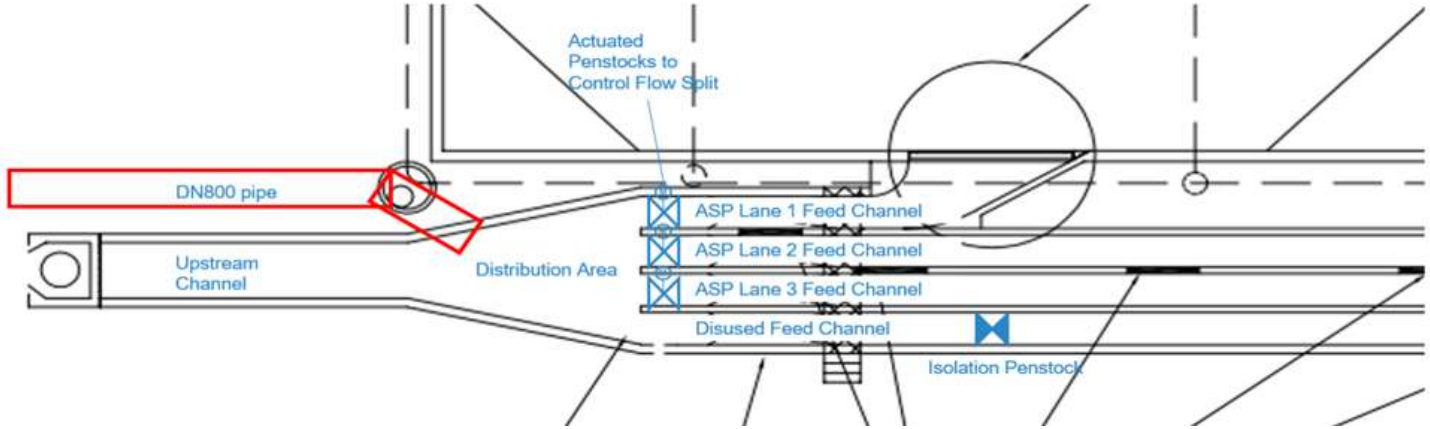






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Scenarios and solution



- Downtime
- Construction
- Costs
- Feasibility and applicability
- Control the inlet flow of the aeration tanks
- Active Sludge inlet via DN800 pipe

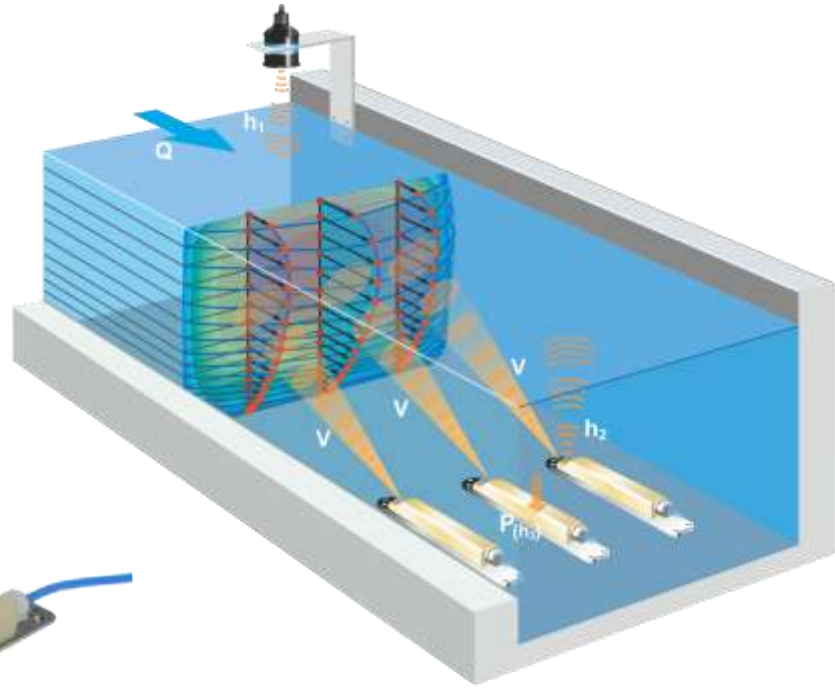


- Controlled Penstock ?????
- **Accurate and Realtime flow data is needed**

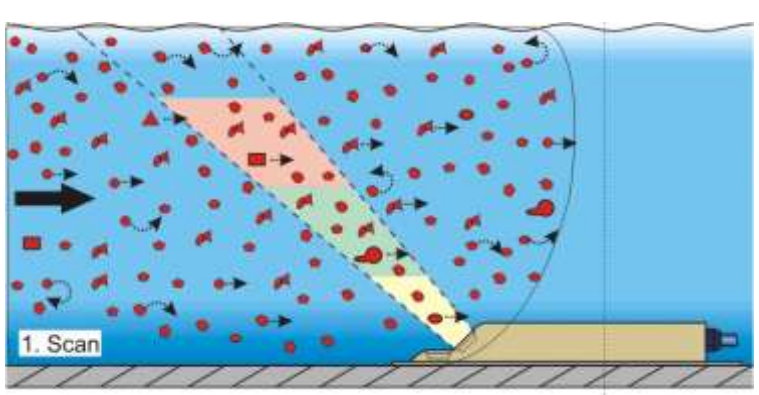
How to deliver reliable flow data?

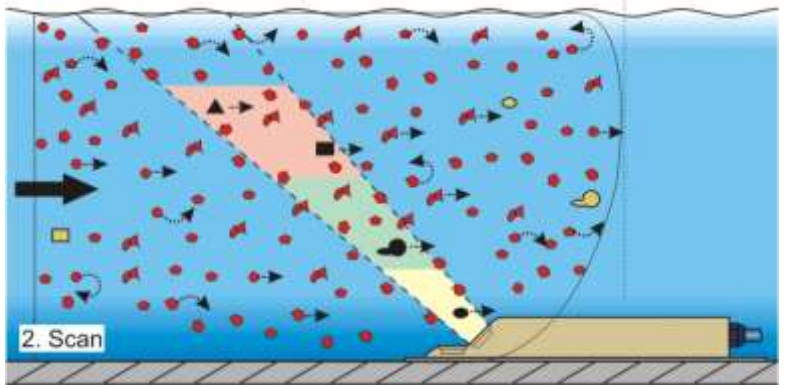
- Cross Correlation - NivuFlow 750
- Patented measurement method for flow velocity detection
- Measuring Flow velocity in 16 different layers simultaneously
- Calibration free

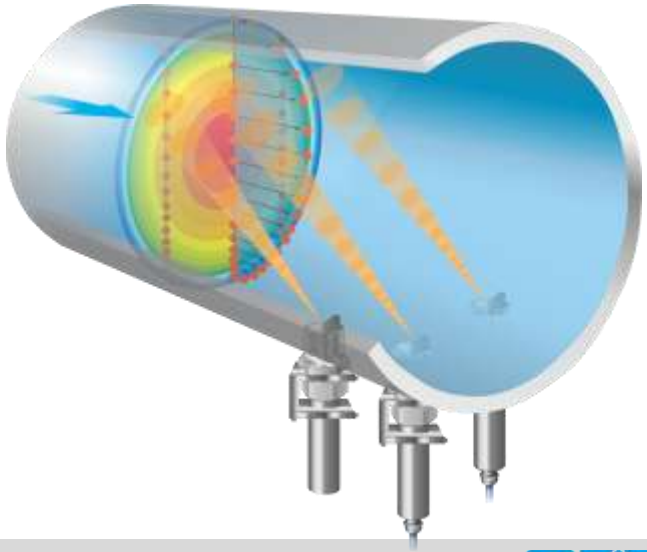












Solution: No downtime, Minor construction, Reliable

NIVUS Cross Correlation Pipe & Wedge Sensor
NivuFlow 750 + POA Sensor



Pipe insertion flowmeter – Installed on 800mm





Channel mounted flowmeter – Installed on existing channels

Results and Benefits

- About 600tCO2e
- £3.5million in Capital Delivery Costs to the Client
- The solution has also protected the Client from ongoing risk to environmental compliance; many of the conventional solutions would have required significant temporary works which could result in deterioration of effluent quality



Flow to ASP before and after Commissioning

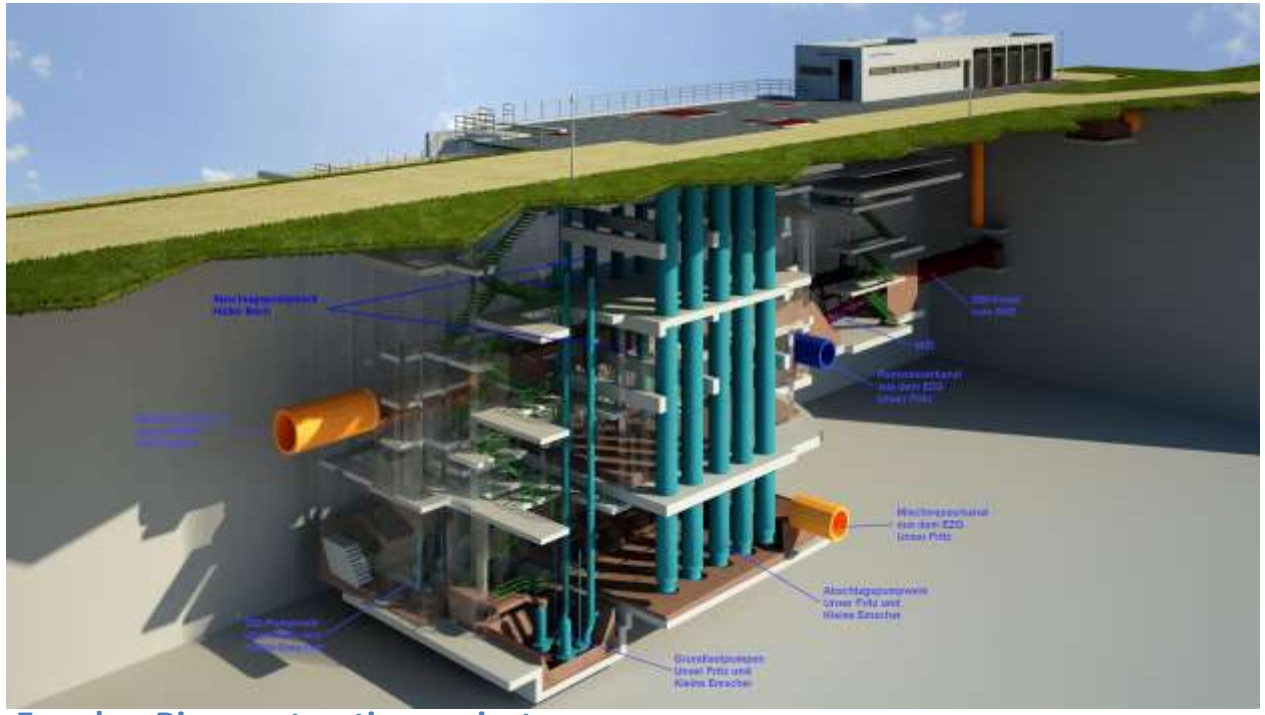


Grimbergstrasse Pumping Station – DE

Making impossible, Possible

Challenge Statement

- Pumping station pumping run-off and wastewater
- 5x DN 1200 + 5x DN 1000
- Pump efficiency and Energy consumption control
- Pumps, cables and chain running inside the pipe DN 1200
- 10 pumping units that pump 8,100 liters per second approximately 32 meters high.



Emscher River restoration project – AKE pumping Station

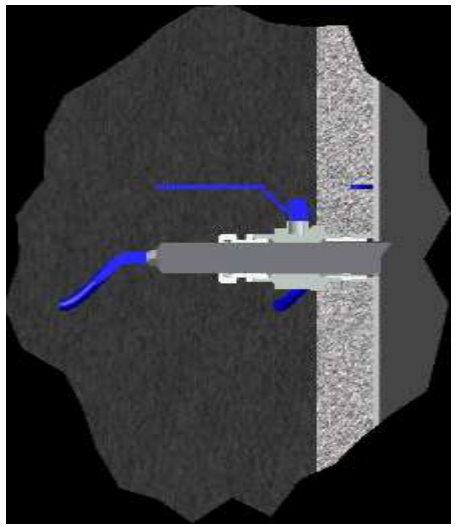


Pump chain and cables passing in the middle of pipe

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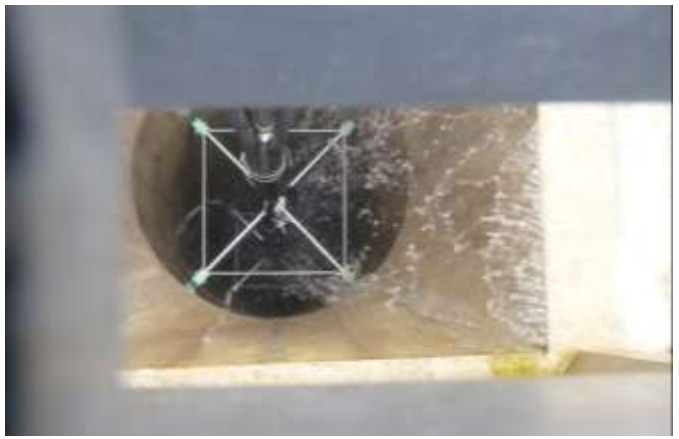
Making impossible, possible

- Project specific adjusted sensors
- Insertion sensors
- Saving capitals and Co2 by using Insertion Cross Correlation
- High Reliability
- No Calibration



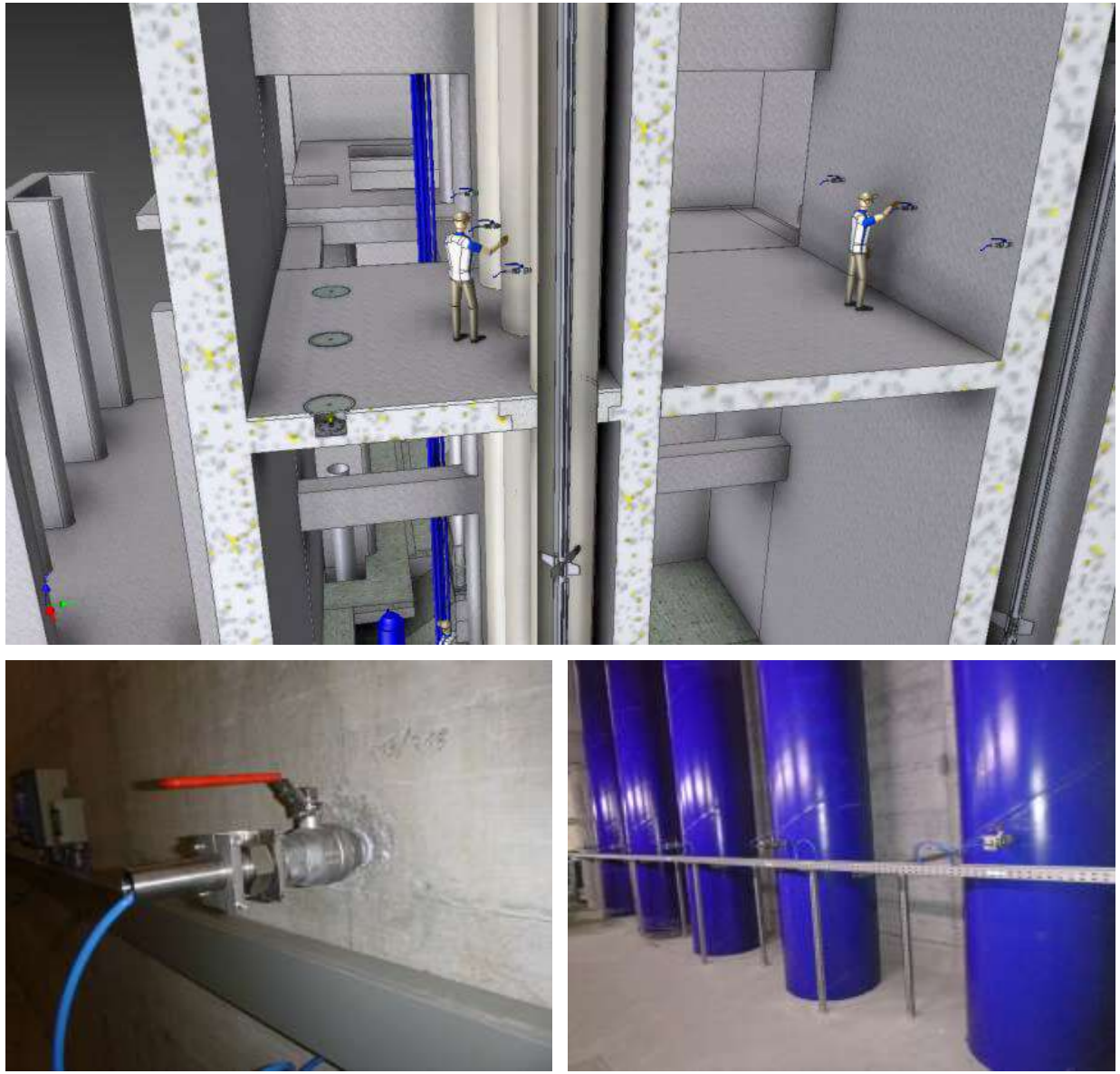






Results and Benefits

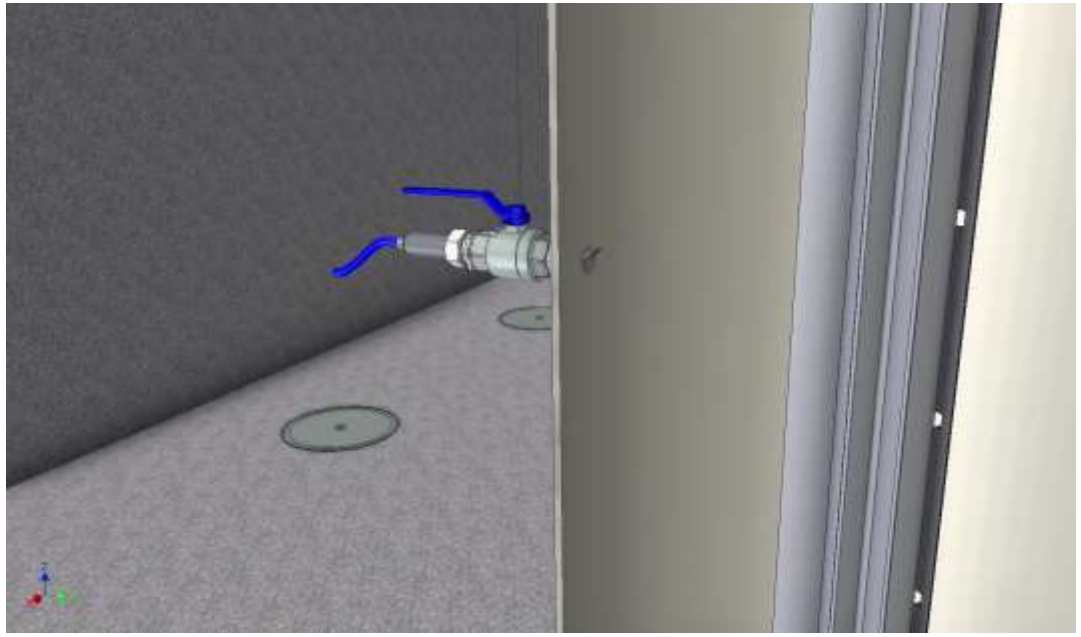
- Implementing Insertion Cross Correlation, and tailoring the sensors made it possible to measure flow in challenging pipes
- Installation with no pipe cut, no big machinery therefore less operational costs
- Easy mounting and demounting opportunity.
- Saving CO2
- Real time pump efficiency check.
- Treatment plant process optimization
- Measured and controlled discharge to the river



Installation of Insertion Cross Correlation FM in pipes without interrupting the process

Solution



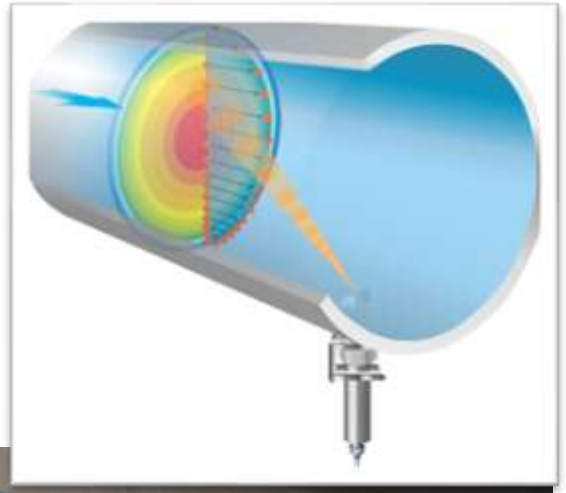


Insertion type Cross Correlation sensor and the wall mounted transmitter



Technology in Use – NivuFlow 750

- Pipe range up to DN 4000
- Positive and negative flow
- Accurate measurement
  - <0.5% for v<1m/s (Standard Condition)
  - <1% for v>1 m/s (Standard Condition)
  - 2% in real application based on mCERTs

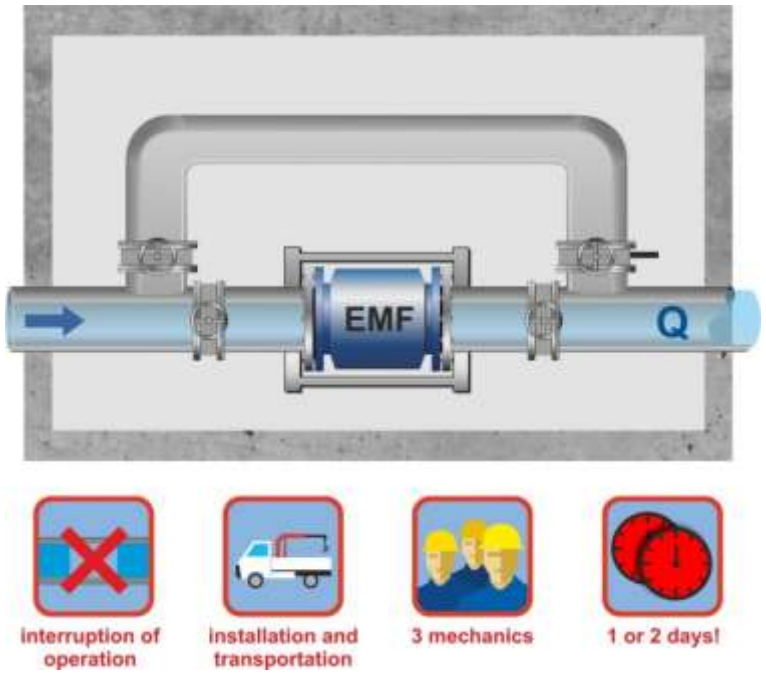




Replacing defected EMF with insertion Cross Correlation

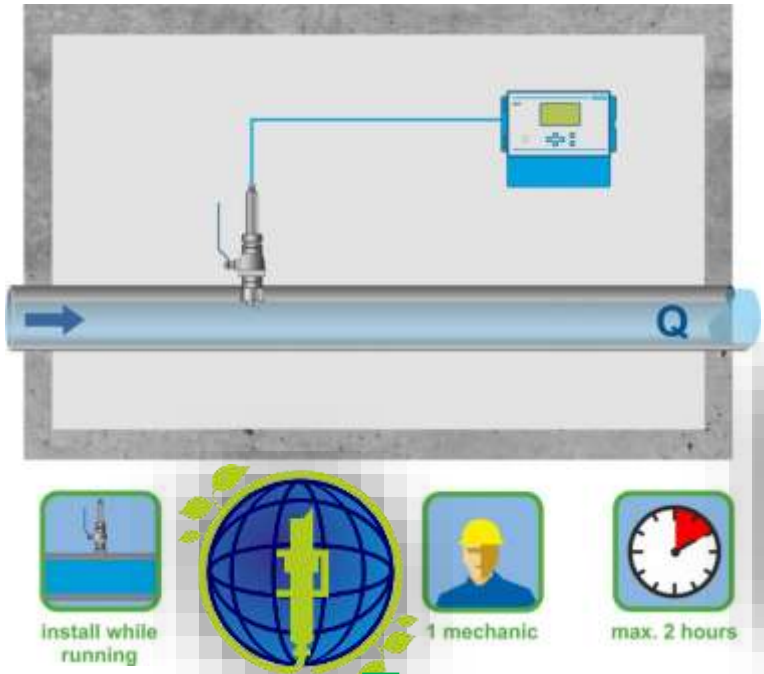
Comparison Delivery and Installation Pipe Sensor / Mag Meter

Electro-Magnetic Flow Meter



Approx. OPEX: potentially £100,000s

NIVUS Pipe Sensor Flow Meter

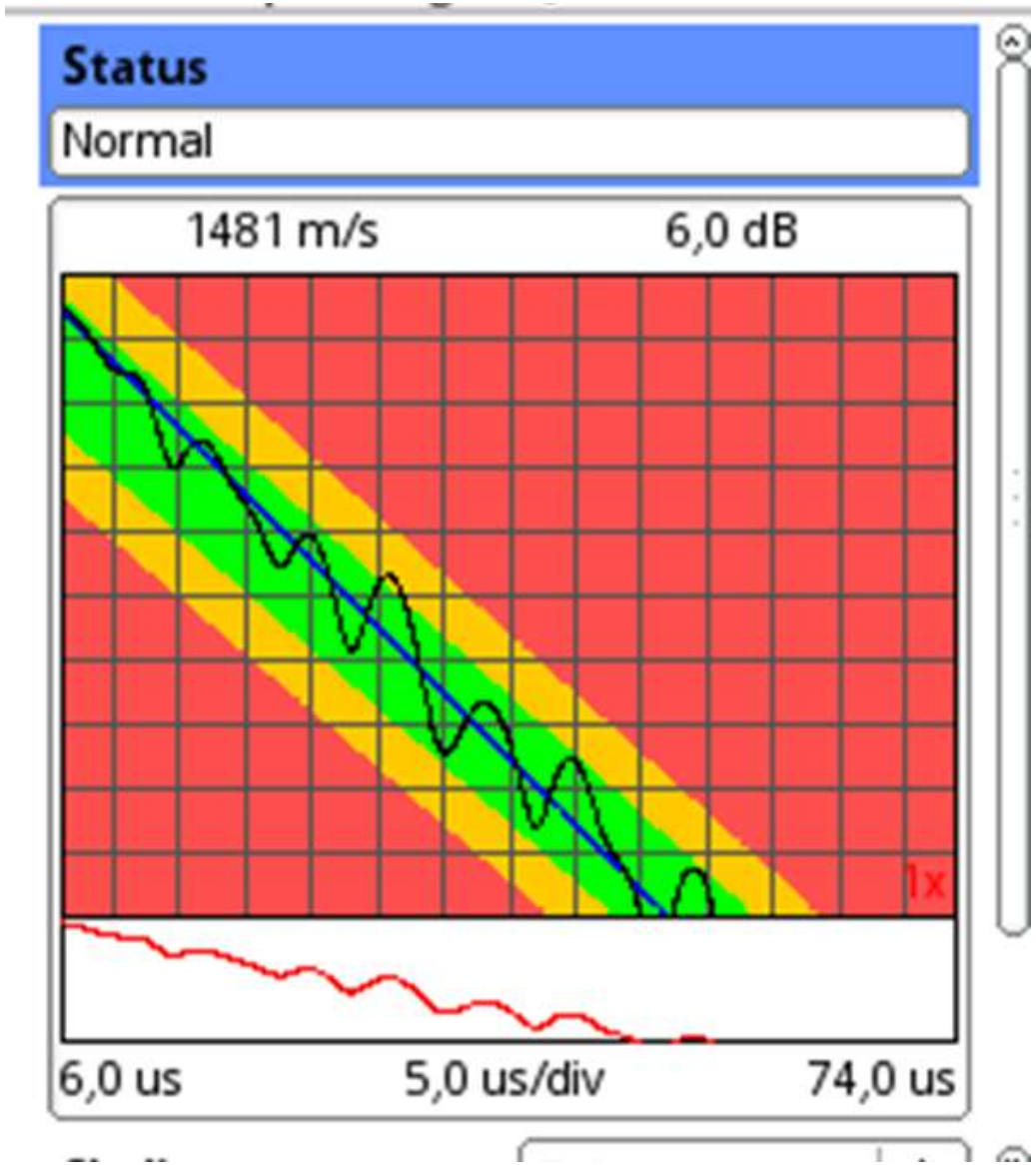


Approx. OPEX: £10,000

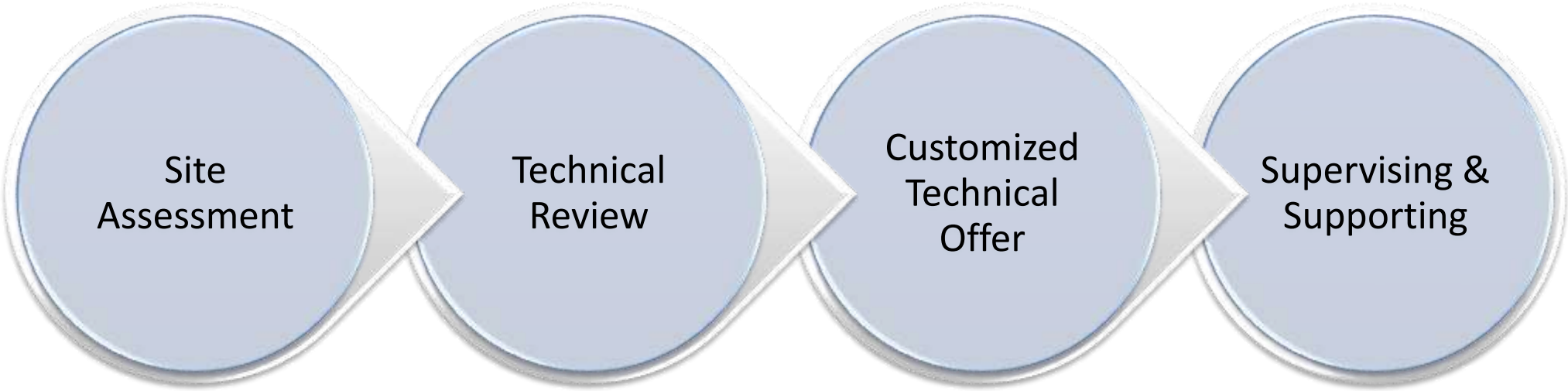
$C0_2$-Reduction thanks to saving approx. 1.300 kg of copper and steel

Diagnostic function of NF 750

- System checks the signal quality to make sure the readings are correct.
- Interruption of the signal will be recorded and recognized in the system.
- Operator is able to automatically receive alert for maintenance and inspection need.



Project Journey



- Receiving information from designated site for measurement
- Technical experts review the hydraulic conditions and suitability
- Providing technically customized design including the installation
- Support during installation and after installation

More information and next step

- Visit our website for more information
  - www.nivus.com
- If you have measurement point share it with us to get technical offer
  - sales@nivus.com
- Find your local partner



Thank you

