ICorr Aberdeen Branch Welcomes

Chris Burke, BEng (Hons), MIET
Oilfield Services
Achieve accurate and reliable measurements in the harshest environments whether you’re pumping drilling mud, cement, or stimulation fluids.

Transportation & Storage
Accurately, safely, and efficiently move, handle and store product while responding to customer and market demands.

Offshore
Reduce operational costs and improve production whether you’re in a fixed, floating, or subsea environment.

Gas Processing & LNG
Improve efficiency and reduce cost for optimized throughput and plant performance across every facet of the gas processing value chain.
Chris Burke
Upstream Sales Manager

- BEng (Hons) Electronic & Communication Engineering – Robert Gordon University
- 20+ years experience in the Oil and Gas Industry
- 15+ years Asset Integrity Experience:
  - Support Engineer - Roxar
  - Corrosion & Erosion Monitoring Engineer - ConocoPhillips
  - Senior Engineer – Oceaneering
  - Senior Project Engineer – SMS
  - Consultant – Sandman Engineering
  - Sales Manager - Permasense
THE ROLE OF ADVANCED INSTRUMENTATION IN PROCESS INTEGRITY MANAGEMENT
IOT & Industrial Technology

- New devices
- Increased Functionality
- Industrial Wireless Technology
- Easier installation / maintenance
Oil & Gas Industry Challenges

- Ageing Assets
- Declining Production
- Increased Maintenance / Inspection challenges
- POB Limitations
Value of Advanced Instrumentation

- Continuous Monitoring
- Remote Monitoring
- Data Visualisation & Analysis software
- Lower Installation costs
Asset Integrity Management

Corrosion Awareness Day 2018
Risk Based Inspection

- Criticality = Likelihood x Consequence
- Inspection scheduling / planning

REACTIVE not PROACTIVE
CO2 Corrosion Modelling Example

NORSOK M-506 CO₂ CORROSION RATE MODEL

The NORSOK M-506 corrosion rate model calculates the CO₂ corrosion rate on basis of given temperature, pH, CO₂ partial pressure and shear stress.

The model is valid for temperatures 5 - 150 °C, pH 3.5 - 6.5, CO₂ partial pressure 0.1 - 10 bar and shear stress 1 - 150 Pa.

The model is not applicable when the H₂S partial pressure is higher than 0.5 bar, or when the ratio between the partial pressure of CO₂ and H₂S is less than 20.

The model can lead to inadequacies of the corrosion rate when the total content of organic acids exceeds 100 ppm and the CO₂ partial pressure is less than 0.5 bar.

Options on input
- Use as input: CO₂ pressure
- CO₂ fugacity
- Calculate shear stress
- Calculate pH

Options
- Parameter study
- Accumulated corrosion
- Calculate humidity
- Print
- Save in new file / Load file
- Save in current file
- Show current file
- Help
- Exit

Output
- Corrosion rate without inhibitor effect: mm/year

Run the corrosion rate model

Calculate corrosion rate
The Role of Advanced Instrumentation in Process Integrity Management

- Real-time monitoring of process parameters
- Trend changing process conditions
- Verify integrity of plant equipment & pipework
- Predict future rates of corrosion
Integrity Advantages of Advanced Instrumentation

- Monitor high risk locations
- Monitor difficult to access potentially hazardous locations
- Verification of RBI methodology
- More efficient scheduling of inspection resources
Operational Advantages of Advanced Instrumentation

- Process Optimisation
- Higher plant availability requirements
- Longer runs between maintenance shutdowns
- Tighter HSE regulations
- Tighter CAPEX budgets
- More remote/unmanned or ageing assets

Data-driven decision making

- Increased margin $

- Leaks/ loss of containment
- Overly conservative operations
- Reduced margin

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Improved Risk Management, Profitability and Safety

Operational risk management
- Availability improvement
- Integrity assurance
- Personnel effectiveness

Enhanced decision making
- Production maximisation
- Material selection
- Equipment life management
- Process optimisation
- Shutdown planning
- Treatment optimisation

Safety
- Personal
- Process

Improved profitability
THANK YOU FOR YOUR ATTENTION ANY QUESTIONS?