Simplify Subsea Testing

Fast - Automated - Reliable - Safe

Winners of The Queens Award for Enterprise: Innovation 2019
C-Kore
Contents

Introduction

Applications:
- Fault Finding Operations
- New Installation Projects

C-Kore Equipment
C-Kore Software
C-Kore Development

Development

Cable Monitor Prototype Trials

Cable Monitor Released

Subsea TDR Released

Started in 2010

2011

2015

2017
C-Kore History

- 250+ Units Deployed
- 40+ Different Customers
- 50+ Different Fields

- 25+ Assets Installed
- 70+ Faults Located in Fields
C-Kore Subsea Testing Tools

Cable Monitor

- Insulation Resistance
- Capacitance
- Temperature
- Continuity
- Shock & Vibration
Cable Monitor Specification

- **Insulation Resistance**: 1kΩ to 10GΩ
- **Capacitance**: 1nF to 99uF
- **Continuity Resistance**: 0Ω to 1MΩ
- **Shock & Vibration**: 0 to ±200G (3 Axis)
- **Temperature**: -40 to 100°C
C-Kore
Subsea Testing Tools

Subsea TDR

- Localize Faults
  - Short Circuits / Faults
  - Open Circuits / Breaks
  - Discontinuities

- Shock & Vibration

- Temperature
Subsea TDR Specification

- Discontinuity Location: >20km Range*
- Location Precision: 2nS (~15cm*)
- Pulse Width: 10nS to 10uS (automated)
- Measurement Gain: -18dB to 56dB (automated)
- Temperature, Shock & Vibration

*Dependent on cable properties
C-Kore
Subsea Testing Tools

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What’s NEW
C-Kore Subsea Modem

Reconfigure units while subsea

Download full test results **without recovery** to deck

Designed for **simple deployment** via ROV

Easy integration using a standard RS232 data-link
C-Kore Programming

01 WHAT to Test
IR, CR, Capacitance core-to-core and core-seawater

02 WHEN to Test
Schedule and Manual Triggers

03 HOW to display Results
All, Worst or Session values

04 Data ANALYSIS
Everything is datalogged download for analysis
Subsea Tools to save *Time & Money* on

- Fault-finding Operations
- Installation/Commissioning Campaigns
- Down-Hole Testing
Fault-finding with C-Kore…
1. Vessel arrives in field
2. ROV launched
3. Downline deployed (move to safe distance)
4. ROV derigs and connects downline
5. Testing from back-deck

Downline Issues:
Slow deployment and permits required
Downline faults, attenuation, reflections
Back deck weather affects readings
Operator skill under time pressure
Quality of saved data
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Deployment
C-Kore

1. Vessel **arrives** in field
2. ROV launched
3. ROV **connects** and triggers C-Kore unit

**C-Kore Benefits:**
- Fast deployment
- No permits required (no high voltage)
- Direct measurement
- Automated and repeatable
- Interactive result analysis
Asset installation with C-Kore…
C-Kore
New Installation

Vessel performs lay
C-Kore measurement throughout
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C-Kore
New Installation

Second UET installed
C-Kore remains fitted

Simplify Subsea Testing
C-Kore
New Installation

Subsea measurement (after lay and/or wet-storage)
Umbilical health proven
C-Kore Systems

Thank You

Any Questions?