

Monitoring mooring performance - managing risk with data technology

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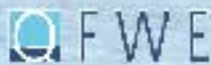


KNOWIX



APPLIED FIBER

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Quest Offshore

About Knowix

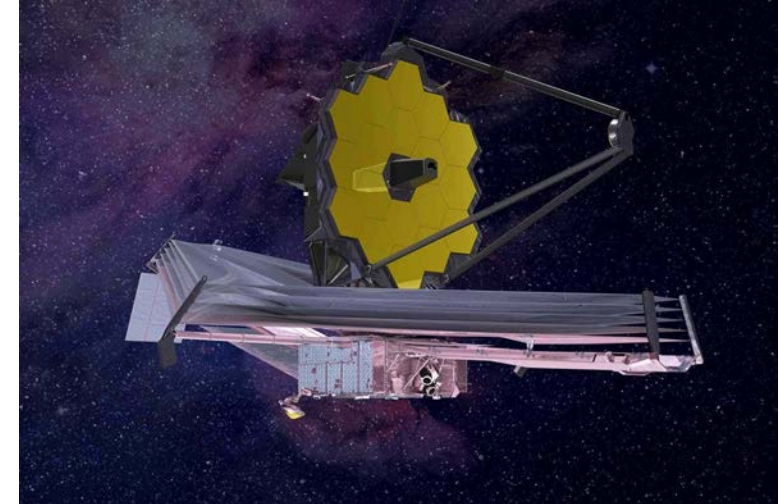
■ About Applied Fiber

- Applied Fiber is the industry leader in advanced terminations with 20 years of experience in offshore, mining, aerospace and military
- DNV Type approved terminations for fiber ropes
- Developed rope digitization IP complementary to termination technology
- **Knowix is an independent spin-off from Applied Fiber**

■ Knowix delivers digitization of fiber rope systems

- Real time system monitoring
- Data and condition monitoring
- Product data consolidation at point of use

■ Knowix and Applied Fiber partner in the delivery of intelligent terminations



The Mooring Life reduce cost and risk



Design, Build and Install

Operations

Decommission

Maintenance and Inspection

Materials Testing
Technology
Design Certifications
Knowhow
Modeling Partnerships

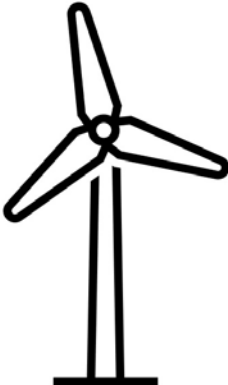
Field Data

Tension Exposure
Elongation Dampening
Excursions Positioning

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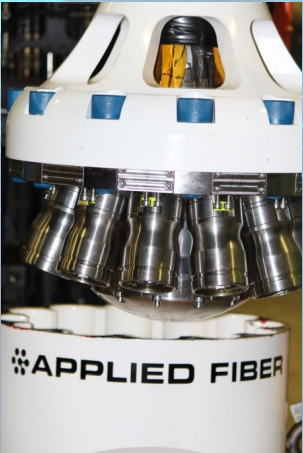


Modeling to Knowing



Data accessible locally and remotely

Integration with platform data

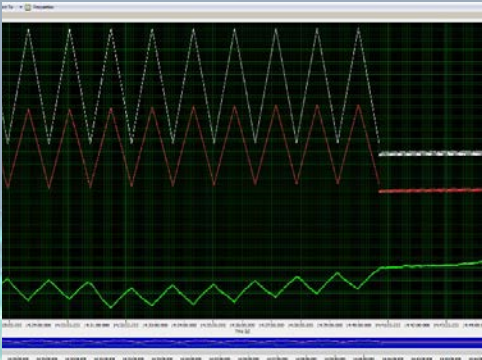
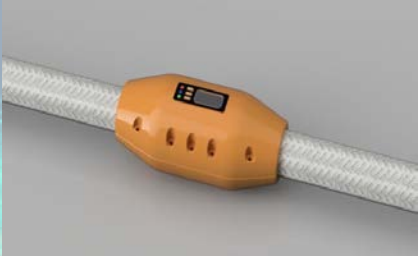


Smart Terminations

Various power and communications options

K-Nodes along rope

Integration with data from other mooring components



Value of smart terminations



- Built-in housing for sensors
- Installation/Operational Benefits
 - Simplify rigging arrangement
 - Quick connect options
 - Improved fatigue at interfaces with metal hardware
- Fatigue monitoring at individual rope strand level



Conclusions

- Field data validates mooring system working as designed and provides details of anomalous events
- Smart terminations can deliver synthetic condition monitoring
- System integration drives broader design and modeling optimization delivering improved reliability
- P-F curves support condition based inspection which reduce operational costs



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Thank you for your time and attention

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