Solutions beyond core

VIsionTech online monitoring device
for optimal rope performance

Digital solutions

Bekaert

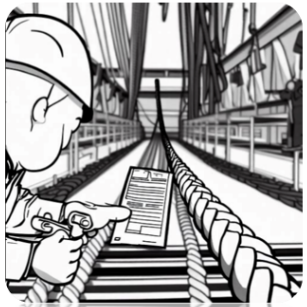
Digitized rope condition monitoring solution

– VisionTek is the leading **3D optical measurement technology** that runs performance and surface algorithms to compare real-time performance with critical rope parameter requirements.

The problem worth solving

Next generation condition monitoring technology enabling safer, faster & high-quality rope monitoring.

The Past: Human Eyes



- Tired human eyes inspect moving rope.
- Only able to see 180 degrees at a time.
- Slow, subjective & tedious process.
- Fatigue and error prone.
- Condition and expertise dependant.

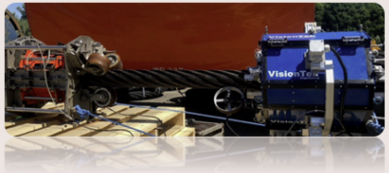
The Present: MRT + Human Eyes

- Magnetic rope testing devices (MRT) complements human inspectors.
- Relatively faster inspections.
- Able to detect certain internal & external damage (wire breaks & corrosion).

Inspector still need to be present,

- To validate & identify other external damages.
- Measure dimensions (ex. diameter) to determine rope condition vs discard criteria.

The Future is here: MRT+ Computer Vision



- Camera records external surface condition.
- Smart UI integrated with MRT allows comprehensive analysis of both internal & external damages.
- Smart algorithms measure dimensions (ex. diameter, lay length) and detect surface damages beyond MRT capabilities (ex. Lightning strikes, abrasion etc).

Technology complements human decision making,

- Improved accuracy, high quality rope dimensional data
- Reduced inspection duration with ability to retrieve and track condition changes and analyse in real time or after inspections
- Digitization of inspections enables rope lifetime predictions and preventative maintenance planning.

In Operation

VisionTek - Digitized Rope Monitoring Solution

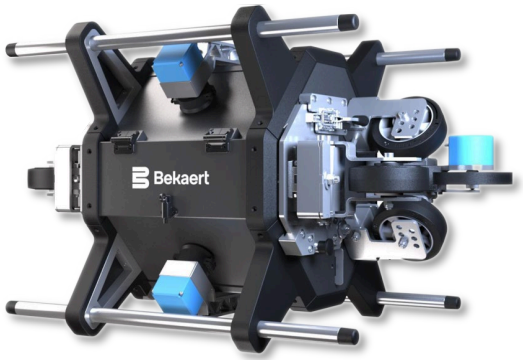
Computer Vision integrated with MRT technology for comprehensive steel rope monitoring

3D geometrical measurements

360⁰ image record + surface analyses

MRT internal + external damage detection

- Full synchronization
- Realtime integration



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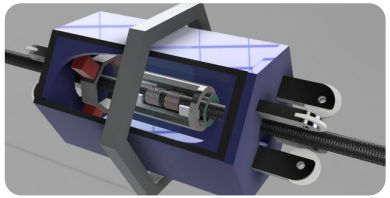

MRT + VisionTek = Internal + External Condition Monitoring	MRT	VisionTek
Diameter		✓
Lay Length		✓
Roundness		✓
Waviness		✓
Axis Alignment		✓
Surface Condition		✓
Image Recording		✓
Loss of Metallic Area	✓	
Internal Broken Wires	✓	
External Broken Wires	✓	✓
Abrasion	✓	✓
Lubrication		✓
Internal Corrosion	✓	
External Corrosion	✓	✓

* Lay length measurement is an experimental feature

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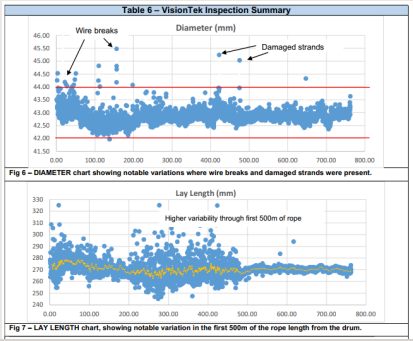
3D Optical Measuring System capabilities – For Steel ropes

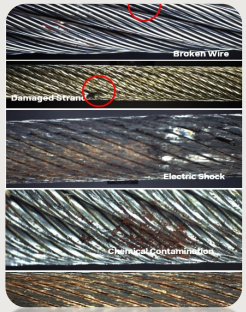
Measurement of all rope parameters

- Diameter
- Roundness
- Lay length, Lay angle
- Waviness
- Axis alignment
- Elongation



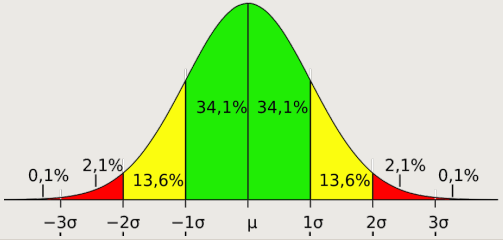
Surface analysis

- Color uniformity
- Lubricant distribution
- Corrosion
- Abrasions
- Broken wires
- Holes detection
- High strands detection



Data analysis, defect finder

- Advanced statistical analysis
- Automatic fully configurable defect finder based on thresholds
- Automatic report generator
- CP, CPK evaluation for QA
- Real-time alarms
- Permanent image recording
- xls, pdf reports, defect image collection



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Solutions beyond core

Flintstone connector for faster hook-up & in-service disconnect of floating platforms

Advanced solutions

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Flintstone Mooring Connection

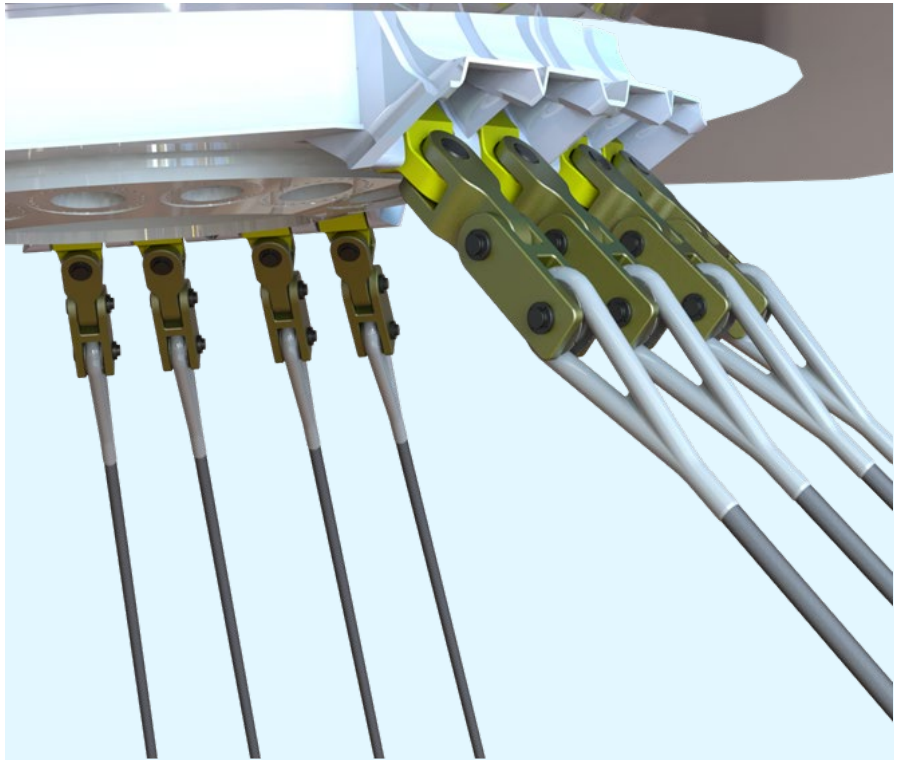
- Bekaert announced the acquisition of 75% of shares in Flintstone Technology Ltd., last year.
- Flintstone provides **mooring technology solutions, systems design and testing** capabilities for the global offshore energy markets.
- It offers a range of products and services including **connectors and tensioners for permanent mooring.**

- Our MoorLine synthetic ropes have **been specifically designed for floating offshore wind applications** where customers demand reliable ropes that ensure floaters stay put in the most challenging conditions.
- By combining Flintstone's connector and tensioner products with our established MoorLine synthetic ropes, **customers can now access a single synthetic mooring line solution from anchor to floater.**

Fast, safe & reliable hook-up

New Flintstone connector for faster hook-up & in-service disconnect

FLINTSTONE
CHALLENGE IMPROVE DELIVER



Reduced Offshore Installation Time

40% reduction in hook-up time resulting in less vessel days and less AHTS crew risk exposure

Option to Safely & Reliably Disconnect in Service

Ability to disconnect & reconnect, enabling effective tow-to-port maintenance strategies

Fully Qualified Technology

Reduced project risk as technology is fully qualified from a committed organisation