Bolt monitoring

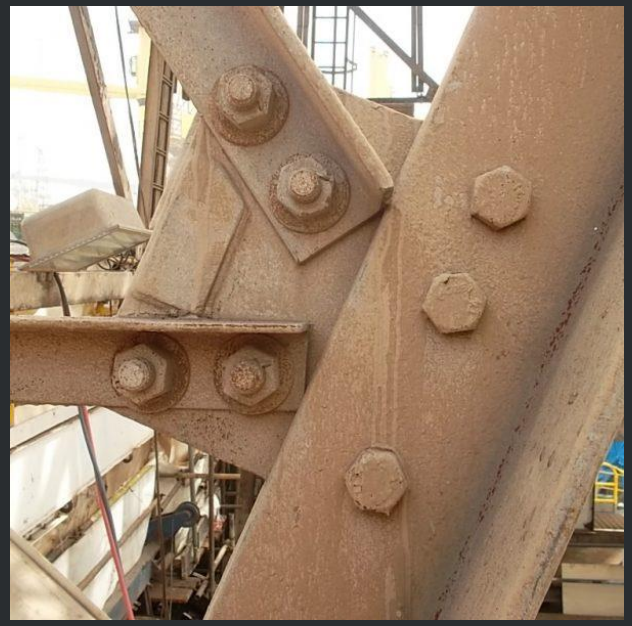
HAWK WIRELESS NETWORK

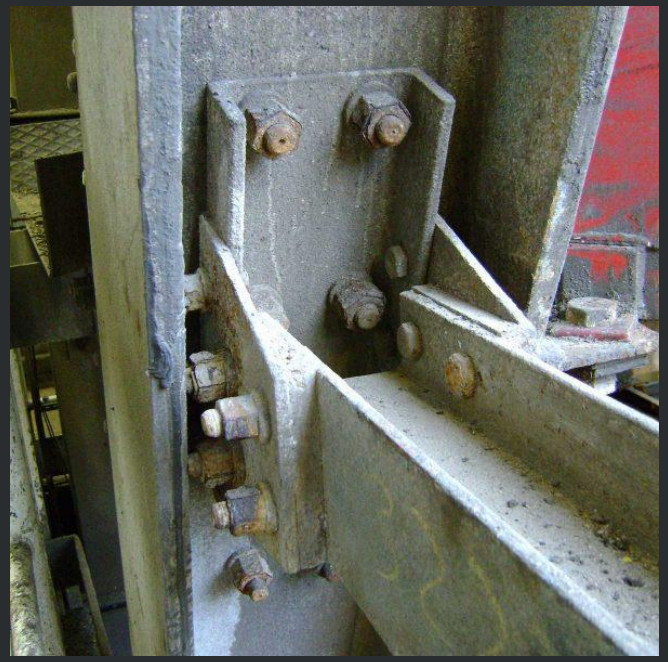
SPARK TANK, DEC 11TH 2019

Structural integrity

Fastener monitoring

Critical fasteners & joints





Fastener monitoring

Bolted joints require regular inspection.

- API RP 4G guideline is to conduct an inspection on the drilling structure at a specific intervals

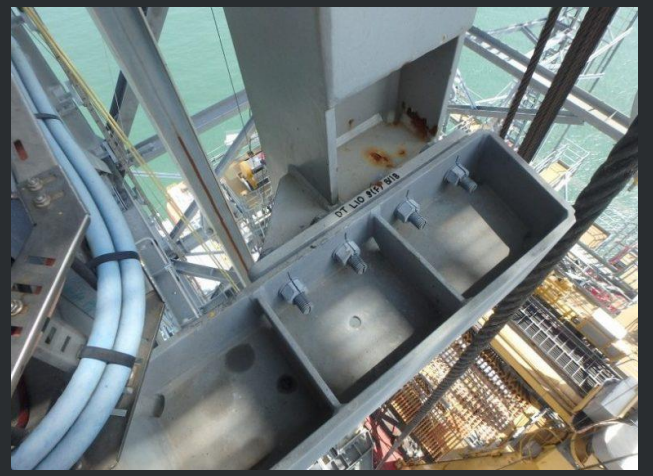
Bolt inspections commonly involve retorquing to check that they haven't worked loose

- Bolts that have been re-torqued during their life are no longer within specification.

Costly bolt surveys

DROPS & HSE risks

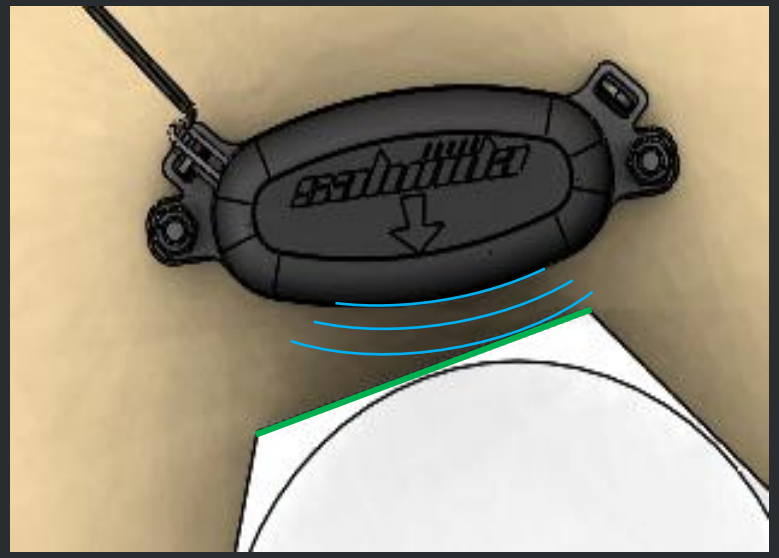
Rope access



DROPS monitoring

RF sensing to monitor the form & distance of the target face (surface of the nut / bolt head).

As the fastener rotates, the surface changes form and is detected by the sensor.



Fastener monitoring

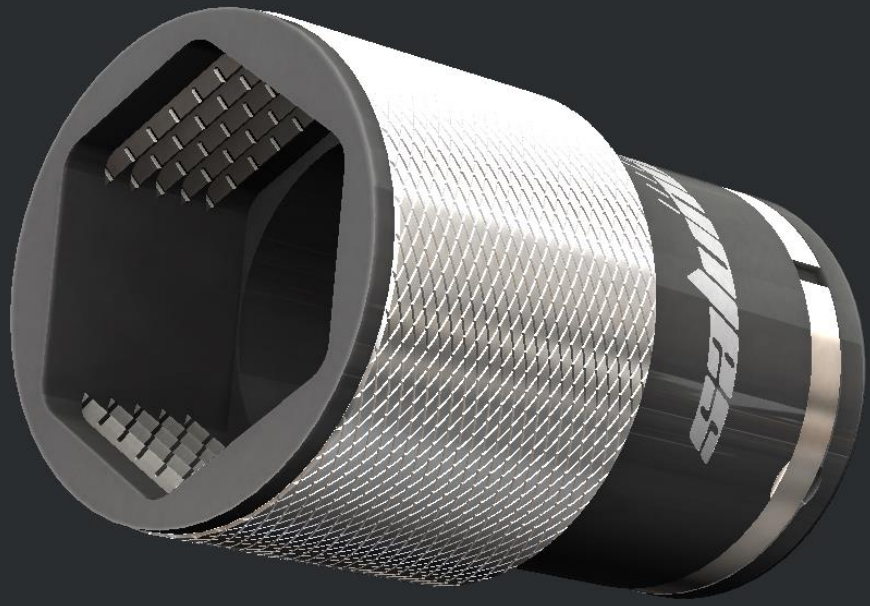
Hawk™ Wireless network provides high density wireless communication

- Common infrastructure for many applications
- Integration with OEM control systems
- Certified for explosive atmospheres (IECEx and ATEX)
- Resistant to UV, drilling muds
- Does not require cleaning (e.g. lens)

Fastener monitoring

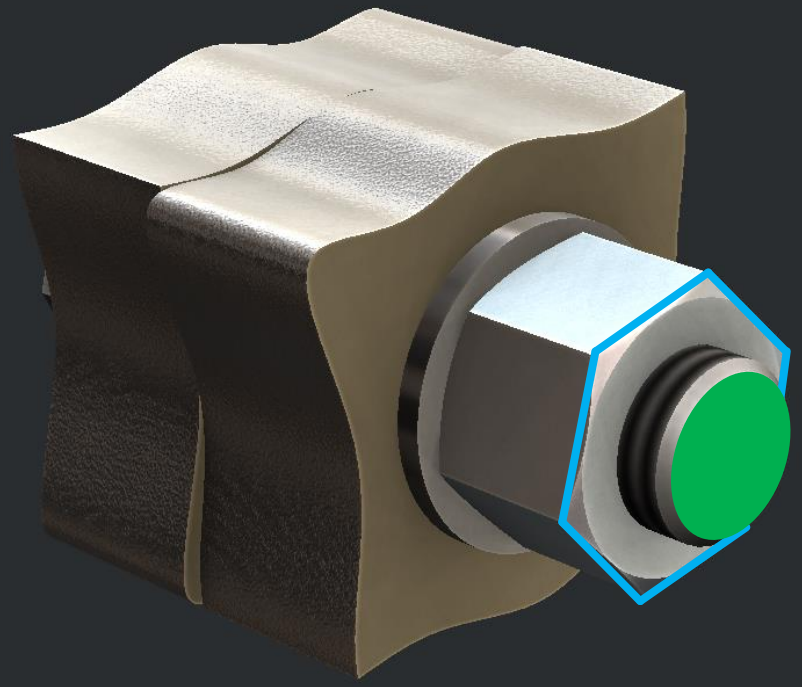
Provides continuous monitoring of threaded joints

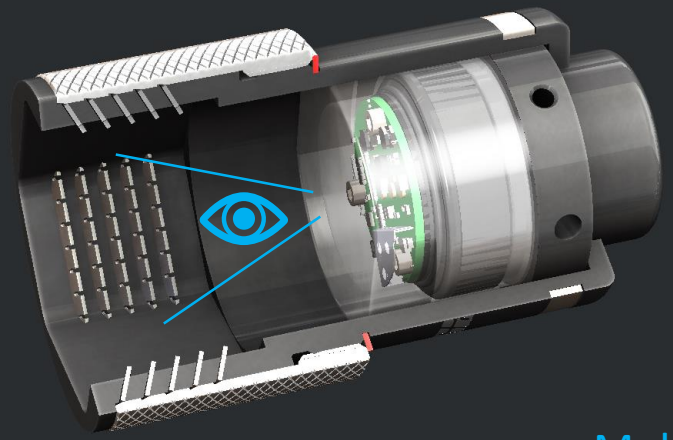
- Simple, robust design
- Eliminates need for visual inspection
- Optical sensing to monitor rotation & corrosion
- Retrofittable to existing equipment
- Common sensor element
- Multiple patents pending



Fastener monitoring

Sensing to monitor relative positions of the nut and bolt.





Multiple patents pending

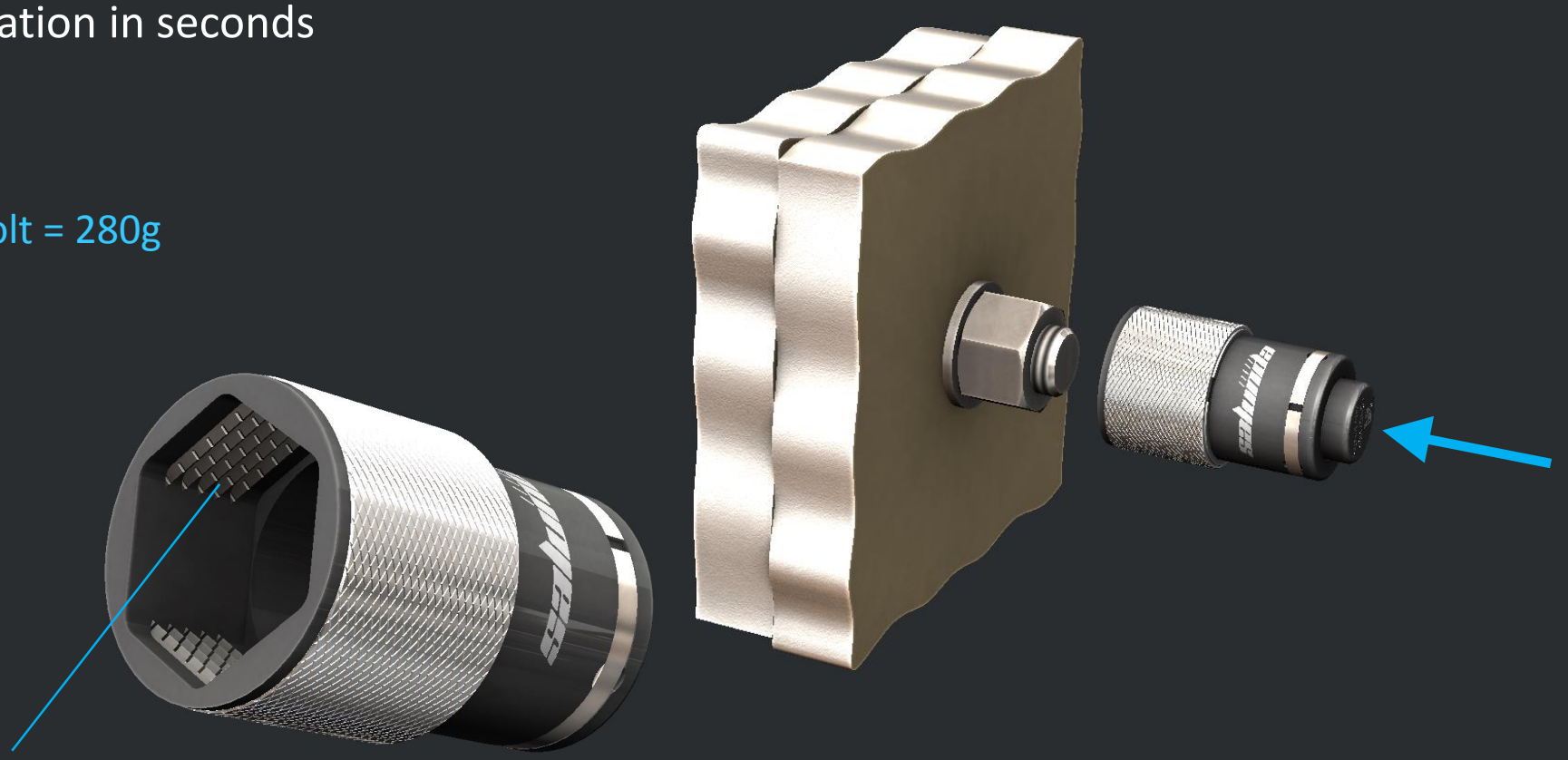
E.g. M20, M30, M36, M40

Fastener monitoring

Simple push fit installation in seconds

Low mass

- M20 unit = 120g
- M20 x 80mm long bolt = 280g



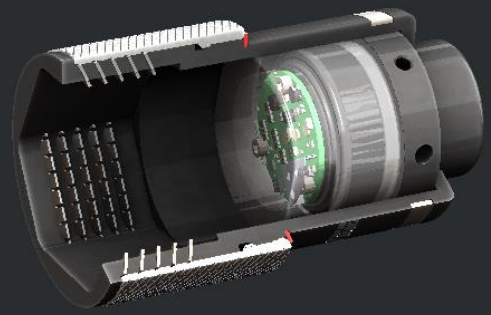
Internal sprung teeth bite into hexagon of nut

Fastener monitoring

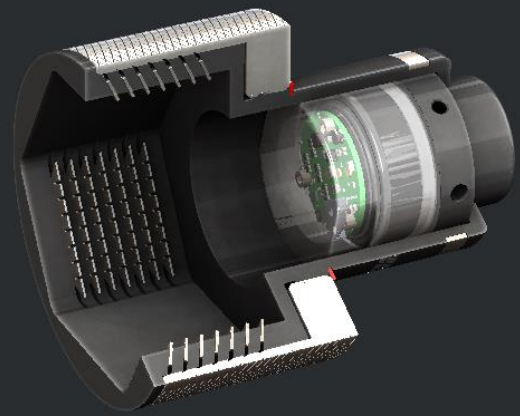
Common sensor element

- Any nut size / style can quickly be accommodated with no change to certification.

M20

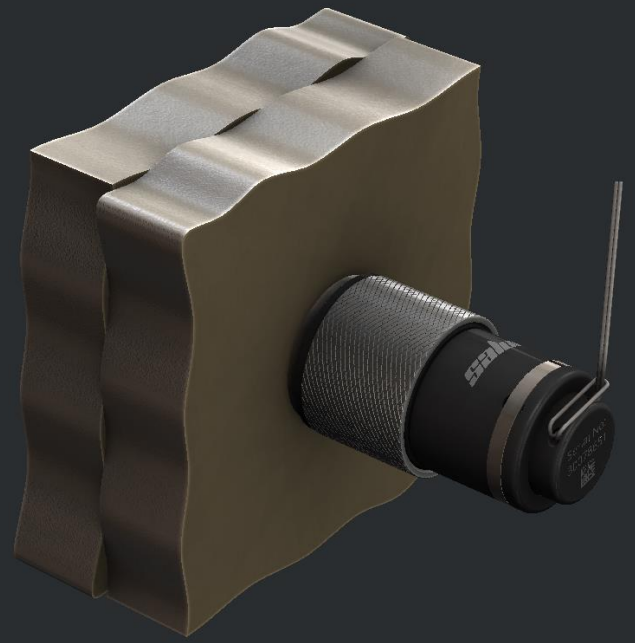


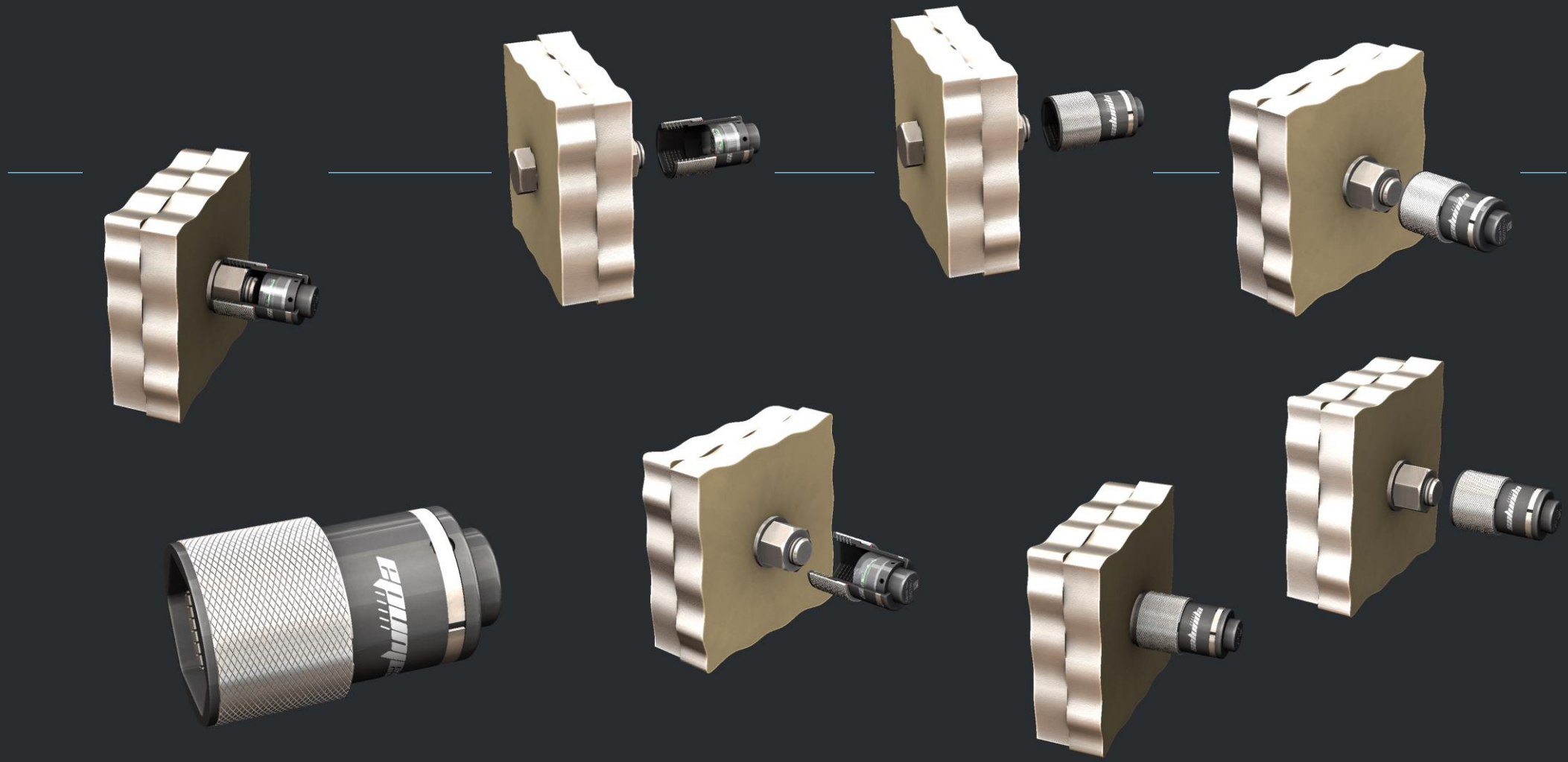
M30



Fastener monitoring

Secondary retention lanyard can be supplied pre fitted for ease of installation.





Summary

Eliminate drop incidents

- Real-time feedback is missing.
- Detect rotation – in position - precursor to failure
- “Wireless chalk mark”
- Remote monitoring of structure
- Condition based monitoring

Automate inspections

- Eliminates need for visual inspection
- Reduces HSE risk
- Eliminates cost of rope access
- Early detection

Simple, robust design

- Retrofittable designs
- Certified for explosive atmospheres (IECEx and ATEX)
- PEEK materials resistant to UV, drilling muds, salt spray
- Does not require cleaning (e.g. lens)

Multiple patents pending

- Wireless communications
- Common infrastructure for many applications
- Integration with OEM control systems

Thank you

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