

Subsea UK at Oil & Gas Asia 2019



**DEEP WATER CAPSTAN
– DELIVERING THE POTENTIAL OF FIBRE ROPE**

Parkburn



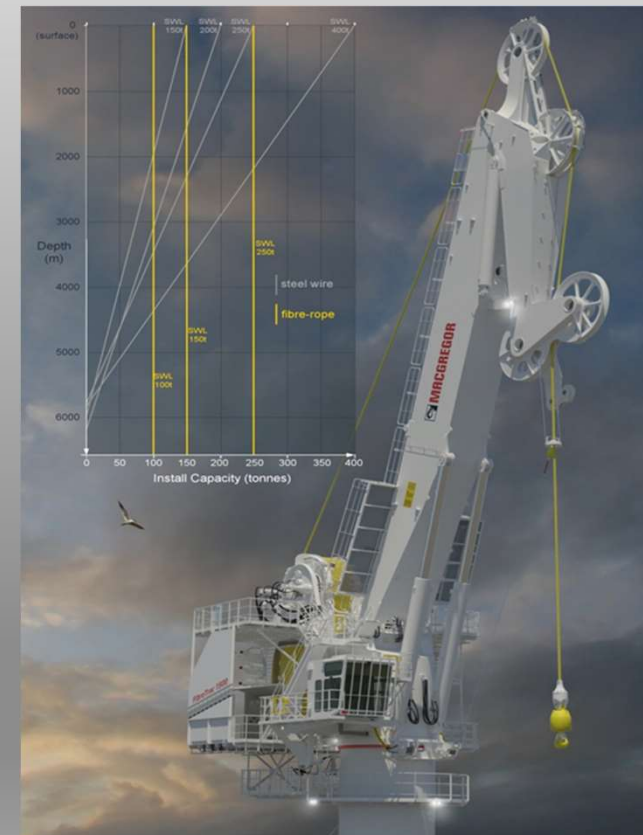
- Privately-owned Scottish Company
- Two locations
 - Hamilton, Scotland
 - Telford, England
- ~80 employees
- Design, manufacture and support of marine handling systems
- Developed and supplied a number of firsts within the offshore sector
 - All-electric SDC/bell dive handling systems
 - 2 in 1 basket/carousel
 - Deep Water Capstan
- Full product listing: www.parkburn.com



Why fibre rope?



- Fibre rope
 - Load capacity not limited by depth
 - Improved significantly in last decade
 - Ability to splice
- 150t crane outperforms 250t @2300m
- 150t crane outperforms 400t @3600m
- Benefit
 - Flexible tool on smaller vessel = cost savings!



Winch design goals



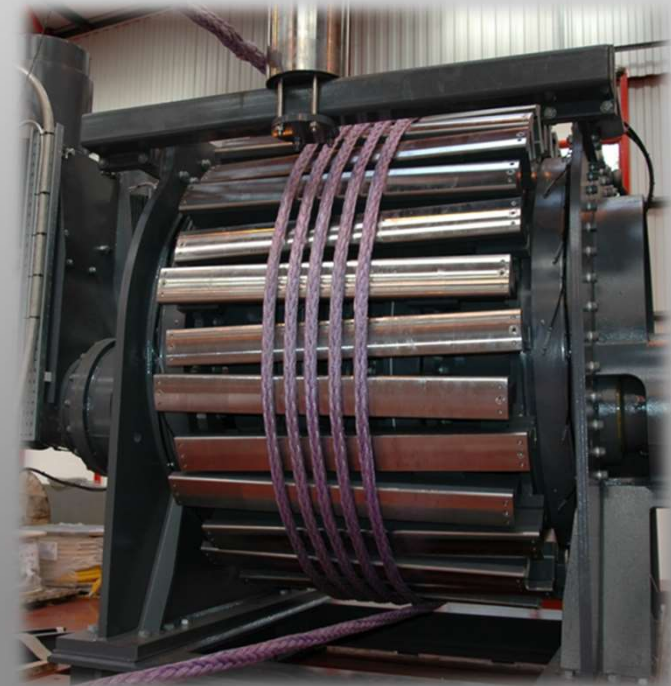
- Low tension spooling
- Kind detensioning profile
- Minimise system bends
- Minimise size and weight
- No complex software
- Competitive price

- Maximise rope life
- Reliability
- Reduced cost of operations

Deep Water Capstan – DWC



- Key design features
 - Compact lightweight design
 - Unique, high-resolution detensioning profile
 - Large overall capstan D:d ratio
 - No fleeting forces
 - No twisting or sliding



75t demonstrator built
and tested

How does it work?



Solving the winch challenge



Joint project with MacGregor



- Build a fully-functional fibre rope knuckle boom crane
- Combine known, tested, certified technologies
- Manage with Crane Control System (CCS) and Lift-line Management System (LMS)
- Work with Classification Society to develop plan for requirements and testing
- Do not defeat benefits with complexity!



150t to 4500msw

150t DWC delivered



- Drum diameter 3.083m
- Rope 88mm (D:d 35:1)
- Weight 60t
- Speed infinitely variable up to 2m/s
- Design life 20 years
- Helix pitch 126mm
- DAF 1.3

- Certified under DNVGL-ST-378

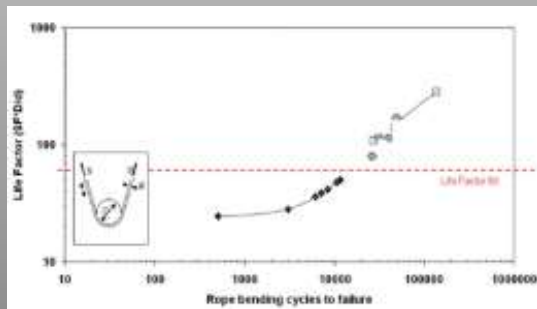
- Installed on the MacGregor FibreTrac crane



Maximising rope life

Lift-line Management System

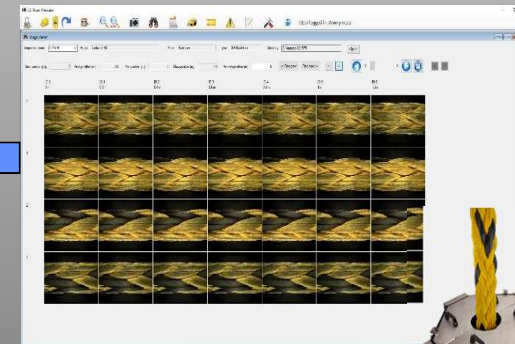
Cyclic bend capacity based on lifetime algorithm



DSM

- INPUTS**
- Basic crane parameters
 - Rope position
 - Bend algorithm
 - Thermal imaging
 - Load cells
 - Vision monitoring

Geometric measurement & visual condition



Wear rate calculated “live” and displayed in “real time”

Partners/scope of supply



- MacGregor (NOR) – Crane structure, drives & controls
- Parkburn (GBR) – 150t DWC
- Parkburn (GBR) – Rope management system
- Applied Fiber (USA) – Socketed termination for rope
- Lankhorst (PRT) – 88mm LankoDeep rope
- VisionTek (ITA) – Rope visual monitoring system
- DSM (NLD) – Rope lifetime algorithm
- DNV GL (NOR) – Certification

Resulting product



FibreTrac project status



- DNVGL-ST-378 Certification
 - Certificate issued
- DNVGL-ST-E407 Assurance Case
 - Final test/validation report submitted to DNVGL





THANK YOU ON BEHALF OF PARKBURN AND OUR PARTNERS