SCOUR PREVENTION MATS

AN INNOVATIVE SOLUTION TO SEABED SCOUR
SCOUR PREVENTION SYSTEMS LTD

- Privately owned UK business founded in 2009
- Founded by Divers and Engineers
- Full patent protection for foundations, cables and pipelines
- Academically analysed, tank tested and field proven
- Recipient of multiple innovation awards
- Supplied FOB UK or manufactured locally to project under licence
Two characteristics make SPMs effective:

- **Shape** – tyres fill with sand and stabilise the seabed.
- **Low Specific Gravity** - neither float away, nor sink.

Tyre mats stabilise the seabed at the level at which they are placed - self-anchoring function.

The tyres add friction to the seabed which causes currents to decrease in speed, causing sediments migrating across the site to become trapped within the tyres.

PATENTED | TANK TESTED | FIELD PROVEN
SEABED SCOUR

Scour is erosion that occurs when water turbulence is caused by an object or structure interrupting flow. Oceanic flows caused by tidal current and waves will wash away the underlying seabed as a result. A significant industry challenge!

Applications:
- Platforms and rigs
- Subsea Pipelines
- Subsea Cables
- Decommissioning
- Coastal structures, bridges, piers and harbours
- Offshore Wind

Sectors:
- Offshore Wind foundations, substations and cables
- Offshore Oil and Gas platforms and pipelines
- Civil Engineering
- Wave and tidal devices and cables

Offshore wind turbine
Pipelines
OFFSHORE APPLICATIONS
EXAMPLE 1: AROUND FOUNDATION

- Wind farm located on a dynamic SNS sandbank
- Monopile foundations of 4.2m diameter driven 31m into the seabed
- 900m³ of rocks dumped into scour pits as scour prevention after foundation installation
- Further secondary scour occurred around the rock protection
- Mats applied to rocks

Site data
- Dense medium sand.
- Grain size $d_{50} = 0.250$mm
- Located on a dynamic sandbank with sand waves and ripples migrating across the site.

- Water depth – 5-10m
- Current velocity 0.8m/s – 1.1m/s
- Mean wave height – 0.7m
- Max wave height – 4.1m
- Peak wave height – 5.2m
EXAMPLE 2: CABLE PIPELINE PROTECTION

- Installation of six tyre mats within the centre of a wind farm to demonstrate cable protection
- Demonstrated that mats can be installed and removed for asset maintenance, repair or decom
- Dive surveys noted the rapid infilling of sediment five hours after placement
- Mats stabilised the seabed and weathered winter storms with wave heights over 5m
- Mats still in place, infilled and effective to date – more than 4 years later
OFFSHORE APPLICATION
EXAMPLE 3: CABLE PIPELINE CROSSINGS

- North Sea Project installed in April 2015
- Telecommunication cable crossing over pipe
- Bespoke mats offering:
  - Scour prevention to a cable
  - Protection to pipeline
- Remote installation using steel frame/ROV:
  - At 80m depth: 1 mat per 2 hours.
  - At 20m depth: 1 mat per hour.
INSTALLATION AND REMOVAL

- Lightweight and therefore cost-effective, low-risk installation
- Lifting uses a simple steel frame, modular design allows multiple single frames to be combined into a larger single installation unit
- Installation uses a vessel’s crane to lower the mat into place
- Mats are released once in position using remote release, ROV or divers
- Aggregate back-fill allows much quicker stabilisation of SPM’s
- Installation time comparable to alternatives e.g. concrete mattress
- Modular frame allows for quick installation

Removal for inspection, maintenance or decommissioning is achieved by attaching a lifting beam to the tyres at one end and peeling back from the seabed.
SCOUR PROTECTION MAT BENEFITS

- Cost-effective
- Field Proven
- Maintenance Free
- No secondary scour
- Flexible sizing and installation
- Uses recycled materials
- Decommission friendly
Sarah Niddrie-Webb
Sales & Marketing Coordinator

e: sarah.niddrie-webb@scourprevention.com

t: 01502 509225 / m: 07917 541785
w: www.scourprevention.com