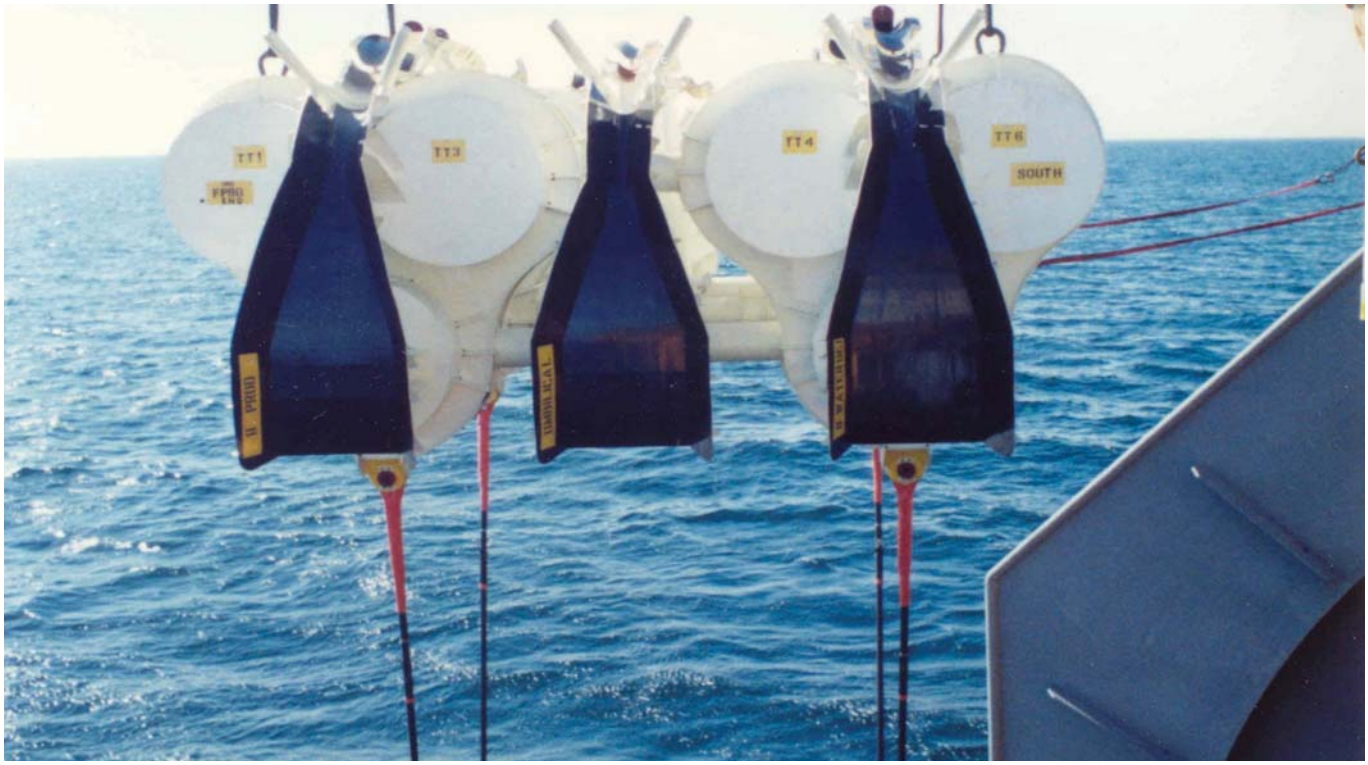
ENGINEERED SYSTEMS

From Innovation to Realization

Technical Notes 08, April 2016



Systems engineered with wire rope, synthetic fibre rope and chain are often complex.

Rope material, the design and construction can have a profound effect on the system performance and lifetime.

Technical textiles need a rigorous engineering approach to meet the demands of tough industrial applications. Electromechanical Cables for offshore and defense applications must be as small as possible and yet exceptionally robust.

TTI has the knowledge and the strength in personnel to provide a total systems approach, from concept to realization. The company's staff includes leading industry experts and distinguished academics. TTI has an extensive engineering database.

The company is dedicated to deliver on time and within budget.

Original Research & Development
- Innovation
- New Software

Testing
- Test Program Design
- Interpretation of Results

Component Design
- Selection of Fibre
- Rope or Fabric Construction
- Associated Hardware
- Finite Element Analysis (FEA)

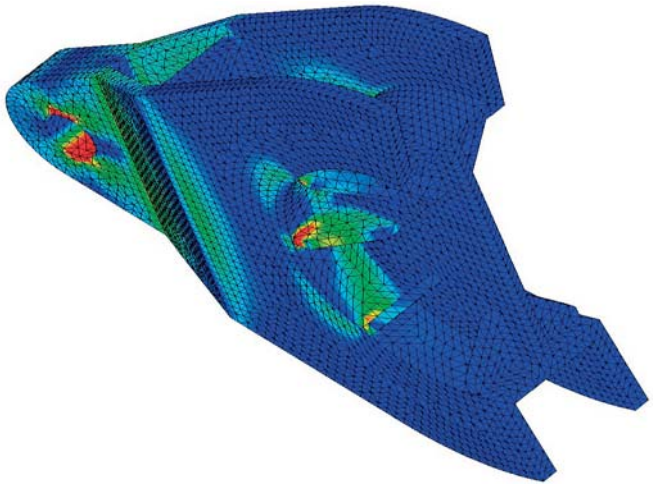
Component Manufacture
- Method
- Quality Control
- Quality Assurance

System Design
- System Response (e.g. energy absorption, load excursion etc)
- Lifetime Prediction
- Relevant Regulations & Guidelines

System Installation
- Method & Manuals
- Supervision

System Monitoring
- Retirement Criteria

Project Management
- Specifications for Purchasing
- Supplier Review
- Procurement
- Documentation
- Overall Management & Budget Control
- Installation and commissioning



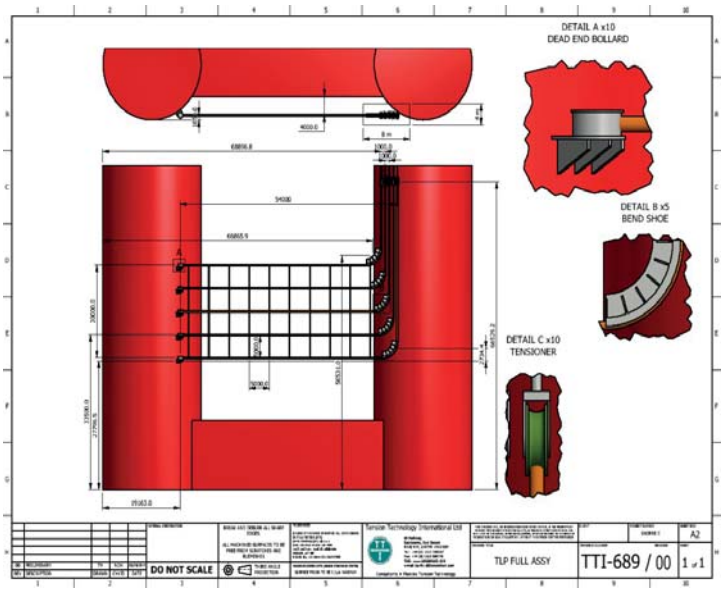
TTI ACHIEVEMENTS

Software

Fibre Rope Modeller [FRM] - Rope Design and Analysis
OPTIMOOR – Vessel Mooring Analysis
NET – Riser Protection Net
OPTI-LIFE - Hawser Life Prediction

JIP's / R & D

Fibre Tethers 2000
Durability of Polyester Ropes
Engineers Design Guide for Deepwater Fibre Moorings
The Testing and Optimisation of full scale fibre FPS Mooring lines
NDT for Fibre Ropes



Projects

- Riser Protection Net [RPN] systems. Design engineering and supply of multiple systems including worlds largest semi-sub
- Mooring analysis of 1300m water depth polyester moored FPSO
- Novel design of yacht marina mooring, marine breakwater and RNLI lifeboat mooring using nylon rope
- Design of taut moored semi-submersible in Scottish Loch
- HMPE spread moored 96,000dwt OBOE in Norwegian fjord
- High tensile and fatigue efficient splice design/specification from 10 to 1500t
- Study of wave action on LNG carriers at exposed terminal and redesign mooring
- Mooring analysis for new build jetty for gas carriers up to 200,000m^3
- Design upgrade/specification to jetty to take larger product carriers with HMPE mooring system
- Design, manufacture and installation of Iceberg protection net system for Arctic Drilling rig
- Design and manufacture for trials of novel synthetic bag anchor system for renewable energy markets

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Consultancy, Design
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in Ropes, Textiles and
Marine Systems