



YOUR CONSULTING PARTNER



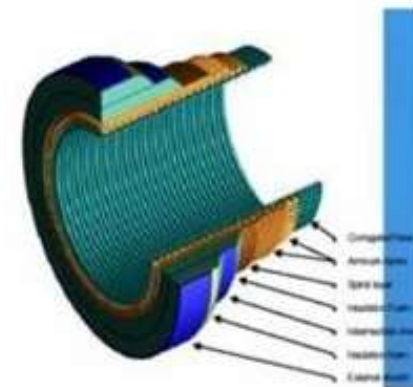
- ▶ **Set up in 1985**
- ▶ **Subsidiary of BUREAU VERITAS**
- ▶ **To provide Consulting Services**
- ▶ **Head Office based in Paris**
- ▶ **TECNITAS : Limited liability company**
- ▶ **Capital: fully owned by Bureau Veritas**
- ▶ **Turnover 2013 : Over 20 million €**

Registered companies :

TEC Singapore
TEC Greece
TEC Central Europe - Hambourg
TEC Far East - Shanghai
TEC do Brazil - Rio

- ▶ **Highly Dedicated People**
- ▶ **Flexible organisation**
- ▶ **Truly International Network**
- ▶ **Technical Expertise**
- ▶ **Reputation and Brand Name**
- ▶ **Highly supportive and stable shareholders**

- ▶ **CONSULTING**
- ▶ **ASSISTANCE TO OWNERS**
- ▶ **PROJECT MANAGEMENT**
- ▶ **EXPERTISE**
- ▶ **ENGINEERING & STRUCTURAL ANALYSES**



- ▶ MARINE, OFFSHORE
- ▶ PORT
- ▶ ENERGY
- ▶ CIVIL WORKS
- ▶ INDUSTRY



...to Optimise the Adequacy of the Product and Needs by A combination of Technical Choices and Costs

- ▶ Assistance before, during and after the construction
- ▶ Preparation of the Final Contract Terms
- ▶ Design Review
- ▶ Construction Supervision
- ▶ Conformity Assessment
- ▶ Attendance to sea trials
- ▶ Maintenance Plan
- ▶ Preparation of Manuals



...to technically assist the owners in the financing of vessels, purchases, asset evaluations, etc

- ▶ **Pre-Purchase Condition Surveys**
- ▶ **Fleet/Vessel Assessments**
- ▶ **Audit of Shipyard / vessels**
- ▶ **Valuation of Assets**
- ▶ **Due diligence**
- ▶ **Outsourcing**



and Large Range of Services

- ▶ **Audit & Evaluation**
- ▶ **Technical Expertise**
- ▶ **Risk Analysis**
- ▶ **Marine Warranty Survey**
- ▶ **Life Extension Study / Recycling**



Related to offshore operations for oil fields, wind farms, etc

- ▶ **DOCUMENTATION REVIEW:**
 - 1. Design criteria
 - 2. Design and calculations
 - 3. Operation procedures

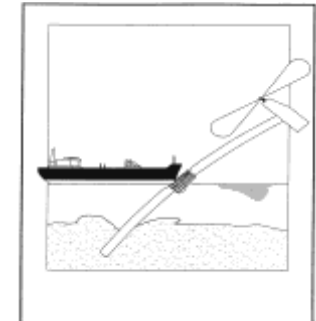
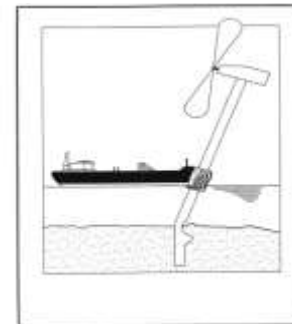
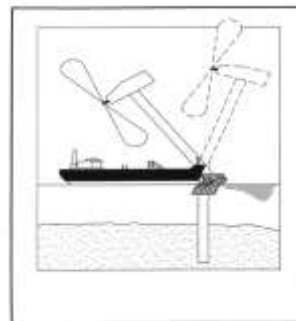
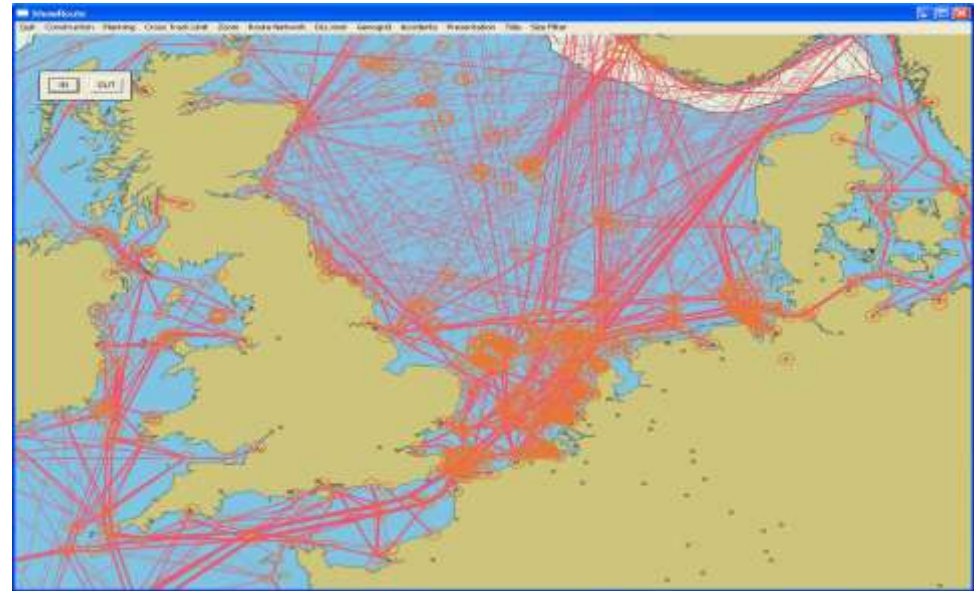
- ▶ **ON SITE SURVEY:**
 - 1. Construction survey
 - 2. Survey and approval of marine spread (tugs, barges, etc.)
 - 3. Survey and witness of the marine operations

- ▶ **MWS CERTIFICATE:** Issuance of Certificate prior marine operation



► Offshore Wind Farms

- Technical / economical studies
- Drafting of specifications
- Assistance to tendering
- Conceptual design
- Environmental assessment
- Maritime traffic risk assessment
- Collision studies
- Recycling/dismantling studies



... to Provide Studies which include Industrial & Economical Aspects

- ▶ **Feasibility studies**
- ▶ **Conceptual Design and Dimensioning**
- ▶ **Basic & Detailed Design**
- ▶ **Definition Studies**
- ▶ **Conversion Studies**

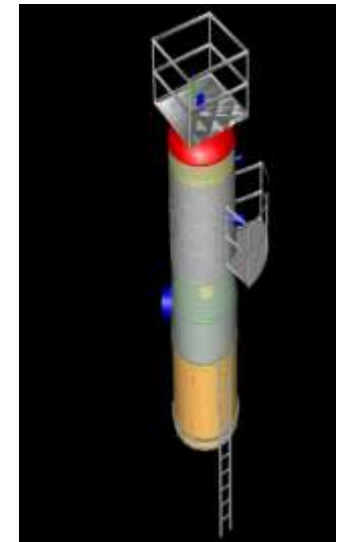
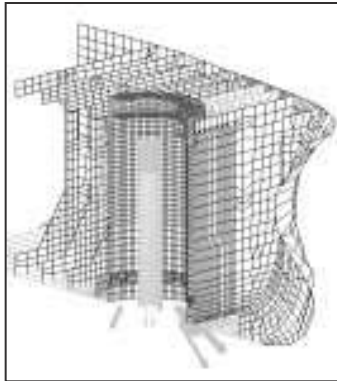
to Analyse Structural Response by Calculations & Measurements Aspects

STRUCTURAL ANALYSIS

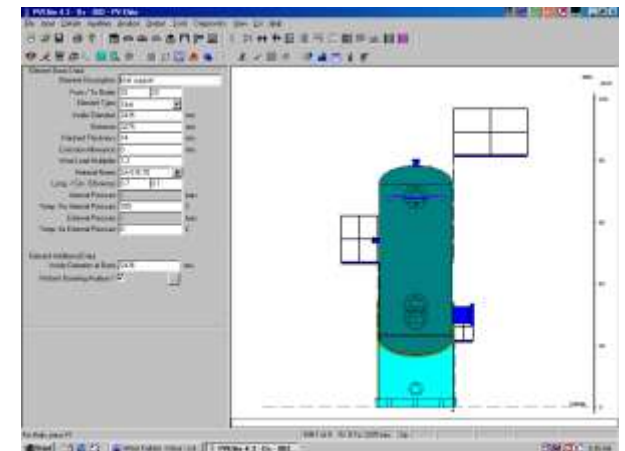
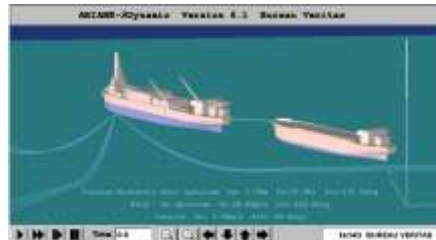
- ▶ **Static and Quasi-Static**
- ▶ **Dynamic**
- ▶ **Buckling / Collapse**
- ▶ **Thermal & Thermo-Dynamic**
- ▶ **Non Linear Complex Analysis**
- ▶ **Fluid / Structure Interaction**

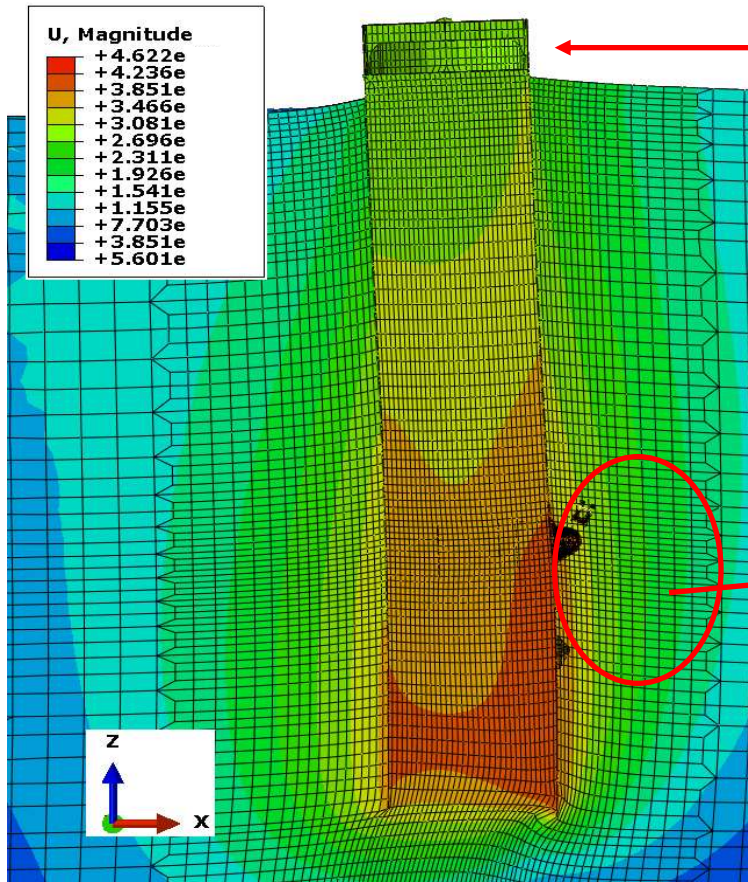
MEASUREMENTS

- ▶ **Strain Gauge**
- ▶ **Vibration**
- ▶ **Noise**
- ▶ **Rotation Machinery**
- ▶ **Hydraulic**
- ▶ **Shaft Alignment**

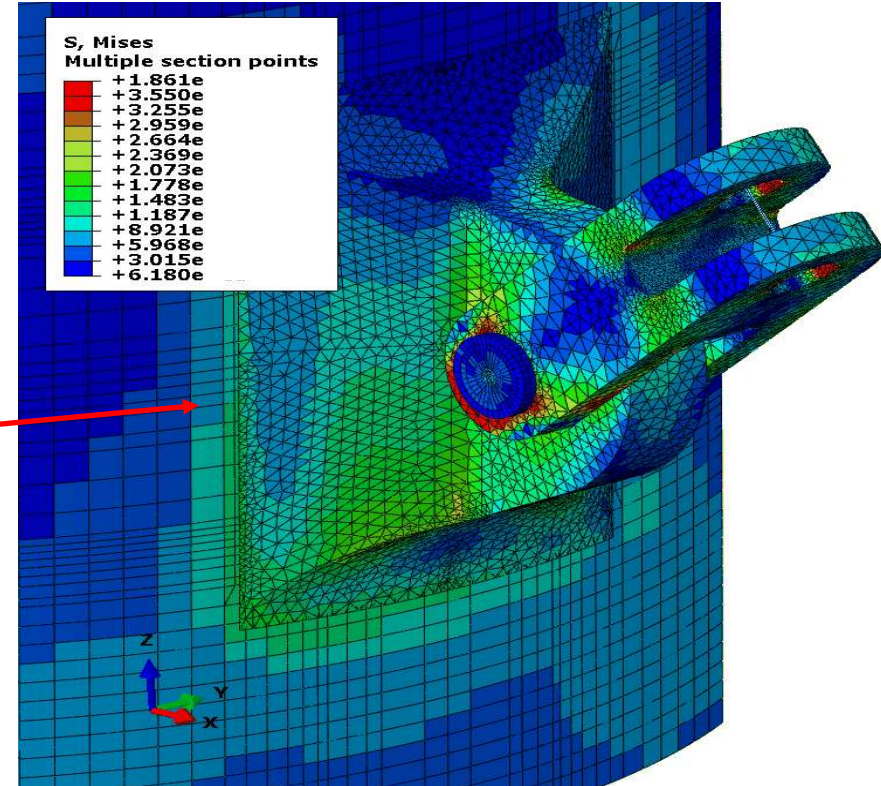


- ▶ Assistance to projects
- ▶ Expertise on Risk Management / Topsides / Subsea
- ▶ Hydro. analysis & simulations – interferences
- ▶ Second party design review





Account for passive suction



Non-linear soil-structure model
Mohr-coulomb soil model
Elastic model of the anchor

Local view Padeye-Axe-Hlink

Vibrations levels must comply with specifications, for comfort, structural safety, good working conditions of equipments, etc

- ▶ Excitations
- ▶ Analysis of vibrations
- ▶ Permissible vibrations limits
- ▶ Prevention of vibrations
- ▶ Reduction of vibrations
- ▶ Measurements

