



ADVANCED ENGINEERING FOR STEEL CATENARY RISERS

- **Independence**
 - Independent and impartial engineering, without hardware or installation preference
- **Advanced Subsea Engineering**
 - Unique combination of engineering experience, including design, testing, analytical skills and proprietary software solutions
- **Experienced Personnel**
 - Personnel with worldwide experience, all locations, all water depths
 - 25 years in offshore industry
- **Resources**
 - Staff of 150 based in Houston, Galway, Aberdeen, Rio, Perth and Paris
- **Worldwide client base and experience**

SERVICE

- **Overall concept design and configuration layout**
- **Pipe sizing (API, DNV, CFR)**
- **Selection/specification of material and coating requirements**
- **Analysis**
 - Extreme (storm conditions)
 - Motion fatigue
 - VIV fatigue
 - Installation
 - Interference with wake effects
- **Specifications**
 - Line pipe
 - Weld test
 - Flex joints/Stress joints
 - Strakes/Fairings
- **Fracture Mechanics**
- **Analysis of pipe-in-pipe SCRs**
- **Evaluation of alternative materials**
- **Operator project support**
- **Technology gap/bridges**
 - HP/HT
 - Materials
 - Components
 - Concepts
- **Installation Support**

CAPABILITY

- **Forefront of Technology**
 - First SCR to a floating production facility
 - World record SCR design in >8,000ft
 - Worlds first SCR design to a DDSS
- **Experience with Multiple Vessel Types**
 - Deep-draft Semi-submersibles (DDSS)
 - Semi-submersibles
 - Spars
 - TLPs
- **Site Locations**
 - Gulf of Mexico
 - West of Africa
 - Offshore Brazil
- **Software**
 - Flexcom, Freecom, Modes, Clear
- **Design**
 - Atlantia – Independence Hub
 - ChevronTexaco - Matterhorn
 - El Paso - Red Hawk
 - Total - Matterhorn
 - Petrobras - Roncador II P52, Roncador P36, South Marlim
 - Unocal - EB 160
- **Verification**
 - Operator Group/GulfTerra – Atwater Valley
 - El Paso - Marco Polo
 - ExxonMobil - Thunder Horse
 - ChevronTexaco - Typhoon
 - Kerr McGee - Red Hawk