

DEFENCE Capabilities

Davide Sirolli



FACILITIES NETWORK – Bibra Lake – Perth City – Bunbury – Darwin – Karratha – Cairns



Est 1979, NOW 46 YEARS OF PROUD HISTORY

- ✓ Pressure Dynamics is an Engineering and Maintenance, service contractor that employs highly skilled Project Managers, Engineers and Technicians committed to collaborating with our business partners in providing innovative, industry-leading, hydraulic and electro-mechanical fit for purpose solutions across Defence, Marine, Mining and Energy Sectors:
- ✓ Design, manufacture, installation and commissioning;
- ✓ provision of subject matter experts on and off site in specialist maintenance services:
- ✓ Specialist rental equipment to facilitate work scopes on site
- ✓ Inspection, maintenance and repair;
- ✓ Storage, fault analysis, maintenance, and preservation of client equipment;
- ✓ Asset management and condition monitoring;
- ✓ Reliability engineering and engineering consulting; and
- ✓ Modelling, simulation, and training of hydraulic and electromechanical equipment and controls systems

Our Business Lines



HYDRAULICS

- Specialist Hydraulics Engineers & Technicians
- Design, Build, Commission and Test of Hydraulic Systems
- PHPU, OHPU's, Well Head Control
- Panels, Control Systems
- Lube Oil Flushing
- Maintenance and Troubleshooting on all Offshore Hydraulic Systems
- Equipment Rental
- Parts Supply



CRANES

- Offshore and Onshore Crane Maintenance Specialists
- Overhead Cranes on LNG Facilities
- Offshore Pedestal Cranes
- Lift Planning & Engineering



PRODUCTS & HIRE

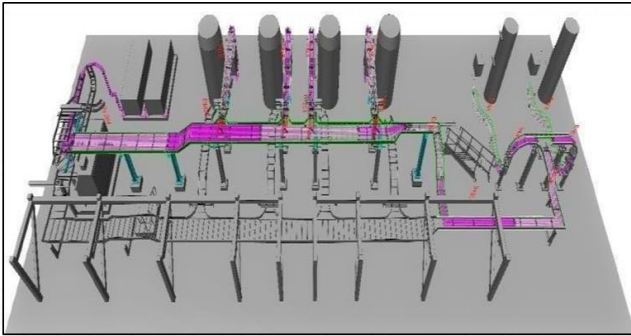
- Hydraulic & Industrial Hose Assemblies & Fittings
- Production & Intervention Umbilicals
- Bunkering Hoses
- Chemical & Specialist
- Hose Assemblies
- Proprietary products
- Sales and service distribution of specialist product ranges
- Equipment Hire



UFP

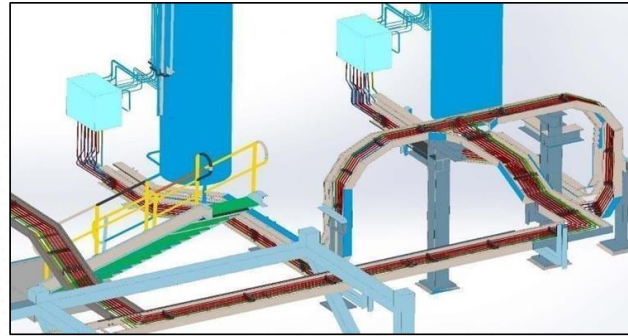
- Hydraulics Technicians
- Maintain and Repair Systems
- Field Services
- Modification on Site
- Rexroth CE Distributor
- Componentry Supply
- Stauff Master Distributor

INNOVATIVE ENGINEERING TECHNOLOGIES



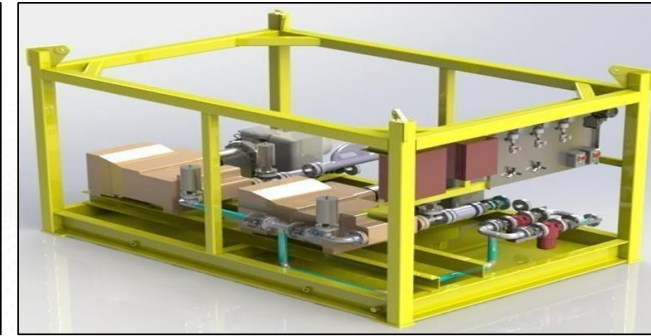
3D SURVEYING

- 3D data surveying of existing facilities and assets
- Data cleanse and packaging is critical pre-modelling
- System structural, mechanical and piping modelling prior to hydraulics design and subsequent engineering outputs
- Point Cloud Integration



SOLIDWORKS 3D MODELLING

- Tubing & Piping modelling and design:
 - Pre-engineering
 - Pre-fabrication
 - Pre-works
 - Reference models throughout works execution
- Output model 'sections' from which to generate module fabrication design drawings



- Equipment & Systems modelling to suit:
 - Original Equipment Manufacture ("OEM")
 - Brownfield modification, upgrade and optimisation

UNCONTROLLED LOAD LOWERING INCIDENTS FOR PEDESTAL CRANE – DIGITAL TWIN MODELING, SIMULATION, ANALYSIS & TROUBLE SHOOTING – MODEC GANA

Solution: Functional 'digital twin' modelling of crane. Subsequent troubleshooting (of design flaw, for counterbalance valve) and performance verification of engineered solution in model

Benefits: Cost- & time-effective rectification of critical equipment failure



SITUATION

Numerous uncontrolled load-lowering incidents had been experienced on the auxiliary winch of the FPSO port crane.

2 other contractors and the OEM had failed to identify the root cause of the fault.

SOLUTION

Pressure Dynamics modelled the hydraulic, electrical, controls and HMI (human machine interface) of the crane in its *Multi-functional 'digital twin' modeling, simulation, analysis, and troubleshooting* technology.

A Senior crane technician was mobilised to the FPSO offshore of West Africa to investigate the operations of the crane; that operational data then used to calibrate the 'digital twin' model. Desktop troubleshooting of the root cause was conducted in the model, the existing fault was replicated in simulation, and the rectification engineered, modeled, and simulated.

Conclusion

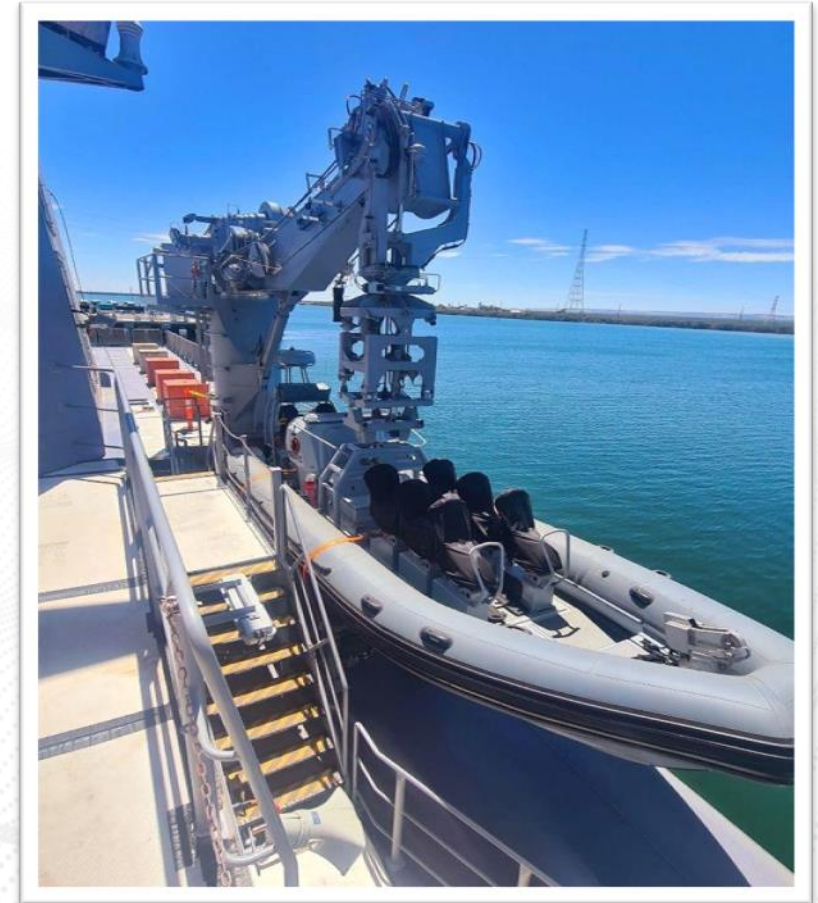
Pressure Dynamics' application of *Multi-functional 'digital twin' modeling, simulation, analysis, and troubleshooting* technology and subject matter expertise resulted in identification of the root cause system fault, which was a design fault in the original manufacturing of the crane.

Componentry to rectify the fault was sourced and manufactured by Pressure Dynamics and mobilized to the FPSO.

Pressure Dynamics' Lead Crane Technician installed the componentry and modified the crane, then tested and re-commissioned the crane for fault-free, safe operations.

DEFENCE EXPERIENCE

- Manufactured 2 Torpedo Recovery Units – Defence
 - Manufactured and maintained equipment for Submarine Rescue Systems – JFD Limited
 - Over 40 years supplying hose assemblies, components, and fittings to Defence Primes
 - 30+ years providing hydraulic systems support across multiple vessel classes:
 - Anzac Class, Arafura Class, ACV Bay Class
 - Pacific Patrol Boats, Armidale Class, Cape Class, and Evolved Cape Class
- In Cairns, strong track record supporting Austal, NORSTA, and Norship with Maintenance, repairs & refits for:
- Ride Control Systems
 - Davits
 - Deck Cranes
 - Steering Systems
 - Capstans
 - Watertight Sliding Doors
 - Other critical hydraulic systems
- In-Country Agent for Global Davit – Engineered and supplied 2 x Manifold Blocks for Luerksen
 - Luerksen Australia –
 - Installation & Commissioning of DAVIT Cranes
 - Schematic Line Installation
 - Hydraulic Line Flushing & Testing
 - Structural Tank Testing
 - Installation & Commissioning of Stern Gates
 - Installation & Commissioning of Stern Ramps
 - Ventia (NT & WA) – Crane & Hydraulic Maintenance Contract across all RAAF sites
 - Raytheon – OEM support for man-riding winches, including periodic maintenance and Sales support for hydraulic components for new Arafura Class vessels delivered to the Commonwealth.
 - BOEING – Supplied Tugger Winch System and served as an OEM for several years



Pressure Dynamics – Huntington Ingles Partnership

Pressure Dynamics has been selected to participate in the Western Australian Government's **AUKUS Pilot Program**, aimed at strengthening local industry involvement in the construction and support of **nuclear-powered submarines** as part of the broader AUKUS / American Supply Chain.

As part of the program:

- Pressure Dynamics has been **onboarded as a registered supplier** to support the **American Defence Supply Chain**.
- We have been allocated a **supplier identification number**.
- An **itemised parts list** is currently being created, and our **first Purchase Order** is expected shortly.



PROJECT REFERENCES

BENDER & MINI-ME MAN-RIDING WINCHES

Pressure Dynamics is the Original Equipment Manufacturer of the Bender and Mini-Me Man-Riding Winches utilised at the Harold E. Holt Naval Communication Station, which is operated and maintained by the Australian Department of Defence on behalf of Australia and the US.

The winches are used to lift personnel safely and reliably to the top of the radio towers for the very low frequency (VLF) radio transmission system, which range from 304m to 364m to 387m high.

Between 2014 & 2016 we refurbished the man-riding winches to an as-new condition, also executing PLC controls upgrades, and a digital operations display and alarms system.

Pressure Dynamics continues to inspect, maintain, and repair the man-riding winches for optimum condition and operations for Raytheon Australia.



HMAS WESTRALIA

Pressure Dynamics executed significant works for HMAS Westralia, including manufacture of its RAS Winch, and modification of the BD Troughing and AT Winches.

Numerous Hydraulic Power Units (HPUs) were supplied for the vessel refurbishment.

Over numerous years we inspected, maintained, and repaired boat davit systems, winches and capstans, RAST (Recovery Assist, Securing and Traversing) systems, fin stabilising systems, ships steering systems and Controllable Pitch Propellers (CPPs).

Further works executed included maintenance and calibration of gauge panels, renewal of instrument and control air lines, and the flushing, filtration, and pressure testing of hydraulic circuits.



NT DEFENSE BASES

Pressure Dynamics inspect, maintain, and repair all Cranes and Lifting Devices for the NT Defence Bases; subcontracted by Defence Base Infrastructure manager Ventia.

We conduct Preventative Maintenance, Reactive Maintenance, and Asset Projects works on the cranes and lifting devices – predominantly Overhead and Gantry Cranes – extending to vehicle hoists, jib cranes, scissors lifts and EWPs, winches, and a ship lift.

Project works have included the supply and installation of an overhead crane, and the as-new refurbishment of a vehicle hoist.



Let's Remember This

LET'S REMEMBER THIS



INTEGRITY

Hold ourselves to a strong ethical standard, and expect the same from others



ACCOUNTABILITY

We are responsible and fully accountable to our stakeholders, for all that we do



TEAMWORK

Willingly collaborate with others to deliver value and share knowledge



CARE

We are passionate and committed to our work, clients, and colleagues

Contact:

Davide Sirolli

Corporate Account Manager

234 Barrington St, Bibra Lake
Western Australia 6163

T: +61 8 9473 7277 Ext.206

M: +61 448 985 888

W: www.pressuredynamics.com