



HPI Energy
Services Ltd

The Energy to Achieve Excellence

HPI Capabilities Briefing

Agenda

- HPI Overview
- Maintenance, Repair and Overhaul Services (MRO)
- Power Plant Engineering, Procurement and Construction (EPC)



HPI OVERVIEW



HPI History



Hawker Siddeley Dynamic Engineering (HSDE) founded in the UK

1962

Vosper Thornycroft (VT) purchases HSDE as part of corporate expansion

1994



HPI founded and incorporated in 2002 by former VT executive and staff following long legacy of excellence in maintenance, repair and controls for turbomachinery

2002



HPI Overview

HPI is a world leader in providing custom, OEM-alternative solutions for turbomachinery MRO and “fast track” power plant EPC

Turnkey solutions for the Energy and Marine industries

Mechanical Repair and Overhaul (MRO) services for HIT and LIT/AD segments

EPC of gas-turbine based power generation facilities

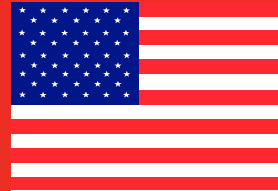
Turbine control and automation solutions



HPI Footprint

200+

Employees worldwide in addition to subcontractors and independent contractors



Engineering, logistics and manufacturing facility at Houston headquarters in the United States



Design and support services in the UK, Canada, Egypt, Venezuela, UAE and Ghana



Worldwide sales support and agency agreements including an office in Tripoli and Benghazi, Libya



Design, manufacturing and MRO facility in Lincoln, UK



Locations – Global Footprint

Regional offices in the US, UK, Egypt, Canada and Venezuela.

Agency agreements are also in place to serve high industrial growth areas such as Sub-Saharan Africa, South America, and Middle East.



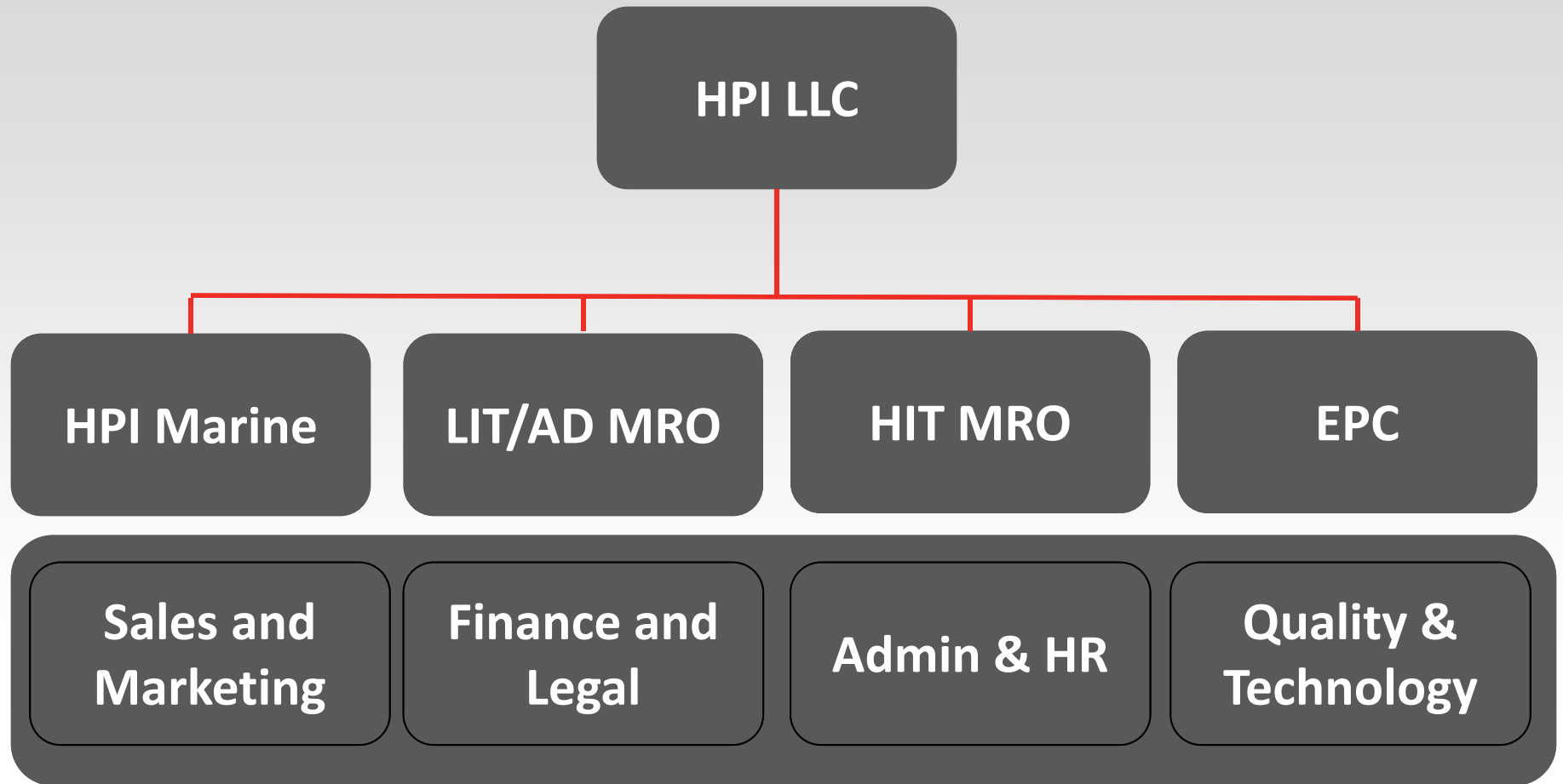
★ Corporate Headquarters

★ Global Offices – Engineering Services, Technical Support & Sales

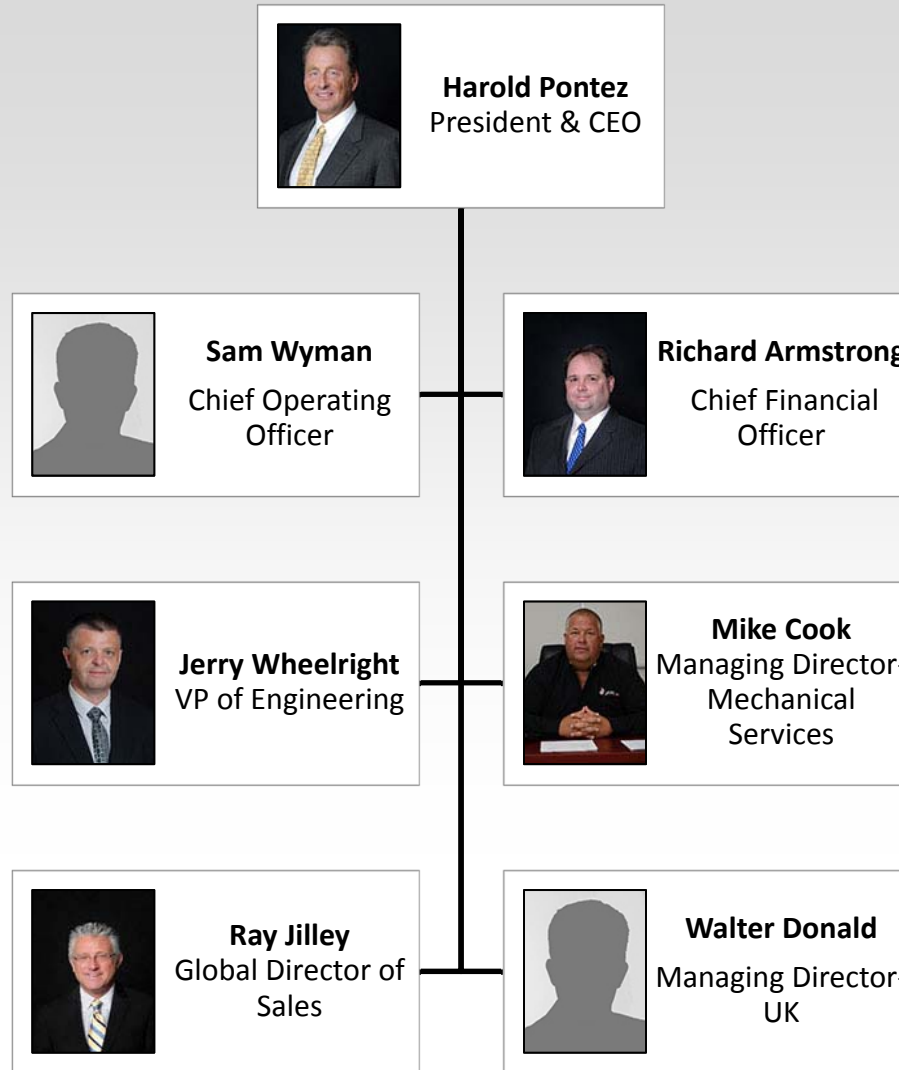
★ Sales Offices



HPI Organization



Our Leadership Team



Global, Diversified, "Blue-Chip" Customer -Base



Customer Focused, Quality Driven

Quality Systems and Programs

- ISO9001: 2008 Quality Systems
- ISO14001 Environmental Systems
- ISO18001 Health & Safety Systems
- CAN/CSA Standard Z299.2 (Canadian Nuclear QA Program)
- CE-1002-STD CANDU Standard for Software Engineering (CAT II Software)
- CSA N286-05 Operations QA program in place

Industry Compliant

- Lloyd's Register Compliant
- ABS Compliant
- DNV Compliant
- US MIL-SPECS Compliant

Quality Culture

- Full-time QA/QC process management
- ISO compliance manager on staff
- Front-line management incentivized to adopt repeatable engineering standards to maintain quality and control costs



A Better, Alternative Solution

BREAK FREE from the OEM



Turbomachinery Controls and Mechanical Services

HPI provides customized solutions and services for flexibility and freedom



MAINTENANCE REPAIR AND OVERHAUL (MRO)



Fully Equipped Service Trailers

Stocked With:

- Full Tool kits
- Borescope
- Inspection Kits
- Laser Alignment
- Vibration Monitoring Equipment
- Trailers contain over \$250K of tooling



MRO Overview

Services

- All aspects of inspections and repairs for turbines (gas and steam), peripheral systems, and rotating equipment
- Planned and emergency maintenance
- Operations and maintenance (O&M)
- Long-term maintenance and service agreements (LTSAs)
- Obsolescence and spares management

HPI Value

- Experienced OEM-trained turbine technicians
- HPI crews
- Tool trailers or service vehicles with all necessary consumables, specialty tools, and parts for each job



Selected Gas Turbine Experience

ABB	GT-9, GT-11, GT-16, GT-25
Allison	501-KB, 501-KB5, 501-KB7, 501-KC, 501-KC5, 501-KCH, 601
Alstom	Frame 5, G50E
Centrax	CS600-2
Dresser-Clark	DC990, KG5
Fiat	TG-16
General Electric	LM1600, LM2500, LM5000, LM6000
General Electric	MS1002, MS3002, MS5001, MS5002, MS6001, MS7001
GE Hitachi	MS5001
GE John Brown	MS5001
GE Nuovo Pignone	MS1002, MS3002, PGT2, PGT5, PGT10
Kawasaki	CGT, M7-A
Konsburg	KG-2
Lycoming	T53
MAN Turbo	M38, THM1100, THM1202, THM1203, THM1304
Mashproekt	GT2500, GT16,000
Mitsubishi	MF-111
Orenda Aerospace	GT2500, OT3, OT5, OFT-3
Orenda Lycoming	T53-AT1200
Pratt & Whitney	GG3, GG4, GG12, FT4, FT8
Rolls-Royce	AVON, GEM, GNOME, OLYMPUS, PEGASUS, PROTEUS, RB211, SPEY, TYNE
Ruston	TA1750, TA2500, TB3000, TB4000, TB5000, TB5400, TD4000, TORNADO
Siemens	V84.2
Solar	CENTAUR, MARS, SATURN, TAURUS, YORK,
Stahl Laval	GT35
Westinghouse	W62, W92, W101, W191, W251, W301, W501



Aero Derivative Healthcare Strategy

Aero Derivative Gas Turbine MRO

- Experienced HPI technicians qualified to complete Level 1–3 field maintenance
- HPI was O&M provider for LM6000 PC and PD Sprint packages installed for Kuwaiti EPC projects

HPI field services include:

- Borescope inspection, as per WP Vol. II
- Mechanical inspection of gas generator and hot sections
- Alignment
- Trim balancing
- Vibration analysis
- Instrument calibration and loop checks for all field devices
- Establishing “health-care” maintenance program, including control and electrical systems



Marine Capabilities

HPI Marine provides main propulsion control and mechanical overhaul for increased reliability and lower operating costs

- Experienced shipboard provider for commercial and naval vessels
- Experience working with all classification societies
- Full range of services including:
 - Main propulsion – Turbine and or Diesel
 - Integrated platform management systems (IPMS)
 - Power and auxiliary management - Generators
 - Mechanical repair and overhaul (MRO)



Control Solutions Overview

HPI provides customized, open architecture, COTS, PLC control systems to meet each individual customer's requirements

Features

- Custom HMIs
- Integration to plant-control network
- Remote monitoring and control
- In-house design, engineering, and programming



Multiple control platforms

- AB Logix, Siemens S7, GE Fanuc, Modicon®, Emerson Ovation, ABB S800, etc.
- DCS platforms, TMR platforms

Power generation assets

- Base, peak, max peak load, load sharing
- Complete generator control systems

Combined cycle applications

- Steam turbine, boiler control and marine applications



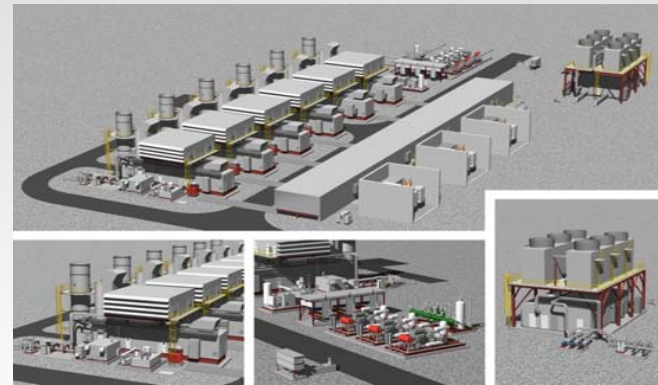
POWER PLANT (ENGINEERING PROCUREMENT & CONSTRUCTION)



Turnkey EPC Power Plants

HPI specializes in turnkey engineering, procurement, and construction (EPC) of complete power plants

- Modular plant design reduces time and costs
- HPI plants have exceeded 300 MW capacity
- Gas turbines installed within 45 days
- Complete power plants commissioned within 6 months of contract execution
- Simple and combined cycle plants
- 100% start and operational reliability from HPI plants



Power Plant Construction (EPC)

Capital Equipment Provided

- Gas Turbines
- Steam Turbines
- Combined Cycle
- Gas Compressors
- Air Inlet Chiller Systems
- Engineered Equipment
- Supervisory Control Systems

Services

- Logistics
- Engineering
- Project Management
- Construction Supervision
- Start-Up



Selected Distributed Control Systems (DCS)

Shuwaikh & Sabiya Power Stations in Kuwait (2 x 300 MW Power Plants)

- Six GE LM6000 gas turbines per plant
- Turbine controls, gas compressors, fuel handling, inlet chilling, relay monitoring, switchgear, transformer protection, metering, etc.

East Texas Electric Company in USA (2 x 170 MW Power Plants)

- Two GE Frame 7EA gas turbines per plant
- Turbine controls, gas compressors, fuel handling, relay monitoring, switchgear, vibration monitoring/analysis, PI historian, CEMS, inter-plant communication/control



Selected Distributed Control Systems (DCS)

Vera Cruz Power Station in Venezuela (340 MW Power Plant)

- 2 Barge Mounted GE Frame 7FA Gas Turbines
- Fuel handling, plant monitoring, generator protection monitoring, barge system controls and monitoring



South Carolina Electric & Gas Hagood in USA (150 MW Power Plant)

- Two GE LM2500 and one Westinghouse 501D5 gas turbines
- Turbine controls, fuel handling, generator protection, electrical protection, de-min water system, glycol system, CEMS



Selected Nuclear Power Experience

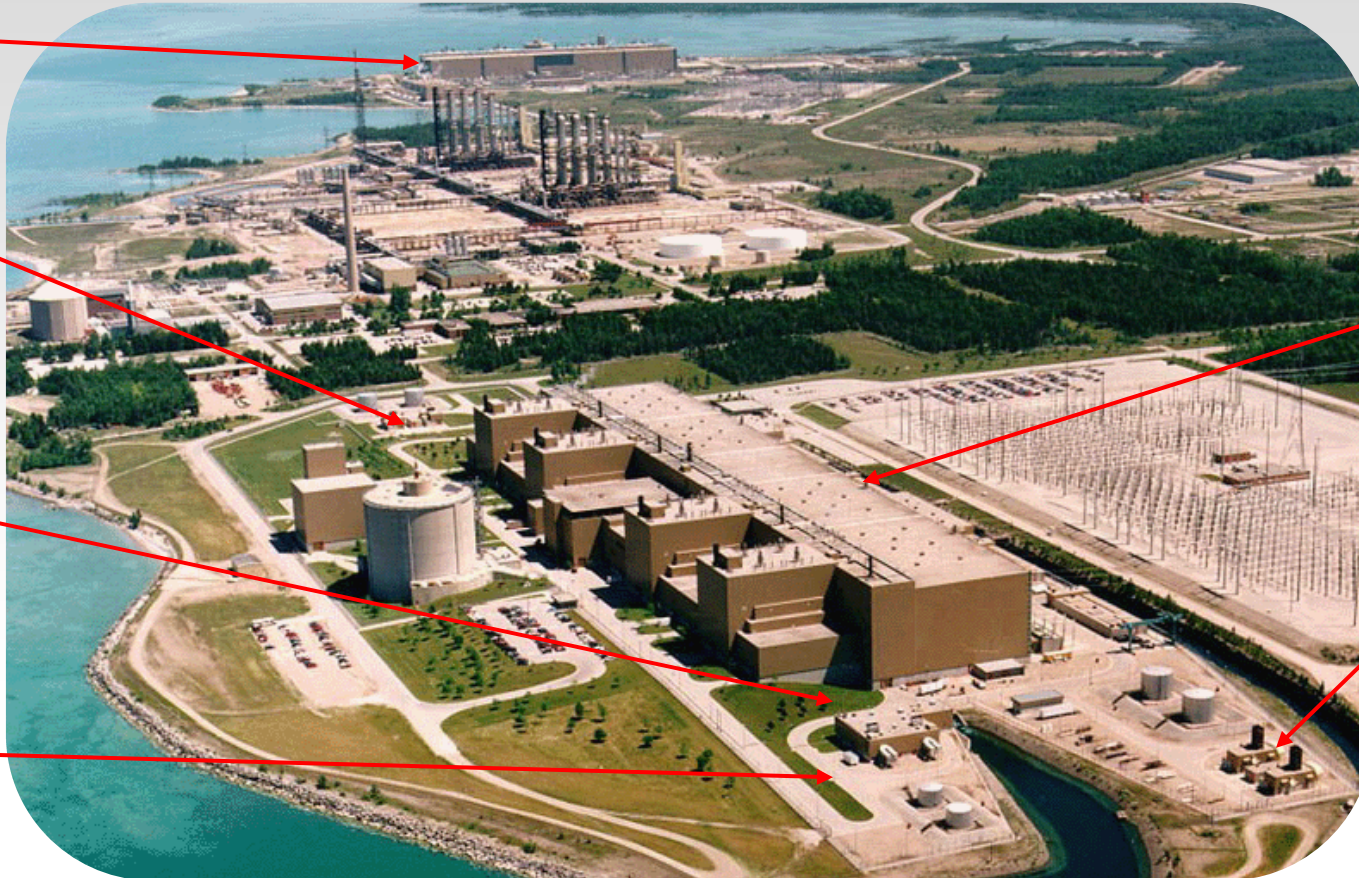
Bruce A – 3.22 GW Bruce B – 3.39 GW Total Power - 6.61 GW

Bruce A

Standby
Power
Generators
(SPG's)

Emergency
Power
Generators
(EPG's)

Site of
Temporary
Emergency
Power
Generators
(TEPS)



Bruce B

Standby
Power
Generators
(SPG's)

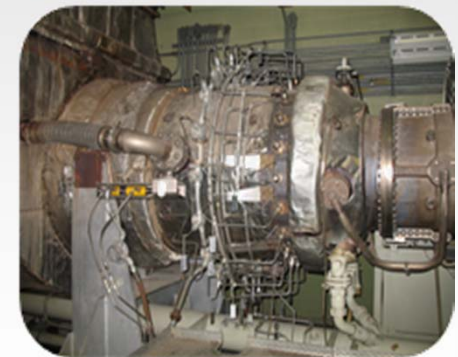


Nuclear Industry Capabilities

Standby and Emergency Power Generation

Open-architecture, custom control and ancillary systems for standby and emergency power generation

- Gas turbine and diesel engine controls
- Fuel systems and fuel control valves
- Electrical protection systems generator and/or transformer
- High-speed data monitoring packages for reactor shutdown testing
- **Standby and emergency power services**
- Provision of EPG facilities
- Failure-modes-and-effects analysis (FMEA) study to identify critical components and recommended spares
- Ability to qualify components and systems
- Design services
- Mechanical inspection and repair of all turbines and generators
- On-site support services
- LTSAs





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