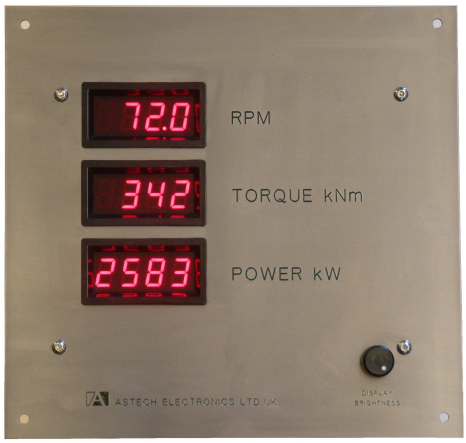
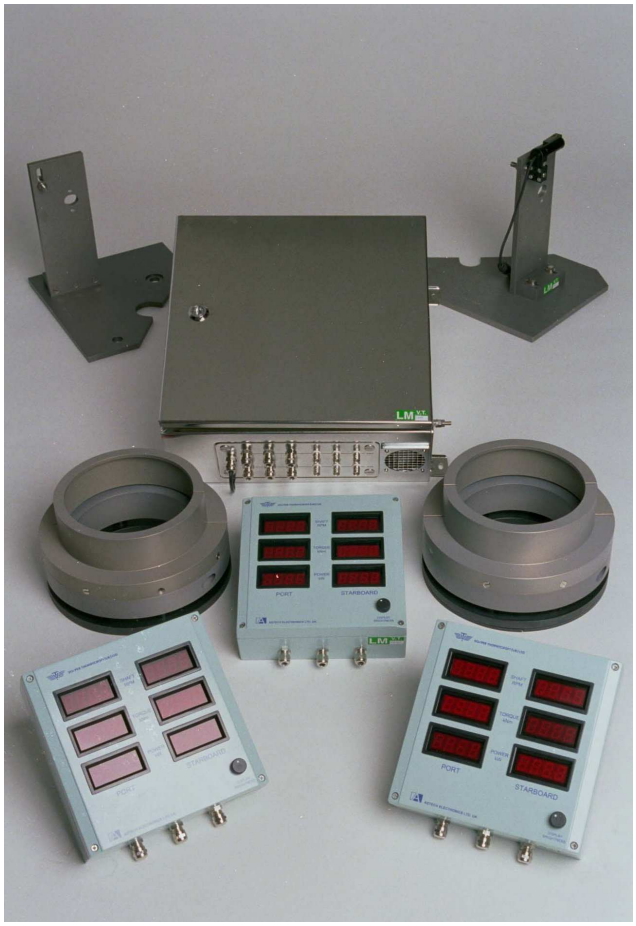
ASTECH ELECTRONICS LTD PRODUCT DATA
PERMANENT MARINE TORQUE & POWERMETER SYSTEMS

Measurement of torque and power in ships using shaft mounted sensors requires specialised application knowledge as well as instrumentation expertise. With over 40 years of experience, Astech Electronics are able to offer these skills to produce systems which meet customers needs – from simple ships trials equipment to sophisticated permanent installations. Using the standard method of strain gauges to measure torque, combined with highly accurate RPM readings and flexible micro-controller based readouts enable Astech produce custom design systems at realistic prices.



SINGLE CHANNEL REPEATER -PANEL STYLE DISPLAY

TWIN CHANNEL REPEATER DISPLAY - ENCLOSURE VERSION

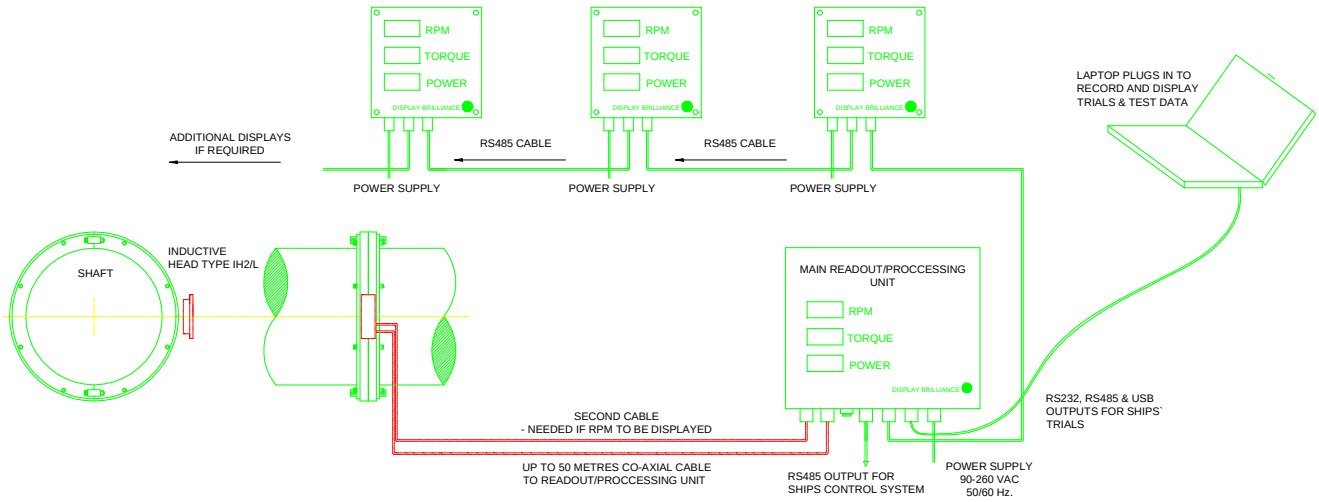


COMPLETE POWER MEASUREMENT SYSTEM WITH 3 REPEATER DISPLAYS FOR REMOTE INSTALLATION

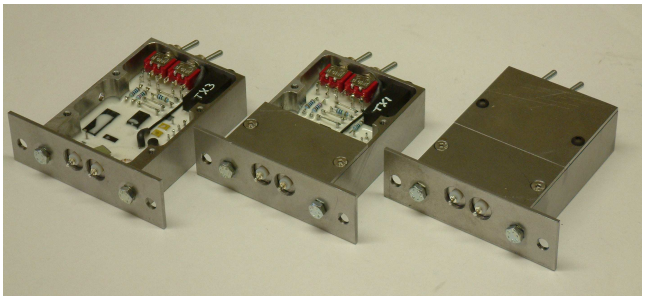
The Astech system consists of 3 main parts – firstly a rugged split-ring assembly which clamps around the propeller shaft. This ring provides substantial protection for the strain gauges bonded to the shaft surface and also for the torque transmitter module. This transmitter converts the strain measurements into a form suitable for air-gap transmission from the rotating shaft to a stationary pickup. Inductive signal coupling and pcm (pulse code modulated) data encoding are used for the air-gap transmission – a method ensuring excellent data integrity.

The second part in the system is the stationary pickup and this has 2 functions - firstly generating a magnetic field which powers the torque transmitter via inductive coupling and secondly, acquisition of the measurement data signal. A single co-axial cable connects between the pickup and the readout equipment and this carries both the inductive power and the data signal.

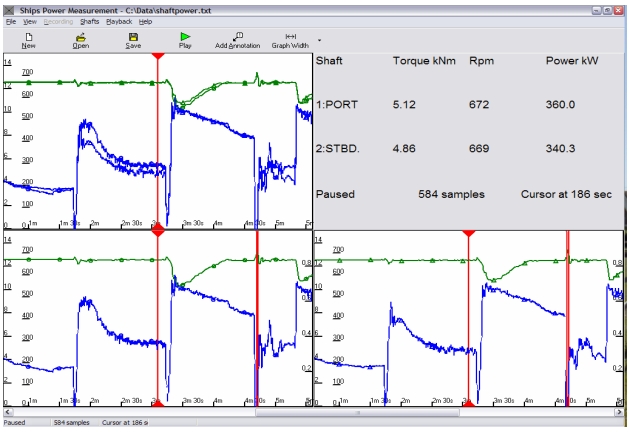
The final system component is the readout unit, which provides digital displays plus various outputs including RS485, USB and analogue voltage and current..



The torque transmitter also transmits ambient temperature and power supply voltage to the readout – useful as a checking facility. It also available in multi-channel versions, providing a backup torque measurement channel if required.



TORQUE TRANSMITTERS



SHIPS TRIALS -TYPICAL DATA DISPLAY

After installation, no access to the shaft assembly is required. Commands and adjustments including zero /offset adjust, input sensitivity scaling and calibration signals are sent remotely from the readout equipment. These are important considerations when using strain gauges in a non-accessible environment, as sensor parameters may change slightly over time.

STAINLESS STEEL & COMPOSITE SPLIT-RINGS

The Astech system may also be used for ships performance trials by simply plugging a lap-top into the system. Logging and display/report software is available from Astech and this can even incorporate a GPS interface to provide tracking data during trials

Main Specifications

Outputs:	±5V, 4-20mA, USB, RS285, RS232
Digital Display:	11mm LED Adjustable Brightness
Graphical Outputs:	Multi-Channel Rolling Graph
Display Options:	RPM, kNm, Ft lbs, kNm SHP
Accuracy:	14 bits 1 part in 16,000
Maximum Radial Airgap:	20mm
Maximum Shaft Movement:	Vertical ±50mm Horizontal ±15mm
O/P Bandwidth:	DC -200Hz
O/P Noise Level:	20mV RMS (0.2% of full scale)
Remote Controls	1) Zero/Offset Adjust 2) Input Sensitivity 3) Operate Shunt Calibration Signal 4) Operate Waveform Calibration Signal
Shaft Diameter Range:	Maximum Approximately 600mm
Split-Ring Dimensions:	Radial=Shaft Dia + 100mm, Axial=100mm

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