Our Mission - Your Support





SHAFT POWER MEASUREMENT SYSTEM **TORXmeter® mkII**

The shaft power measurement system measures the power transmitted through a shaft, enabling the measurement of actual engine power delivered to the propeller.

The cost of a maintenance free and accurate permanently installed torsion meter is very reasonable, in comparison with potential saving in operational costs.

- \Rightarrow Fuel Savings
- \Rightarrow Improved Maintenance Scheduling
- **Equipment Protection** \Rightarrow

Shaft power is an essential input (KPI) to Ship Performance Monitoring Systems for the ship efficiency. Actual shaft power measurements levels provides an accurate reference point to assist with the assesment of:

- **Engine Performance Monitoring** \Rightarrow
- **Hull Condition** \Rightarrow
- **Propeller Condition** \Rightarrow
- Specific Fuel Consumption \Rightarrow
- **Operational Efficiency Planning** \Rightarrow
- **Ship Condition Changes** \Rightarrow

Fitted at an earlier stage, the shaft power meter can be used for Ship Acceptance Trials and, from that point on, be a KPI of the condition of the ship, troughout it's lifecycle.

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SHAFT POWER MEASUREMENT SYSTEM Principle of operation

Flexible shaft will deform under the action of torque and a twist angle is generated. The angle of twist is measured by mounting two magnetic belts on the shaft.



The measurement principle is an extreme fast response (EXFR) magnetic scanning of the magnetic pattern of the belts. The EXFR sensors mkII uses the magnetic pole changing and the zero crossing (change of the magnetic fields) between the two EXFR sensor belts for angle measurement. The signals are working with a resolution of 24 bit.

Because of the measurement of torque (twist angle) the measurement system has two EXFR sensors mkII with two sensor heads and EXFR sensor belts, installed on the shaft.

The TORX meter \mathbb{R} mkII, is the further development of the TORX meter \mathbb{R} which offers new functions:

- ⇒ New advanced EXFR sensor technology, now with 2 separate sensor heads per side. More flexibility for installation and smaller shaft diameter
- ⇒ Extended LED status on the MWE mkII Box for simplified commissioning and error diagnosis
- \Rightarrow Optional : repeater display for ECR etc.



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SHAFT POWER MEASUREMENT SYSTEM Benefits

The TORXmeter® mkII, has been developed to meet the requirements of the Marine Market. The feedback from our customers are included in the revised system.

- \Rightarrow Easy to install and operate
- \Rightarrow No electronic parts on the rotating shaft
- ⇒ **Full contactless**
- \Rightarrow Maintenance free
- \Rightarrow Can be Installed in 1 day
- \Rightarrow All Components can be replaced individually
- \Rightarrow Easy error diagnosos via email due to fault indicators on the components
- \Rightarrow Zeroing (new calibration) can be done by ships crew



Hundrets of systems installed on:

- Bulk carrier
- Tankers
- Container Vessels
- Ferries

OUR MISSION—YOUR SUPPORT Self installation supported by video and detailed manual

A major cost factor is always the installation and commissioning of shaft power systems. The

TORXmeter® mk II is designed for installation by crew. A set of training CD's are incl. in the scope of supply to lead the crew step by step to the installation & commissioning process. In addition we will support with free of charge Email assistance and questionaries to guide the crew. As a matter of fact, we are offering installation and commissioning even by service technicians.



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SHAFT POWER MEASUREMENT SYSTEM Scope of Supply

No. 1	Terminal Box mkII
No. 2	MWE Box mkII
No. A1/A2	Pre-wired cable between MWE Box mkII and EXFR sensors mkII (appr.
	7,5 m)
No. B1/B2	Pre-wired cable between MWE Box mkII and EXFR sensors mkII (appr.
	7.5 m)
No. 3	2x Welding Brackets (bracket must be welded to ships structure –No.4)
No. 4	2x Support for Sensor holder
No. 5	Cable between Terminal Box mkII and MWE Box mkII (4x2x0,75mm ²)
No. 6	2x sensor holder (screwed on No.3)
No. 7	2 x Sensor holder with pre-mounted 2x2 EXFR sensors mkII (A1/A2)
	(B1/B2)
No. 8	2 x EXFR sensor belts mkII
Remark:	Green items scope of supply, ; red items not in the scope off supply



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INFORMATIONS Terminal Box mkII/ MWE Box mkII

The TERMINAL BOX mkII is a touchscreen operated system for the operation of the TORXmeter® mkII., with following functions:

- \Rightarrow Permanent display oft shaft power, torque and shaft rpm
- \Rightarrow Display of the Load diagram
- \Rightarrow Entry of the ship specific parameter
- \Rightarrow Calibration (Zeroing) of the system
- \Rightarrow Carry out single and daily reports
- \Rightarrow Software update via USB stick
- $\Rightarrow \quad Datalogging \ on \ SD \ card$





The MWE BOX mkII with following functions:

- ⇒ For connection of the EXFR sensors
- ⇒ evaluation of the raw data and send to Terminal Box mkII
- ⇒ Status LEDs on the front for health check of the MWE board and sensor board



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Technical Specifications

Sensor Accuracy	Shaft Torque	<0,1%
(2x2pcs high resolution sensors, contact free)	Shaft RPM	<0,1%
	Shaft Power	<0,1%
System Accuracy	Shaft Torque	<0,1% +Ke
	Shaft RPM	<0,1%
	Shaft Power	<0,1% + Ke
	Ке	Total error in shaft modulus constant and shaft diameter
Shaft diameter		150mm up to 3000mm
Speed Range		Up to 1200 rpm
Data Output	Performance output	RS485 (NMEA183) protocol
	4-20mA Output (4PCS)	Torque, shaft power, shaft rpm, bipolar shaft rpm
Data storage	Mini Sd card Terminal Box mkII control board	Measurement data and re- ports as .txt files
Measurement principle		Extreme fast response mag- netic belt scanning
Environmental	Operating temperature	o°C up to 50°C
Environmental Sealing	Terminal Cabinet	IP67
	Sensors	IP67
Supply Voltage		100/240VAC, 5-60Hz, 16A;
Power consumption		24 Volts / <2A
Option:	Repeater Display for ECR or WH	

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