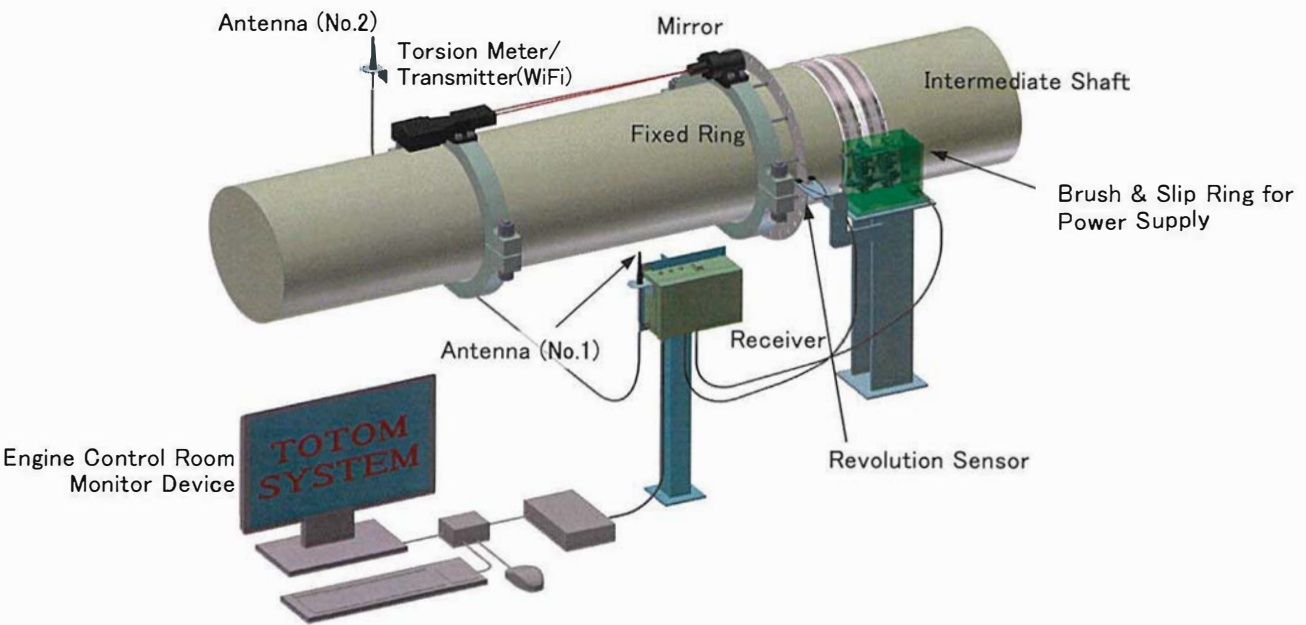


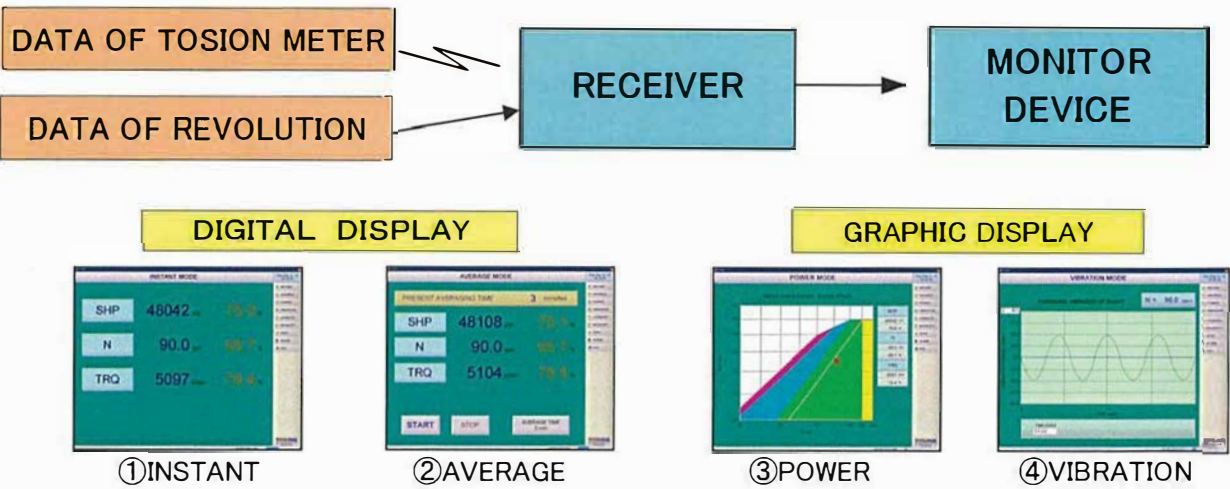
Digital Radio Type Optical Torsion Meter (TOTOM-dR (MK-II))

TOTOM-dR mounted on the intermediate shaft of the main engine is continuously detecting torsion with high accuracy by laser light without aging effect. The amount of torsion is transmitted wirelessly to the receiver installed on side of the hull. **TOTOM-dR** is an ideal tool to measure ship's performance especially for EEDI (Energy Efficiency Design Index) and EEOI (Energy Efficiency Operational Indicator).

MK-II (as shown below) was improved for reliability and less maintenance by integrating the torsion meter and the transmitter.

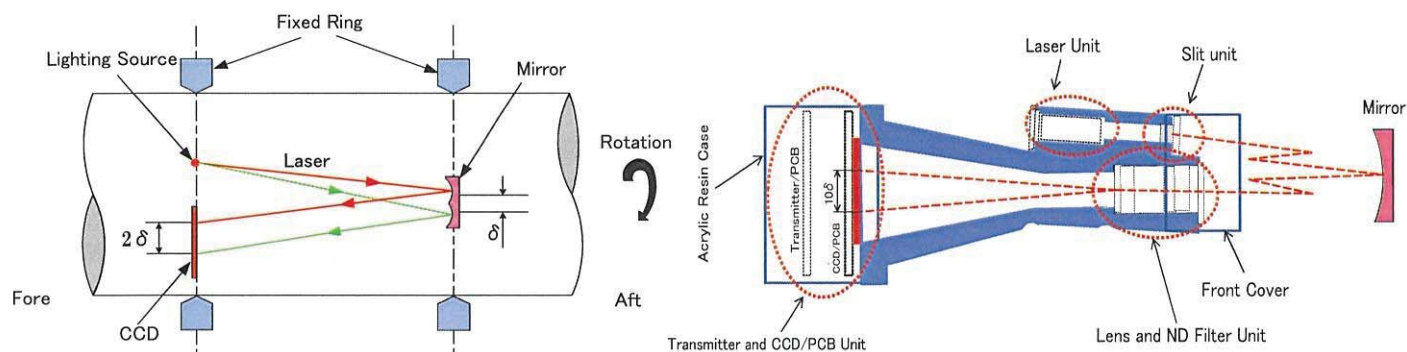


BASIC CONFIGURATION OF TOTOM-dR (MK-II)



MODE	CONTENTS OF DISPLAY
① INSTANT MODE	SHP・TRQ・N (Average value of every ten seconds)
② AVERAGE MODE	SHP・TRQ・N (Average value from one minute to 240 minutes)
③ POWER MODE	BHP・N (Instant value plotted on the main engine operation diagram)
④ VIBRATION MODE	Vibratory torsional stress is displayed in every one to ten seconds
⑤ ZERO MODE	Zero point of torsion meter is measured
⑥ LOGBOOK MODE	SHP・TRQ・N (Average value during the fixed time)
⑦ NOON REPORT MODE	SHP・TRQ・N (Average value from noon to noon)
⑧ ALARM MODE	Condition of equipment is displayed in the character of NORMAL or ABNORMAL
⑨ TRIAL MODE	Summary and data saved (conforming to ISO15016:2015) (OPTION)

PRINCIPLE AND CONFIGURATION OF THE TORSION Meter

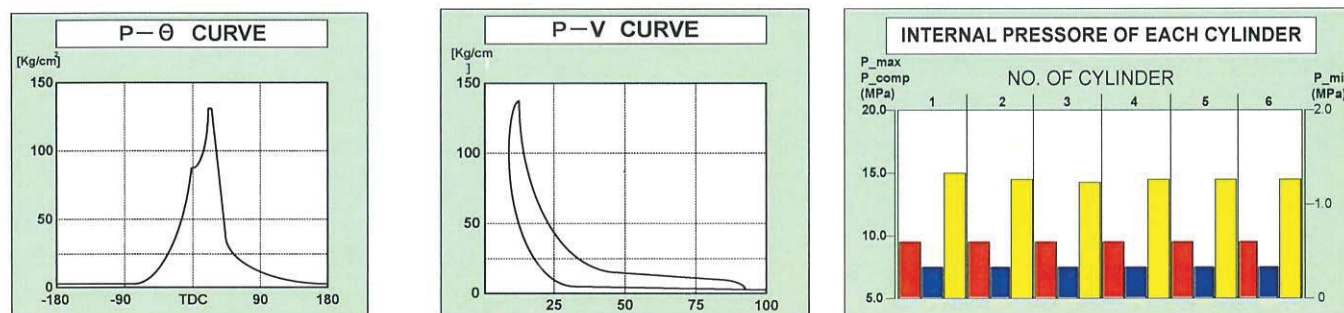


OPTIONAL ITEM

MAIN ENGINE COMBUSTION DIAGNOSTIC FUNCTION

If an abnormal burning of the main engine is detected by VIBRATION MODE of **TOTOM-dR (MK-II)**, the internal pressure of each cylinder is measured by portable type instrument. This function can identify abnormal cylinder and prevent troubles not only improve combustion by replacing defective parts with new ones earlier.

DISPLAY OF THE INTERNAL PRESSURE OF CYLINDER



FEATURES OF **TOTOM-dR(MK-II)**

- Detecting torsion of intermediate shaft with ring span of 250~500mm
Measurement accuracy can be improved if longer span
- Optical measurement of torsion
There is no error due to measuring by laser light
- Detected torsion is transmitted wirelessly to receiver(Digital radio)
- Complete measurement on-axis of intermediate shaft
Accurate measurement can be obtained without affection of hull torsion and vibration
- Remote maintenance
Instruction to ship how to resolve troubles
In case of electric components failure, crew can replace parts with new ones according to instruction

■ INFORMATION SUBMITTED AT INQUIRY ■

- 1) New ship or ship in service
- 2) Kind of ship
- 3) Type and MR of main engine
- 4) Diameter of intermediate shaft(mm)
- 5) Dia. of propeller and No. of blades
- 6) Installation place of monitoring device
- 7) Type of monitoring device
Built-in console or stand-alone
- 8) Voltage of power source: 100V or 220V



MHI MARINE ENGINEERING

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