MES-EPOCH is an electronic cylinder indication pressure analyzer. Signal from the pressure sensor is processed by our software. It records and analyzes the data and outputs the following items.

**MES-EPOCH functions**

- **Digital value display**

- **Deviations of each cylinder**

- **Zoom function**

- **Comparison with other engines**
Comparison with other makers

<table>
<thead>
<tr>
<th>Equipment</th>
<th>MES-EPOCH</th>
<th>Maker A</th>
<th>Maker B</th>
<th>Maker C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>○</td>
<td>○</td>
<td>△〜△</td>
<td>△</td>
</tr>
<tr>
<td>Crank angle measurement</td>
<td>TDC pulse 1024 pulse/rev.</td>
<td>TDC pulse Tooth of Flywheel</td>
<td>TDC pulse only</td>
<td>Interval between Pressure Signal</td>
</tr>
<tr>
<td>System Expandability</td>
<td>Combustion diagnosis in e-GICS</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Improved calculation accuracy by using the precise crank angle signal of 1024 pulse/revolution from the angle encoder of the Alpha-Lubrication-System.

Advantages

* Improvement of measurement accuracy ・・・・・・・・・・The crank angle signal of 1024 pulse/rev. is applied.
* Reduction of measurement time ・・・・・・・・About 1 minute/cyl. Simple PC operation for measurement.
* Data can be transferred from the ship to the land office ・・・・・・The same data measurements taken onboard can be confirmed at the land office.
* Link to “e-GICS” ・・・・・・・・More detailed analysis is possible, e.g., recommendations for fuel savings, cylinder improvements, etc.

Layout of equipment

Standard Set

* Cylinder Pressure Sensor
* Signal Intermediate Box
* Signal Cables
* CD-ROM (Software)
* Instruction Manual

Optional Parts

* PC (Personal / Portable Computer)
* Pscav Sensor
* Handle (for easy removal of press. sensor)
* Torque Wrench (for reassembly)
* Encoder Intermediate Box
* Angle Encoder etc.

* For PC specifications and other options, please contact MES TECHNOSERVICE Co., Ltd.
In addition to the conventional performance diagnosis, "combustion diagnosis" information is instantly available by uploading MES-EPOCH data to the e-GICS system. (Please refer to the TECHNO NEWS 075.)

**Features of the combustion diagnosis system**

* Prevention of SFOC deterioration by optimal combustion operation.
* Early detection of abnormal combustion.
* Preventive maintenance by early detection of abnormal conditions.

**An example of diagnosis results**

<table>
<thead>
<tr>
<th>Item</th>
<th>Trouble contents</th>
<th>Cylinder No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Comp. stroke</td>
<td>Decrease of fuel-injection quantity</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Increase of fuel-injection quantity</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>High load</td>
<td>O</td>
</tr>
<tr>
<td>Combustion stroke or Fuel</td>
<td>Decrease of injection condition</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Fuel-pump, Fuel-valve, etc.</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Injection timing</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Reducing of suction air</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Combustion retardancy fuel</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Low LCV fuel</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Retarded injection-timing</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Advanced injection-timing</td>
<td>O</td>
</tr>
<tr>
<td>Expansion and Scav. stroke</td>
<td>Decrease of fuel-injection quantity</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Fuel-pump, Fuel-valve, etc.</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Injection timing</td>
<td>O</td>
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<td>O</td>
</tr>
<tr>
<td></td>
<td>Advanced injection-timing</td>
<td>O</td>
</tr>
</tbody>
</table>

An example of technical comments:

Cylinder No.(1), (2), (3), (4), (5) All check points are normal.
Cylinder No.(6) Ignition-timing is retarded, and Pmax is lower than other cylinders.
There is a possibility that fuel-injection-timing is retarded, or ignition-delay is too large.
Please check the VIT, fuel-pump, fuel-valve and fuel specification.

No.6 ignition-timing has retarded than other cylinders.
If diagnosis results of remeasure data is same, please check the fuel pump of No.6 cylinder.
And, after the check, remeasure the data and try the diagnosis.
Service Network

MITSUI ENGINEERING & SHIPBUILDING CO., LTD.
機械システム事業本部 テクノサービス事業室
(TECHNOSERVICE DEPARTMENT)
〒104-8439 東京都中央区築地 5-6-4
6-4, Tsukiji 5-chome, Chuo-ku, Tokyo 104-8439, Japan
TEL : 03-3544-3105 FAX : 03-3544-3055

MES TECHNOSERVICE CO., LTD.
(HEAD OFFICE)
c/o Tamano Works of Mitsui Engineering & Shipbuilding Co., Ltd.
〒706-8651 岡山県玉野市玉 3-1-1 三井造船㈱玉野事業所構内
1-1, Tama 3-chome, Tamano City, Okayama 706-8651, Japan
TEL : 0863-23-2581 FAX : 0863-23-2085
E-mail : tech_de@mes.co.jp (For Technical)
E-mail : techdesa@mes.co.jp (For Commercial)

東京営業所 (TOKYO OFFICE)
〒104-8439 東京都中央区築地 5-6-4 三井造船㈱ 本社内
6-4, Tsukiji 5-chome, Chuo-ku, Tokyo 104-8439, Japan
TEL : 03-3544-3421 FAX : 03-3544-3055

名古屋営業所 (NAGOYA OFFICE)
〒455-0037 愛知県名古屋市港区名港 2-9-27 ポートプラザビル 7F
7th Floor, Port Plaza Building 9-27, Meiko 2-chome, Minato-ku, Nagoya City, Aichi 455-0037, Japan
TEL : 052-654-9461 FAX : 052-654-8381

MITSUIZOSEN TECHNOSERVICE SINGAPORE PTE. LTD. (MITS)
192, Pandan Loop #04-29, Pan tech Industrial Complex, Singapore 128381
Whom to contact : Mr. Y. Tsukoh, Managing Director
Ms. Gina Gui, General Manager
TEL : 65-6777-1677 FAX : 65-6773-3677
E-mail : sales@mtsin.com.sg

MITSUIZOSEN TECHNOSERVICE HONGKONG LIMITED (MTH)
Unit Nos. 1309-1312, Level 13, Metro Plaza, Tower 1, 223 Hing Fong Road, Kwai Fong, New Territories, Hong Kong
Whom to contact : Mr. Y. Kudo, Managing Director
Mr. Eric Cheng, General Manager
TEL : 852-2610-1282 FAX : 852-2610-1220
E-mail : engine@mthhk.com.hk

MITSUIZOSEN TECHNOSERVICE TAIWAN CO., LTD. (MTT)
19F-1, No.6, Minquan 2nd road, Qianzhen Dist., Kaohsiung City
80661 Taiwan (R.O.C.)
Whom to contact : Mr. Y. Kudo, Managing Director
Mr. F. W. Wang, Deputy General Manager
TEL : 886-7-331-2801 FAX : 886-7-332-2218
E-mail : mitsuizo@ms13.hinet.net

MES TECHNOSERVICE (SHANGHAI) CO., LTD. (MTC)
Room 2106, Dong Fang Road 877, Pudong Shanghai
(Jiaxing Bldg) 200122
Whom to contact : Mr. M. Uebayashi, Managing Director
TEL : 86-21-6194-0144 FAX : 86-21-6194-0155
E-mail : mestech-sh@mtc-sh.com

MITSUIZOSEN EUROPE LIMITED
Level 16, City Tower, 40 Basinghall Street, London EC2V 5DE, United Kingdom
Whom to contact : Mr. K. Nagahashi / Sales Manager
TEL : 44-20-7256-7171 FAX : 44-20-7256-7272
E-mail : knagahashi@ukmel.com

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