DEPARTMENT OF MECHANICAL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY: TIRUCHIRAPPALLI

SPECIFICATIONS FOR TENDER

The engineering equipment manufacturers/ suppliers are required to supply the following Test rigs/Equipments for the Thermal Engineering Laboratory of Mechanical Engineering Department as per the specifications.

1. EXHAUST GAS ANALYSER (FIVE GAS)
   - Should measure CO, CO₂, HC, O₂, and NO.
   - Should measure lambda values.
   - Should have the following measurement range and resolution.

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>MEASUREMENT RANGE</th>
<th>RESOLUTION</th>
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</thead>
<tbody>
<tr>
<td>CO</td>
<td>0 to 10% VOL.</td>
<td>0.01% VOL.</td>
</tr>
<tr>
<td>HC</td>
<td>0 to 20,000 PPM VOL.</td>
<td>1 PPM/10 PPM</td>
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<tr>
<td>CO₂</td>
<td>0 to 20% VOL</td>
<td>0.1%</td>
</tr>
<tr>
<td>O₂</td>
<td>0 to 22% VOL</td>
<td>0.01%</td>
</tr>
<tr>
<td>NO</td>
<td>0 to 5000 PPM VOL.</td>
<td>1 PPM VOL.</td>
</tr>
<tr>
<td>LAMBDA</td>
<td>0 to 9.999</td>
<td>0.001</td>
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</tbody>
</table>

- Should have computer interface RS 232 with USB computer interface.
- Should have the provision to print the report.
- Should provide error codes for easy fault analysis.
- Should be suitable for low idling, increased idling and for load test.
- Should operate on both AC and DC.
- All the data taken from the instrument need to be given as input to the computer for analysis.
- Should provide computerization software.
- Should have provision to connect with vibration type universal magnetic speed pickup to measure engine speed and oil temperature measurement.
- Should indicate for incorrect pressure, temperature and operating voltage.
- Should supply accessories to connect the meter to the engine.
- Should hold valid approval from ARAI, Pune.
- Should hold valid confirmative of production certificate from ARAI, Pune.
- Should have International approval OIML CLASS 1/CE/ISO 3930:2000/PTB (Europe).
- All the electrical systems must be as per IS specification
- Installation and Demo is must at the Thermal Engineering Laboratory of the Institute
- Should provide at site calibration every six months throughout the life of the instrument.
- Offer should also include spare parts/consumables for three years of satisfactory operation.