External Views and Dimensions

### Hydrogen Purging Standard Ranges

<table>
<thead>
<tr>
<th>Range</th>
<th>H₂ in Air (vol%)</th>
<th>H₂ in CO₂ (vol%)</th>
<th>Air in CO₂ (vol%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Range</td>
<td>85 - 100</td>
<td>0 - 100</td>
<td>0 - 100</td>
</tr>
<tr>
<td>Response Time</td>
<td>90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linearity</td>
<td>±1</td>
<td>±1</td>
<td>±1</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.5</td>
<td>±0.5</td>
<td>±0.5</td>
</tr>
<tr>
<td>Long Term Stability</td>
<td>±0.5/month</td>
<td>±0.5/month</td>
<td>±0.5/month</td>
</tr>
</tbody>
</table>

Density is the basic measurement, all other representations are derived from the basic density data.

VigilantPlant is Yokogawa's automation concept for safe, reliable, and profitable plant operations. VigilantPlant aims to enable an ongoing state of Operational Excellence where plant personnel are watchful and attentive, well-informed, and ready to take actions that optimize plant and business performance.

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Represented by:

Prevent catastrophic failures and lengthy downtime...

Monitor generator purity with the

**EXA GD402/GD40**

Hydrogen Purity Monitor
EXA GD402/GD40 Hydrogen Purity Monitor

The Yokogawa vibrating element type Hydrogen Purity Monitor has experienced worldwide acceptance as the new hydrogen purity measurement for electric power generators.

The GD402/GD40 hydrogen purity monitor’s low maintenance design, self-diagnostics capabilities, and easy-to-use YES/NO programming provide a broad range of control options to meet the demanding environments of power producers. It's versatility allows easy replacement of existing “old” hydrogen measurement installations. It consists of a gas detector (GD40) and a signal converter (GD402) that fit directly into most generator installations.

“...the installations used the existing generator gas sample ports and the similarity to other Yokogawa equipment already within the plant made the operation nearly plug and play which greatly reduced installation and startup time.”

Senior Instrument Mechanical Foreman, TVA Kingston power plant USA comments on the installation of 9 GD402 systems.

WHICH MONITOR TO CHOOSE?

The Yokogawa GD402/GD40 Hydrogen Purity Monitor (HPM) helps ensure that power generators are running with pure hydrogen. It is a fast, accurate and reliable process gas measurement and control device that is unaffected by ambient temperature or vibration and does not require reference gases or a controlled temperature environment.

The heart of the GD40 is a unique, vibrating cylinder, sensor technology that measures hydrogen purity. Multi-frequency cylinder oscillation makes the GD40’s measurement highly resistant to errors caused by dust, oil, vibration, and temperature changes. The Yokogawa HPM maintains ±1% FS accuracy and a response time (T90) of less than 5 seconds.

Simple operation, rock-solid performance, and low maintenance define the Yokogawa Hydrogen Purity Monitor.

HPM

Power generators use pure hydrogen to cool and insulate power generator electrical windings. Inexpensive and readily available, hydrogen is the choice insulator because its low density and high thermal conductivity provide the best environment for generator operation. Contaminated hydrogen reduces generator efficiency. Air is the most common contaminant, originating from leaking rotor shaft seals. Knowing the purity level of the generator hydrogen helps plant operators avoid conditions that place human life and expensive machinery at risk. Monitoring hydrogen purity with the EXA GD402 helps improve generator efficiency and reduce operational costs. (Fig 1)