

TELEDYNE ANALYTICAL INSTRUMENTS



MODEL 2750 *Portable Gas Analyzer for Turbine Generators*

The portable Model 2750 accurately and reliably measures hydrogen-in-CO₂ and air-in-CO₂ during maintenance purging of hydrogen-cooled turbine generators. These measurements assure that the purging proceeds quickly, efficiently and effectively. Switch-selectable ranges on the instrument make it easy to choose the measurement required. Plus, the 2750 features a third range that alerts the user to air leaks in the hydrogen cooling gas and thus helps assure optimum efficiency during normal generator operation.

Designed for Turbine Generator Applications

The 2750 is a rugged, portable, easy-to-use gas analyzer that monitors purge gases and the cooling gas in hydrogen-cooled turbine generators. Three selectable ranges:

- Monitor purge gas composition during maintenance purging
- Spot-check hydrogen purity during normal generator operation

The portability of the unit eliminates installation costs and makes it easy to move between generators. There are no moving parts to wear out, no filters to change, and no traps to clean. The 2750 is virtually maintenance free. A simple periodic calibration is all that is needed to assure years of trouble-free service.

Applications

Before workers can perform periodic maintenance inside a hydrogen-cooled turbine generator, the hydrogen (H₂) cooling gas must be purged and replaced with a breathable atmosphere (air). However, air / H₂ mixtures are potentially explosive, so a maintenance purge is used that proceeds in two stages. First, carbon dioxide (CO₂) is used to purge out the H₂. Then, in the second stage, air purges out the CO₂.

Minimizes Costly Downtime

To minimize downtime, it is important for the 2-step purge process to proceed quickly and effectively. The 2750 helps achieve those objectives. During the first stage of maintenance purging, the unit monitors the changing H₂ / CO₂ mixture. This allows operators to know the earliest moment to begin the second stage (air purge). This also saves money by minimizing CO₂ usage.

During the second stage, the 2750 monitors air-in-CO₂, which helps you decide when workers can begin maintenance.

Sensor Description

The sensor structure consists of an integrated heater located on a thin electrical and thermal insulating membrane. Two thin film resistors are used for heating and measuring the temperature of the membrane. Two resistors are integrated on the silicon beside the membrane for the compensation of the ambient temperature changes.

Gases that have a lower density than air (CH₄) cause a decrease on the surface membrane temperature. Gases with densities heavier than air (CO₂) increase the temperature of the measuring resistor.

Built for Reliability and Performance

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Features

- Portable, rugged, lightweight
- Sealed reference cell; no need for a flowing reference support gas
- Uses no consumables and is virtually maintenance free
- Proven thermal conductivity detector
- Precise temperature control provides optimum accuracy
- Three switch-selectable ranges for easy choice of desired measurement
- Large, easy to read readout for observing rate of change (trending) of purge gas mixtures

Benefits

- Minimizes costly maintenance downtime
- Saves money by avoiding needless waste of CO₂ purge gas
- Assures optimum efficiency by detecting air contamination

Specifications

Ranges (switch selectable)

0-100% H₂ in CO₂

0-100% Air in CO₂

80 - 100% H₂ in Air

Accuracy: ±5% of range at a constant temperature and pressure (once equilibrium has been achieved)

±6% at constant pressure over operating temp range

Sensor type:	Thermal conductivity
Resolution:	0.1% (gas) H ₂ , Air and CO ₂
Response time:	0 - 90% in less than 10 seconds @ 0.5 SCFH
Drift rate:	Less than 1% (range) / day
Display:	3-1/2 digit LCD
Flow rate:	0.1 – 2.5 SCFH normal 2.5 SCFH maximum (0.5 - 30 psig)
Wetted parts:	Brass, SS, Aluminum, glass, Teflon, nylon
Power:	9V DC power adapter powered from a 90-264 VAC 47-63 Hz VAC (US type 2 prong plug)
Enclosure:	NEMA-4X PET plastic housing
Dimensions:	Length: 10.6" (269.2 mm) Height: 4.8" (121.9 mm) Width: 9.9" (251.5 mm)
Operating temp:	0-40°C
Output:	0-1 VDC (0.8 - 1 VDC 80-100% range)
Gas connections:	1/8 tube and 3/16 barb
Flowmeter:	Required
Weight:	4.96 lb. (2.24 kg.)

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Warranty

Instrument is warranted for 1 year against defects in material or workmanship

NOTE: Specifications and features will vary with application. The above are established and validated during design, but are not to be construed as test criteria for every product. All specifications and features are subject to change without notice.

