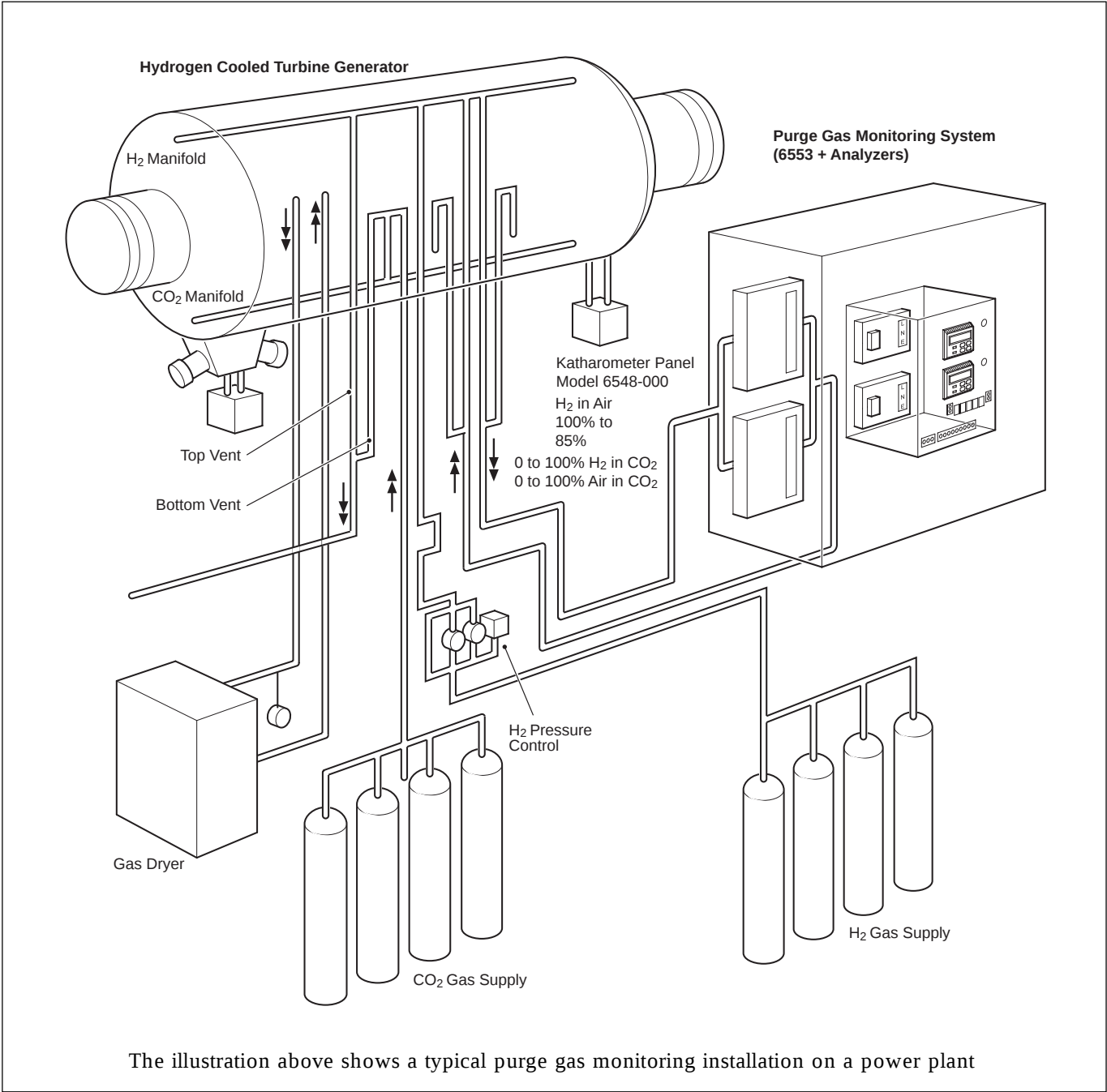




Why use Hydrogen Purity/Purge Gas Systems on Alternators ?

Why use ABB Instrumentation ?

The customer needs:

- ▶ To ensure efficient operation of the plant.
- ▶ To ensure safety of the plant while operational.
- ▶ To ensure safety of the plant during filling or de-commissioning of the alternator.

- ▶ ABB offer greater security at a lower cost by having:
 - a worldwide network of companies and agents to ensure backup in most areas,
 - proven reliability – over 100 years of process instrumentation experience, with 80 years experience of H₂ analysis,
 - a range of cost-effective purge gas analyzer systems with long-term reliability,
 - unique design features, ensuring low cost-of-ownership,
 - full installation, commissioning and routine servicing facilities available (in the UK and some other countries this is covered by the Assist[™] Customer Support Programme).
- ▶ Comprehensive range of field-proven products available.
- ▶ All components designed, manufactured and supported by the same company.

What ABB products are suitable ?

- ▶ **Type 6553 Gas Analyzer System:**
 - wide sample and ambient temperature tolerances minimise the need for additional conditioning equipment,
 - the analysers are not flow sensitive and are not affected by variations in sample pressure,
 - other than the need for desiccant replacement the analysers systems do not require routine maintenance,
 - simple calibration procedure on long time intervals,
 - numerous range options available including N₂ and Ar alternatives to CO₂ purge gas.

Installation

- ▶ The 6540-203 or 6548-000 analyser panels are normally located in the vicinity of the gas control valves on open racks.
- ▶ The 6553 display unit and power suppliers are normally mounted in cubicles where the displays are visible from the gas control valves.
- ▶ Coalescing filters fitted up stream of the analysers are recommended if carry-over of oil from the generator seals is likely to occur.
- ▶ The sample pressure reducer/regulator for the low pressure systems should be fitted at the generator tapping point to give the fastest possible response time.
- ▶ The diagrams opposite show the options available for systems to work at virtually atmospheric pressure or at static pressure of the generator. The high pressure analyzer system is pressure tested to 10bar and is covered by the same I.S. certificate as the low pressure system, provided the sample pressure remains virtually at atmospheric pressure.
- ▶ No data exists for properties of flame propagation in H₂/air mixtures at elevated pressures and therefore I.S. certification is not possible for such duties.

Process Description

Prior to start up of the generator air is removed by 'purging' with CO_2 . When the generator is filled with CO_2 the H_2 is introduced to a level of 100% H_2 .

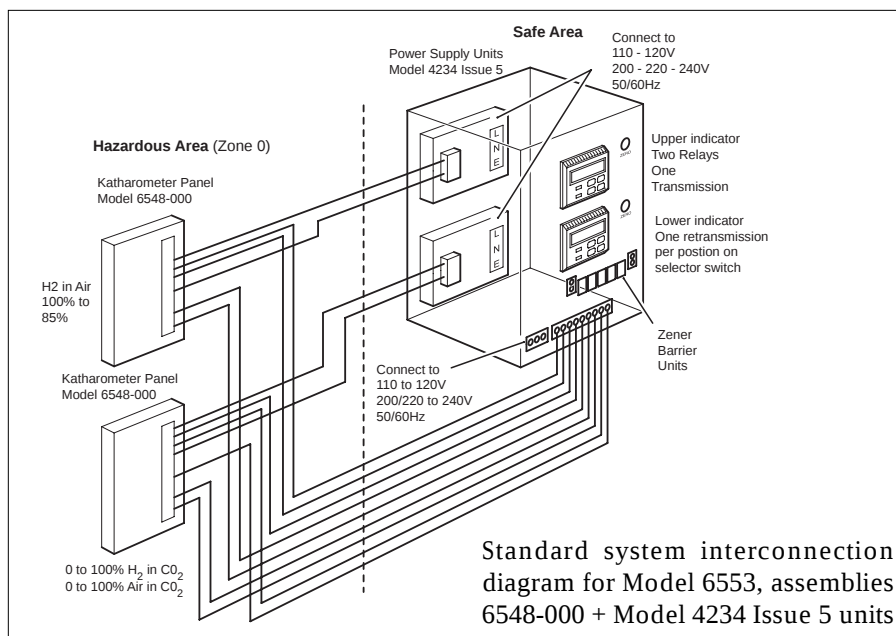
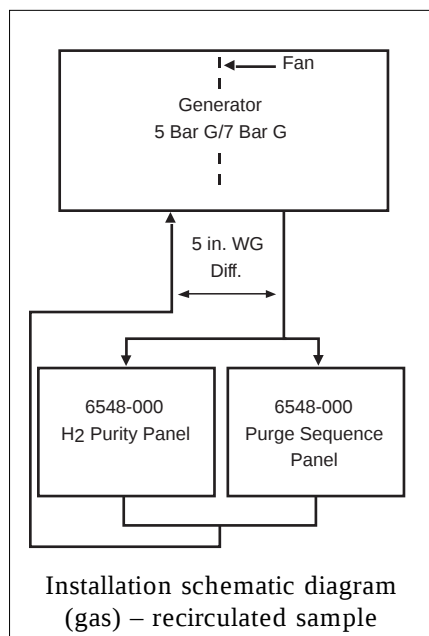
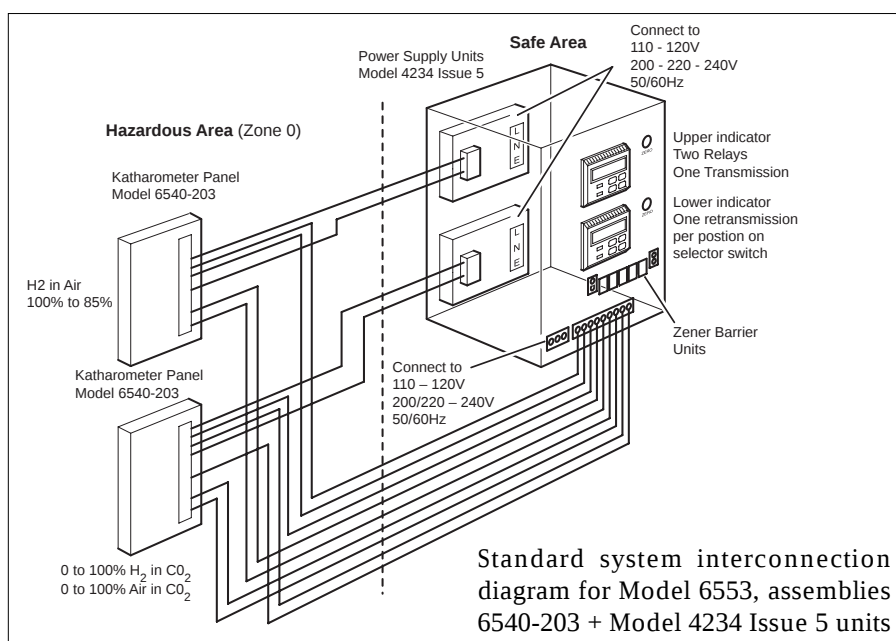
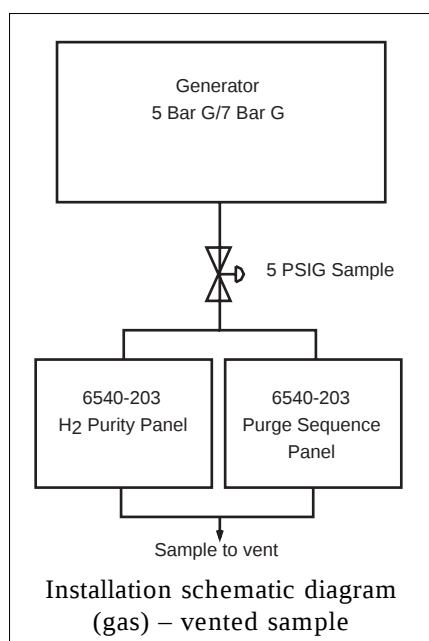
These two stages have a common factor in that there is the need to measure Air in CO_2 and H_2 in CO_2 ; both over the range of 0 to 100%.

As CO_2 is common to both ranges, it is possible, by use of CO_2 ref. gas, to measure both these ranges on a single Katharometer.

When the level of 100% H_2 is reached a third range of 100 to 85% or 100 to 80% H_2 in Air is monitored to ensure safety of the plant while the generator is operational.

When the generator is shut down the reverse procedure is followed to ensure removal of all H_2 and CO_2 , in that sequence, prior to operator maintenance.

As an alternative to the systems described it is possible to measure all three gas ranges on a single analyzer system.



Other ABB Monitoring Capabilities Suitable For Power Utilities

Analytical Applications:

- ▶ Regeneration of the resin beds in both make-up Water Treatment and Condensate Polishing Plants using 4621/26 multi-electrode systems.
- ▶ pH monitoring using type 4630/35 transmitters and associated electrode systems.
- ▶ Sodium monitoring using type 8036 Sodium Monitors.
- ▶ Silica monitoring using type 8241 Silica Monitors.

Industrial Applications:

- ▶ Recorders and recorder/controllers:
 - C50, C100, C150, C200, C300, C1900, MR100, MR250, PR100, PR250.

Flow Applications:

- ▶ MagMaster flowmeters.
- ▶ Type 600T Smart pressure transmitters.



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