

MSA Gas Detection System For Hydrogen Monitoring in Nuclear Power Plants and Storage Areas



Product Description:

MSA Gas Detection sample draw system consists of a stainless steel sample system with an Ultima® X sensor and on-board LED's to provide local alarms.

System Contents include:

- ▶ MSA Ultima X Hydrogen Sensor
- ▶ Heater
- ▶ Flow Switch
- ▶ 4 to 20 mA or Modbus output
- ▶ Stainless Steel Sample System

Applications:

- ▶ Nuclear Power Plants Boiling Water Reactor (BWR)
- ▶ Storage Areas for Nuclear Rods and Waste



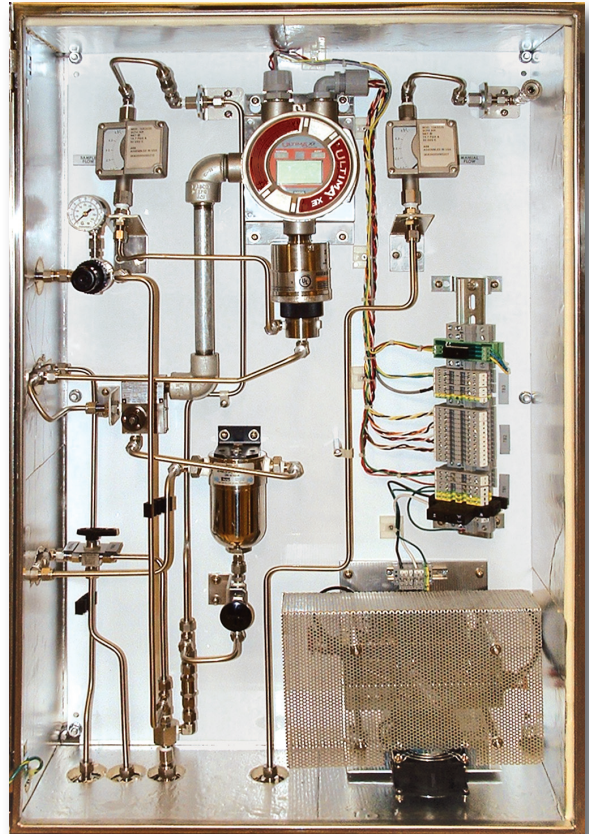
The zirconium in Zircaloy cladding used in fuel rods, through oxidation with steam, can produce hydrogen, particularly when the rods over-heat during adverse conditions. Hydrogen, when mixed with air, is highly flammable and its detonation or deflagration may damage the reactor containment.

To avoid such catastrophic events, the MSA Gas Detection system can be used to measure hydrogen in the off gas re-combiner in BWR's and also in the long term storage areas of spent zirconium fuel rods.

The system measures hydrogen in the range of 0 – 100% LEL (4% by volume). Other ranges are available. A 4 to 20 mA output or Modbus output is available to send signals to the control room. Relays are available for the local alarm.

Specifications:

- ▶ Tested to seismic load requirements IBC-2008 and ASCE-7-05.
- ▶ Designed following Quality Assurance Requirements for Nuclear Facility Applications, 2000 NQA-1, ASME B31.3 and NFPA 70 standards.
- ▶ NEMA 4X as defined by NEMA 250, Enclosures for Electrical Equipment, 2003.
- ▶ The Ultima X combustible (hydrogen) sensor is SIL 2 Certified.
- ▶ Heated enclosure.
- ▶ Operational temperature range of -30 to +50 C.
- ▶ Designed to withstand short-term exposure to 75C and 110 PSIG.
- ▶ All wetted parts are stainless steel.
- ▶ Flow switch contacts for indication of loss of flow.
- ▶ Three (3) levels of gas alarm: caution, warning and alarm, in addition to trouble relay.
- ▶ 4 to 20 mA output to control panel or DCS. Modbus output also available.
- ▶ Sample can be vented back to the process or storage container.
- ▶ Product of US.



Note: This bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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