framatome

Containment Atmosphere Monitoring and Sampling System

COMPASS

The Containment Atmosphere Monitoring and Sampling System COMPASS provides information about gaseous containment atmosphere composition, online activity measurement and precise automatic sampling and sample dilution function.

Challenge

Adequately managing different severe accident scenarios is complicated by a lack of available information during degraded plant conditions. Existing instrumentation will most likely be lost or produces incorrect data in severe accident conditions. Monitoring the relevant containment atmosphere and sump water parameters such as combustible gas concentrations, core status or core localization are essential to interpret the accident progression, initiate appropriate mitigation measures and check the effectiveness of counter measures.

Solution

COMPASS consists of different modules which are assembled according to the requirements of the customer. One module takes and dilutes automatically in-situ samples (liquid and gaseous) from the containment atmosphere and of the containment sump. Sample dilution ratio can be flexible adapted according the specific situation. The samples can be analyzed by online analyzers or will be provided in an appropriate sampling vessel for analysis in a laboratory. The second module extracts a micro gas sample from the containment atmosphere to analyze the micro samples with online measurements for the combustion regime potentially formed inside the containment. All samples being extracted from the containment will automatically be transported back to containment. The modules are automatically decontaminated in regular intervals.

COMPASS provides the automatic functions of:

- Take representative samples from the containment atmosphere or the sump water to allow detailed analysis.
- Dilute the samples in flexible ratios to combine easy handling and high accuracy
- Provide online measurements for activity and gas composition of the containment atmosphere.
- Provide online measurement for the pH-value of the sump water.

Qualification Tests

- Resistance to thermal/radiation aging
- Temperature, moisture, pressure
- Long distance sample transport without loss of accuracy
- No susceptibility of local hot spots inside the containment
- Seismic resistance

Your performance
is **our** everyday **commitment**

Sampling and dilution module

In-situ sampler

Technical Information

- Main Dimensions:
  - Sampling and dilution module 1600 mm x 500 mm x 2100 mm
  - Micro Sample module 1300 mm x 700 mm x 1900 mm
- Availalbe online measurements: H_2, O_2, CO, CO_2, H_2O (g), Kr, Xe, pH-value, spectroscopy
- Available samples: Gaseous, liquid, aerosols (transferred to liquid phase), sump water

Customer benefits

- Qualified for severe accident
- Reliable function and long-term operability
- Customized and flexible design
- Reduced dose to the operator

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