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## PIS-300

# POST-ACCIDENT GASEOUS EFFLUENT SAMPLER

## MAIN ADVANTAGES

- Fully automatic operation with redundant sampling chambers.
- Measurement of dose rate from filters and signaling of alarm levels.
- It is possible to remotely disconnect sampling lines and remove filters from a distance of 1 meter.

## PURPOSE

The PIS-300 samples air during accident and post-accident conditions from ventilation stacks and ducts and evaluates the release of radioactive particulates and iodine into the environment.

Integrated detectors are used to measure dose rate from the filters in the shielded sampling chambers.

Post-accident sampler PIS-300 consists of following main parts:

- Control PLC unit, which controls, checks, and indicates the system status
- Pneumatic system, which handles the air intake and distribution between two sampling chambers.
- Detectors for the measurement of dose rate from the filters.

The PIS-300 is controlled by a local control unit, with the host system monitoring the status of the device and setting the selected parameters.

The sampler can operate in local manual mode or use full control from the host control system.

The system is in standby mode by default. It is activated from the host system according to the preset mode:

- Automatic Continuous Mode: automatically switches between the filters after exceeding the set dose rate threshold from the active filters.
- Automatic Discontinuous Mode: automatically switches between the filters after exceeding the set dose rate threshold from the active filters and pauses sampling for a set time.
- Discontinuous One-time Mode: after the required sampling time has elapsed the sampling is terminated and the sampler waits for a new start.

The integrated sampling piping is equipped with controlled heating to limit sample condensation.

Various connections and hand valves are used for manual flow control in the sampling path during maintenance, manual sampling, manual purging, testing and calibration.

Based on the signal from the dose rate detectors located in the shielded chamber, sampling can be stopped and switched to the second set of filters. The estimated dose rate at 1 meter from the filter can be displayed.

During post-accident sampling, high activities are deposited on filters. In order to minimize the risk of worker exposure when handling the filters, the filter capsules are placed in a shielded steel or lead casing.

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An automatic mechanism for connecting/disconnecting the filter capsules to/from the sampling paths provides for a quick and safe exchange of the filters in the chamber. The system is controlled by a mechanical lever located outside the chamber, which also serves as a lock of the chamber door. This mechanism greatly reduces the time needed for the exchange of filters and thus also the exposure of the personnel performing it.

There is also a special tool that enables to pull out the capsule with the filters and put in the transport container remotely. Workers will keep a distance of 1 meter from the filters throughout the entire exchange process.

## SPECIFICATION

| | |
|---|---|
| Nominal sample flow | 1 l/min |
| Sample relative humidity | 95 % noncondensing |
| Sample temperature | max. 50 °C |
| Sample pressure | 150 kPa |
| Max. activity | 3,17E12 Bq/m$^3$ |
| Filters | |
| Aerosol | glass fibre |
| Iodine | silver zeolite |
| Dose rate measuring range | 5E-6 to 1E1 Gy/h |
| Chamber shielding | Pb, 10 cm |
| Dimensions (W × H × D) | 1900 × 1700 × 470 mm |
| Weight | 1200 kg |
| Power supply | 2 × 230 V, 50 Hz / 450 VA |
| Temperature | 55 °C |
| Interface | RS-485 |

## OPTIONAL ACCESSORIES

| | |
|---|---|
| **K0962-01** | Shielded container for filters transportation |
| **K0966-53** | Stair-trolley for transportation of shielded container |

## RELATED PRODUCTS

| | |
|---|---|
| **GEMS-413** | Post-accident gaseous effluent sampler PIS-300 with the integrated NGD-13 post-accident noble gas detector |
| **GEMS-700** | Gaseous effluent monitoring and sampling system for routine and post-accident operation |

Shielded sampling chamber
with filters and dose rate meters

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Specification subject to change without prior written notice.

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