

# GES-400 Post-Accident Gaseous Effluent Sampler



**Gaseous Effluent Sampler is intended for accident and post-accident ventilation stack air sampling for further evaluation of radioactive aerosols and iodine discharges. Two shielded chambers ensure continuous sampling during high activity event.**

## Purpose

Gaseous Effluent Sampler is intended for accident and post-accident ventilation stack air sampling for further evaluation of radioactive aerosols and iodine discharges. It is equipped with dose rate detectors for activity evaluation of filters with signalization for values exceeding pre-set alarm levels of dose rate.

The GES-400 sampler works in local and remote manual sampling mode or in automatic sampling mode with auto-switch option which handles switching between filters depending on the pre-set dose rate level.

## Description

The sampler consists of following main parts:

- Control PLC unit with signalization of the pneumatic system status, dose rate detector for filter measurement, which also provides value of dose rate in 1 m to the operator who is handling the capsule replacement
- Pneumatic system, which handles the intake and distribution between two sampling chambers. The chamber is purged with fresh air before it is opened by the operator
- Two 10 cm (4 in) lead shielded sampling chambers and shielded doors with safety interlocks and status sensors
- A compartment with provisions for Post-Accident Noble Gas Monitor

Sampler is in default standby mode waiting for an instruction from host system to start user preprogramed procedure - mode. There are several preprogramed procedures:

- Automatic continuous mode
- Automatic discontinuous mode
- Discontinuous one-off mode

## Main Advantages

- Automatic operation with full-scale auto diagnostic procedures
- Dose rate measurement
- Automatic disconnection
- High reliability
- Low maintenance requirements

## Specification

### Sample parameters

|               |                      |
|---------------|----------------------|
| Nominal flow  | 1 l/min (0.0353 cfm) |
| Rel. humidity | 95 % non-cond.       |
| Temperature   | max. 50 °C (122 °F)  |
| Pressure      | 150 kPa (1125 mmHg)  |

### Filter type

|         |                |
|---------|----------------|
| Aerosol | Glass fibre    |
| Iodine  | Silver zeolite |

### Filter dose rate measurement

|                           |                                       |
|---------------------------|---------------------------------------|
| Effective measuring range | 5E-6 ~ 1E1 Gy/h<br>(5E-4 ~ 1E3 rad/h) |
| Energy range              | 80 keV ~ 1.25 MeV                     |

### Operational conditions

|               |                        |
|---------------|------------------------|
| Temperature   | 5 ~ 40 °C (41~ 104 °F) |
| Rel. humidity | max. 85%               |

### General

|                        |                                           |
|------------------------|-------------------------------------------|
| Dimensions (W x H x D) | 90 x 170 x 47 cm<br>(35.4 x 67 x 18.5 in) |
| Weight                 | app. 1200 kg<br>(2645 lb)                 |
| Power supply           | 2 x 230 V, 50 Hz / 450 VA                 |

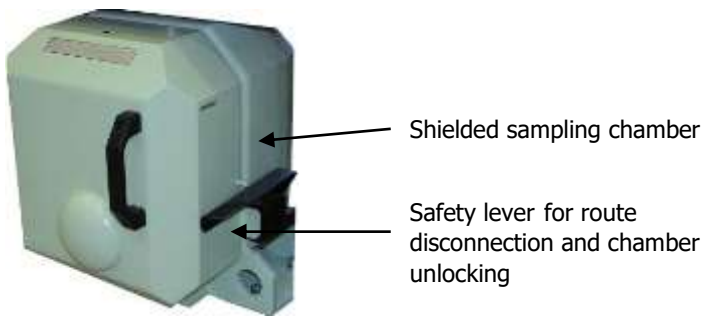
## Description

The sample line is heated to prevent condensation of the sample. The heating is temperature controlled; typical temperature for the air sample system, both piping and chamber, is about 55 °C (130 °F).

The sample lines are equipped with test ports and manual valves where applicable. These are used for manual control of the air flow through the sample lines for maintenance, obtaining grab sample, manual purge, service and testing, or calibration.

High activities of particulate and iodine are expected during post-accident sampling, and the exposure to the personnel must be minimized. Therefore the post-accident sampling filter assemblies have been designed with shielded enclosures for the particulate and iodine sample filter holders.

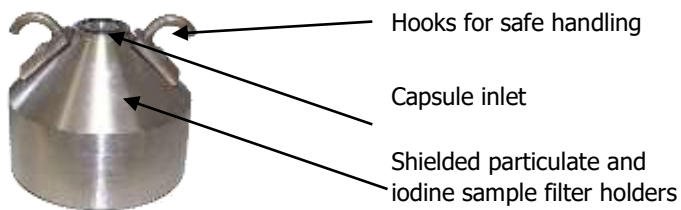
The automatic lifting mechanism to connect the sample line to the sample holder is used to facilitate the removal of the sample holder from the lead shield. The use of this mechanism significantly reduces the exposure time of the personnel during the sample holder removal process. The operator can maintain a distance of 1m (3 feet) from the filter holder throughout the removal process. In order to observe the ALARA principles a special handling tool for removal of the sample holders is provided.



Shielded sampling chamber

Safety lever for route disconnection and chamber unlocking

*Heated, 10 cm (4 in) lead shielded sampling chamber with dose rate meters for capsule activity measurement.*



Hooks for safe handling

Capsule inlet

Shielded particulate and iodine sample filter holders

*Shielded particulate and iodine sample filter holders can be provide in steel, lead or tungsten design.*



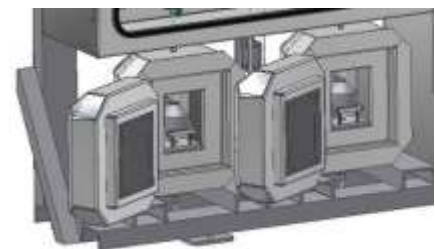
## Standards and Certification

GES-400 sampler is designed according to these standards and regulations:

- Nuclear power plants - Instrumentation and control systems important to safety – Classification **ČSN IEC 61226** – Category B
- Radiation monitoring equipment for accident and post-accident conditions in nuclear power plants. Part 1: General requirements, **ČSN IEC 60951-1**
- Radiation monitoring equipment for accident and post-accident conditions in nuclear power plants. Part 2: Equipment for continuous monitoring of noble gases in gaseous effluents, **ČSN IEC 60951-2**
- Recommended practices for seismic qualification of electrical equipment of the safety system for nuclear generating stations, **IEC 60980**

## Models and Accessories

| Type/Model                  | Description                                                |
|-----------------------------|------------------------------------------------------------|
| <b>K0966</b>                | Basic option of GES-400 with two shielded chambers         |
| <b>Optional Accessories</b> |                                                            |
| <b>K0962</b>                | Shielded container for capsule transportation              |
| <b>K0966-53</b>             | Stair-trolley for shielded container transport             |
| <b>Related Products</b>     |                                                            |
| <b>K1330</b>                | Routine and Post-Accident Gaseous Effluent Sampler GES-700 |



*Opened doors of shielded chambers with shielded particulate holders*

[www.vf.eu](http://www.vf.eu)

### Contact address

#### Czech Republic

VF, a.s., Svitavská 588  
CZ 679 21 Černá Hora  
tel. +420 516 428 611  
fax +420 516 428 610  
info@vf.eu

#### Slovak Republic

VF, s.r.o., M. R. Štefánika 9  
SK 010 02 Žilina  
tel. +421 415 072 411  
fax +421 415 072 410  
info@vf.eu

### Your supplier