scienta
sensor
systems

SAUNA III

A fully automated radionuclide continuous monitoring system

Key Features

- 6 hours data resolution gives better source localization
- Nitrogen used as carrier gas lowers operational cost
- Highly sensitive beta-gamma detection gives low detection limits for ^{133}Xe, ^{135}Xe, ^{133m}Xe, and ^{131m}Xe
- Automatic adjustment of detector energy drift
- Remote operation and diagnosis
- Data continuously transferred to user

SAUNA

SAUNA is a fully automatic system for detection of radioactive xenon gas in the ambient atmosphere. SAUNA III performs uninterrupted sampling, processing, quantification, and activity measurement of the four xenon isotopes ^{133}Xe, ^{135}Xe, ^{133m}Xe, and ^{131m}Xe. The SAUNA system comprises a sampling system, processing system, quantification system, detector transfer system, detection system, UPS system and a State of Health system for system supervision. The instrument has a modular design and everything except the detection system is installed in 19" racks.

Future proof

Existing SAUNA II systems can easily be upgraded to SAUNA III by replacing a few modules. The close strategic cooperation with Swedish Defence Research Agency (FOI), who has world-leading expertise in the field of radio-xenon detection and analysis, vouch for continuously improvements of the system, which will give the user better performance and data availability. This will maintain our position as the No. 1 supplier of radio-nuclide monitoring equipment.

Wherever and whenever you need us

Our experienced service engineers maintain and support all installations globally at least once per year. Thanks to that we can sustain our excellent operational track record and historically highest system uptime; some customers have 99% uptime. We offer a variety of service contract levels to meet our customers' demands for world-class services.

Today we have 40 operational systems worldwide.

About us

Scienta Sensor Systems markets, installs, and services ultrasensitive systems for detection of radioactive xenon in the atmosphere, e.g. for detection of nuclear explosions or malfunctioning nuclear plants. The company has the largest installed base of radio-nuclide systems that have been installed in monitoring stations and networks worldwide. Scienta Sensor Systems is engaged in a long term strategic partnership with the Swedish Defense Research Agency (FOI) in the development of technologies for the next generation of systems.

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Target specifications:

The comparison between the SAUNA II and SAUNA III systems shows that we have managed to increase the SAUNA III performance significantly. For example:

- The number of samples per 24 hours have increased to 4 from previously 2
- The stable xenon sample is 3.0 ml after a cycle of 6 hours instead of 1.25 ml after 12 hours
- The Minimum Detectable Concentration (MDC) has also been improved

Parameters	SAUNA II	SAUNA III
Number of samples/24 h	2	4
Airflow, m³/hour	1.4	>6
Stable xenon/sample, cm³ at STP	1.3	3.0
Stable xenon energy yield, ml/kW	0.8	3.2
Stable xenon extraction coefficient	0.95	0.95
MDC of ^{133}Xe, mBq/m³	0.2	0.20
MDC ^{133m}Xe, mBq/m³	0.2	0.15
MDC ^{131m}Xe, mBq/m³	0.2	0.15
MDC ^{135}Xe, mBq/m³	0.7	0.35
Radon removal coefficient	>10⁵	>10⁵
Energy calibration stability	QC checked	QC checked
Historical Data Availability %	>90[1]	TBD
Detector technology	Plastic/NaI	Plastic/NaI
Cross-contamination between subsequent samples	<0.1%	<0.1%
Requires certified calibration sources	No	No
Carrier gas	Helium	Nitrogen
Power consumption, mean (kW)	3	3.7
Power consumption, peak (kW)	5.5	6
Approximately weight (kg)	1800	1800
Footprint of detector unit (m)	1.2 × 0.6	1.2 × 0.6
Footprint of 19" racks (m)	1.8 × 0.8	1.8 × 0.8
Available for sale	Yes	Yes

[1]Independent customers with Gold service contracts achieve >98%.

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