DeGeN
MEASUREMENT VEHICLE
FOR RADIOACTIVE
AND NUCLEAR MATERIAL
ABOUT DeGeN

The possibility of radioactive or nuclear material falling into the wrong hands poses a serious threat to society. The prevention of a terrorist attack involving radioactive or nuclear material requires sophisticated measurement techniques to detect these substances.

Fraunhofer INT developed, integrated and operates the vehicle based mobile measurement system DeGeN. It is equipped with highly efficient gamma and neutron detection systems to track down and analyze radioactive and nuclear material, both during storage and transportation.

The car is well suited for covert search or can be used as a portal to survey and secure e.g. a point of entry. In the latter mode of operation, the system can be operated with batteries.

Our institute operates a precision mechanical workshop and an electronic laboratory. This enables us to adapt or integrate equipment for specific needs.
CHARACTERISTICS

- 6 slab counters for neutron measurements on each side (72 $^3$He-tubes with polyethylene moderator) with very high efficiency.

- 12 l plastic scintillator detector with natural background rejection (NBR) functionality on each side for gamma detection with excellent detection capability.

- GPS-georeferenced count-rate data is recorded for further analysis.

- Direction sensitive measurements.

- System powered from vehicle power supply, power socket or back-up battery (up to 10 h).

- Measurement system can be fitted into most customary station wagons.

- Possibility of remote control of measurement equipment.
APPLICATIONS

- Searching and identification of radioactive and nuclear material.
- Covert search and surveillance operation.
- Surveillance of entry point of a critical infrastructure.
- Recording of maps of gamma and neutron radiation distribution.
- Estimation of neutron and gamma intensities.
- Gammas: Distinguish between natural background and artificial radiation.
- Neutrons: Distinguish between fissile material and industrial sources.
- Identification of nuclides by means of a high resolution, electrically cooled, portable germanium detector.
The Fraunhofer Institute for Technological Trend Analysis INT provides scientifically sound assessments and counseling on the entire spectrum of technological developments. On this basis, the Institute conducts Technology Forecasting, making possible a long-term approach to strategic research planning. Fraunhofer INT constantly applies this competence in projects tailor-made for our clients.

Over and above these skills, we run our own experimental and theoretical research on the effects of ionizing and electromagnetic radiation on electronic components, as well as on radiation detection systems. To this end, INT is equipped with the latest measurement technology. Our main laboratory and large-scale appliances are radiation sources, electromagnetic simulation facilities and detector systems that cannot be found in this combination in any other civilian body in Germany.

For more than 40 years, INT has been a reliable partner for the Federal German Ministry of Defense, which it advises in close cooperation and for which it carries out research in technology analysis and strategic planning as well as radiation effects. INT also successfully advises and conducts research for domestic and international civilian clients: both public bodies and industry, from SMEs to DAX 30 companies.
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