“Do you need a 6th sense? – GRAETZ has it!”

Radiation measuring instruments for personal radiation protection in **N**on **D**estructive **T**esting

The method of radiographic test is particularly suitable for the non-destructive testing of materials. NDT uses isotopes like e.g. SE75, IR192, Yb169, Tm170 as well as X-rays. As human beings have no organ for the perception of ionising radiation, there is no natural alarm in case of dangerous situations. But there are appropriate safety directives and suitable alarm and measuring instruments for the detection of α, β and γ-radiation.

The German Radiation Protection Ordinance and the German X-ray regulations define limit values in order to prevent the hazard of health by ionising radiation or to minimise the exposure of workmen. In Germany for example the local dose rate for non-stationary handling of radioactive substances outside a controlled area may not be higher than 40 µSv/h.

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The following battery operated alarm and measuring instruments for γ-radiation and X-rays are suitable for the use in NDT: made for rough use, handy and easy to operate. In case of an exceeded alarm threshold an optical and acoustic alarm will be triggered.

Dose rate alarm units:

GRAETZ GammaSmart one and GammaSmart two

- indication by optical and acoustical single-pulses.
- increasing dose rate leads to an increasing pulse rate
- optionally available with one alarm threshold at 40 µSv/h (special version V40)
- **GammaSmart one** approved for the use in explosion endangered atmospheres of zone 1

GRAETZ GammaTest C

- 4 preset alarm thresholds at 25 µSv/h, 40 µSv/h, 1 mSv/h, 10 mSv/h
- optical single-pulse indication for permanent function control
- increasing flash frequency indicates increasing dose rate

GRAETZ GWL10m

- designed as quasi stationary dose rate alarm device
- 4 adjustable alarm thresholds at 7.5 µSv/h, 25 µSv/h, 1 mSv/h, 10 mSv/h
- optical and acoustic alarm (can be activated)
- optional accessories: special tripod and motion sensor triggering an acoustic alarm when a person approaches towards a danger zone with an increased radiation level

Dose meters:

GRAETZ GPD150G

- personal dose meter,
  measuring range 0.05 µSv up to 10 Sv
- 4 preset dose alarm thresholds,
  (can be customised upon request)
- one dose rate alarm threshold at 25 µSv/h acoustic
- single-pulse indication can be activated

GRAETZ ED150

- personal dose meter, measuring range 0.1 µSv up to 10 Sv
- acoustic single-pulse indication can be activated
- 4 preset alarm thresholds for dose and dose rate
  (can be customised upon request)
- PTB-approved

Dose rate meters:

GRAETZ GammaTwin

- dose rate indication range
  0 nSv/h up to 70 mSv/h
- 4 preset alarm thresholds for dose and dose rate (can be customised upon request)
- single-pulse indication can be activated
- separate or simultaneous display of dose and dose rate
- PTB-approved

Special version:
GammaTwin S with probe for contamination control of metal scrap

GRAETZ X5C *plus*

- dose rate indication range 0 nSv/h up to 20 mSv/h
- 4 free programmable alarm thresholds for dose and dose rate
- acoustic single-pulse indication can be activated
- connection of with various external probes
- PTB-approved
- available as **GRAETZ X5CEx** for the application in explosion endangered atmospheres

Stationary monitoring systems:

If laboratories or bunker have to be permanently monitored, stationary room monitoring systems of the type **GRAETZ WS05C** are used.

- 4 free programmable alarm thresholds for dose and dose rate
- possibility to connect a maximum of three external probes (same or different type or measuring range) from 150 nSv/h up to 10 Sv/h
- energy range, measuring range, measurand etc. for the single channels correspond to the data of the connected probe(s)
- if a set alarm threshold is exceeded, γ-radiation and X-rays will trigger an acoustic and optical alarm
- additional alarm in case of probe failure
- optional accessories like emergency power supply, potential free relay output or external alarm lamps

General advice for service intervals

Each instrument is be supplied with a certificate confirming the instrument's measuring accuracy. All measurements are effected on a special, officially licensed and regularly controlled calibration installation. The functionality of radiation measuring instruments has to be checked regularly. The particular steps for testing GRAETZ devices are described on our website www.graetz.com (chapter service/functional tests).

- **Every 6 months** the operational readiness has to be ensured by visual control and functional tests, if applicable completed by radiological controls (e.g. by using approved test sources and device-specific control units)
- **Every 3 years** recalibration of measuring instruments in industrial use by the manufacturer GRAETZ to ensure correct operation