

## Personal dosimeter for magnetic field monitoring (P-1032)

### Key Facts

- Monitoring of static and dynamic magnetic fields
- Material composition allows the use of the device in all kinds of magnetic fields
- Compact measuring sensor (1 cm<sup>3</sup>) can be used for exposure measurement at any part of the body
- Cost-effective and simple production; device is easy to apply

### Abstract

Many different personal dosimeters have been developed to monitor the exposure to magnetic fields. These dosimeter systems are used mainly for magnetic resonance imaging (MRI) and are often limited to specific measuring parameters, such as a certain range of magnetic field strength. Moreover, most of the dosimeters are worn at chest level and cannot be used to monitor the exposure of other individual parts of the body (such as the head, arm, etc.).

### The Technology

By using Hall effect sensors and electromagnetic induction coils, the magnetic flux density, the change in magnetic flux density, and the change in magnetic flux can be monitored simultaneously.

The compact measuring sensor is connected to the supply and data storage device via a signal cable and can be attached to any body part.

Due to the use of non-ferromagnetic components and by its free programmability, the device can be used for all kinds of magnetic fields.

### Development Stage

A fully functional prototype has already been constructed and tested.

### Applications and Commercial Opportunity

The personal dosimeter can be used in medicine and industry, including MRI, electrical generating stations, high-voltage equipment, and power stations.

### Advantages

- Monitoring of all kinds of magnetic fields simultaneously
- Exposure measurement at any body part
- The device is suitable for weak and extremely strong magnetic fields (it has been tested for up to 7 tesla)
- Cost-effective and simple production by using standard components
- Device is easy to apply
- Simple data analysis

### Inventor

The inventor is Jens Gröbner, DKFZ Heidelberg, Germany.

### Intellectual Property

A German utility patent "Vorrichtung für die Messung von statischen und dynamischen Magnetfeldern" [DE202012008154](#) was granted September 24th, 2012.

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