A sample changer for transferring radioactive samples between a hot cell and a measuring apparatus

Description

The present invention relates to a sample changer for transferring radioactive samples between a hot cell and a measuring apparatus like a hybrid K-edge densitometer. The proposed solution is a special linear drive composed of 5 elements:

1. A sample transfer tube made of high-grade stainless steel with an outer diameter suited for standard adapters of hot cells.
2. A stepping motor for spindle rotation separated from the inner containment by a double shaft seal.
3. A capacitive sensor providing the reference position.
4. A sample magazine made of titanium for 6 samples and designed for simple loading/unloading with telemanipulators.
5. A split aperture of 0,2 mm width incorporated in the sample magazine to control positional accuracy of the drive (0,05 mm).

The main advantages of the solution are related to its applicability in connection with a hot cell environment, meeting at the same time the requirements of HKED measurements.

Innovative aspects and main advantages

- Special interior design of the sample transfer tube, which allows incorporation of a linear drive while maintaining the outer dimensions of traditional systems
- Strict separation of mechanical and electrical components, which are left outside of the hot cell
- Use of a non-intrusive capacitive sensor as reference element
- Automated control of positional accuracy by recording/evaluating intensity profile through slit aperture
- No manual handling inside the hot cell
- Possibility of conversion to manual sample changer

Areas of application

- Measurements of highly radioactive materials

Stages of development

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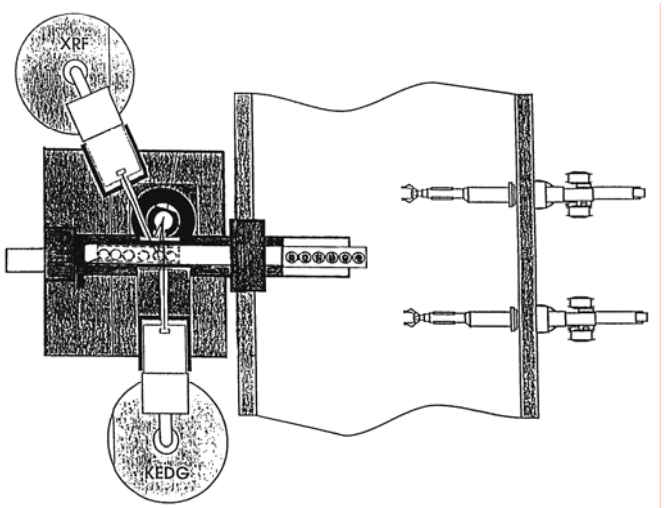
	Patent granted	LU 90270
		US6630679
		EP1102980
	Patent Pending	Japan



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