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News Release from: **Industrial Tomography Systems** | Subject: **Electrical resistance tomography**

Edited by the Engineeringtalk Editorial Team on 24 February 2004

Electrical resistance tomography proves its worth

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After a successful demonstration at its Sellafield site, BNFL has decided to install electrical resistance tomography (ERT) as process monitoring technology for a plant trial. By sophisticated analysis of electrical signals from an array of sensors in or around a process vessel, ERT allows the user to "see" in detail what is going on inside.

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David Watson of BNFL's Thorp technical department comments: "This technology offers exciting possibilities.

Our detailed trial programme has led to its adoption in a particular application; we can see it being applied across a number of other areas".

The "particular application" is a unit operation within the Thorp fuel reprocessing plant.

It takes place in a continuous stirred tank into which reactants are added to produce a heavy metal precipitate.

Stirring of the reaction vessel is important: it must be continuous and of the right intensity.

Quite apart from demands placed on operator time in monitoring the system, the nontransparent nature of the vessel contents prevents operators from seeing exactly what is going on.

Other forms of surveillance are also impractical, so BNFL decided to try a new method: electrical resistance tomography.

Using specially written algorithms, ERT analyses data coming from the electrode sensors and creates a picture of the contents of the vessel.

The sensors can be arranged around the circumference of the vessel but, in a recent development used by BNFL, they can also be placed in a probe inserted down one side of it.

Data from this arrangement, known as Optomix, reveal not only whether or not the mixing vortex is present in the centre of the vessel but also its dimensions.

This opens up a new level of control sensitivity for operators.

The project that led to BNFL's decision was a joint effort with two other organisations.

Industrial Tomography Systems (ITS), the company marketing the technology, supplied the equipment and software; the University of Leeds, which has a special alliance with BNFL, was responsible for instrumentation specification and validation.

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