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Software will cut millions from nuclear clean-up bill

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Virtual reality software that plans the safe decommissioning of nuclear power plants and other nuclear facilities could save industry millions of pounds, according to its inventors.

The software package, based on the work of University of Leeds engineers, lets planners work out the best way of breaking up and packing contaminated equipment while minimising workers' radiation exposure. It also shows in minute detail how radioactive waste can be stored in the smallest possible space, reducing the number of long-term storage containers needed.

"Independent commercial contractors have estimated that just packing this waste efficiently could lead to literally millions of pounds being saved from the public purse," said Professor Richard Williams of the University of Leeds and co-inventor of the software. "This type of cost saving should accelerate the safe decommissioning of nuclear installations."

The software is based on a general modelling tool that shows how oddly-shaped objects fit best together. Most other software packages used to solve packing problems can only handle simple and regular shaped objects - a scenario that does not reflect real life problems as accurately.

It is also able to take into account the properties of the material that is being packed, for example, its level of radioactivity and how hard it will be to cut.

The software package, launched commercially today, is based on research led by Professor Richard Williams and Dr Xiaodong Jia. It has been developed by the University of Leeds spin-out company Structure Vision Ltd.

Prior to its release, the NuPlant™ software was tested by several industry partners for a variety of applications. In one of these trials, conducted at the UK's Low Level Waste Repository at Drigg, Cumbria, the software showed how the number of containers needed to transport and store racks that had held irradiated waste materials could be reduced by a third, simply by changing the way they were cut up.

The software is also expected to be used when nuclear reactors are being designed. In the UK, proposals to build new nuclear reactors have to include detailed decommissioning plans. These reactors could be needed for power plants, scientific research, or the commercial manufacture of radioisotopes for medical scans.

Neville Chamberlain, CBE, Chairman of the Structure Vision Board, said: "Previously when nuclear reactors were built, the cost of disposing of contaminated plants safely when they reached the end of their operating life was never a major concern. This software tool will help engineers design new reactors with cost-effective decommissioning in mind."

Dr David Knight, Director of Software Development at Structure Vision Ltd said: "By providing not only accurate cutting and packing simulations, but an entire decommissioning project planning tool, project engineers will for the first time be able to see the whole picture of their liabilities and directly compare the impact of different approaches to dealing with intermediate- and low-level waste from complete nuclear facilities."

For further information:

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Professor Richard Williams is available for interview.

More images available on request.

Notes to editors

1. Over 400 new nuclear reactors are planned globally, to provide power to over 65% of the world's population.
2. The Faculty of Engineering at the University of Leeds is ranked 7th in the UK for the quality of its research (2008 Research Assessment Exercise); an impressive 75% of the Faculty's research activity rated as internationally excellent or world leading.

With 700 academic and research staff and 3,000 students the Faculty is a major player in the field with a track record of experience across the full spectrum of the engineering and computing disciplines. The Faculty of Engineering is home to five schools: civil engineering; computing; electronic and electrical engineering; mechanical engineering; process, environmental and materials engineering.

Two thirds of students are undergraduates with the remaining third split evenly between taught masters and research degrees. The Faculty attracts staff and students from all around the world; one third of students are from outside the UK and representing over 90 different nationalities. **www.engineering.leeds.ac.uk (http://www.engineering.leeds.ac.uk)**

3. Structure Vision Ltd (SVL) is a leading provider of Advanced Engineering Software for the Particle Analysis and Nuclear Decommissioning Markets. SVL has unique expertise in the understanding of how objects and particles of arbitrary shapes pack together in confined spaces, formed after years of research at the Institute of Particle Science and Engineering at the University of Leeds.

   The company was co-founded by Professor Richard Williams and Dr Xiaodong Jia. Neville Chamberlain, former CEO of British Nuclear Fuels, and Dr Peter Watson, former Chairman and Chief Executive of AEA Technology PLC, are both Non-Executive Directors.

   SVL's application software suite includes DigiPac™ - aimed at Particulate Analysis in the Chemicals and Pharmaceuticals Markets, and NuPlant™ - aimed at the Nuclear Decommissioning Market. For more information on SVL, our Products and Services, please visit **www.structurevision.com (http://www.structurevision.com)**

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