

# HIGH POWER LASERS for NUCLEAR DECOMMISSIONING

*The Nuclear Decommissioning Authority (NDA) has awarded TWI a contract to demonstrate the capabilities of lasers for surface removal of contaminated concrete structures and size reduction of vessels and pipework.*

The recent advent of high power solid state lasers and optical fibre delivery of the laser energy offers robust, easily deployed processes suitable for remote use in nuclear decommissioning environments.

## What will TWI be doing?

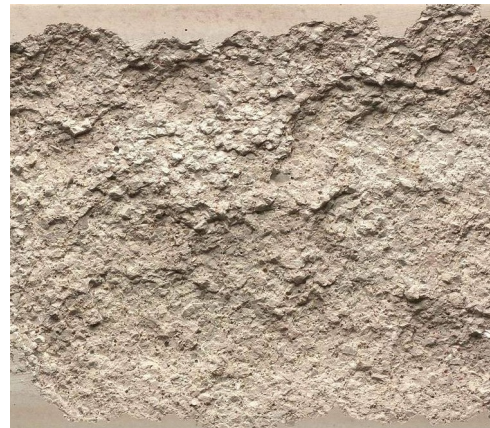
TWI will set up technology demonstrations to show how high power lasers can be used in nuclear decommissioning for scabbling concrete and cutting metal.

This will involve demonstrating the integration of an industrial laser with the necessary deployment and control systems, together with options for controlling and handling of debris produced. In addition to providing system design and process capability information, the project will demonstrate the level of operator skill required.

## How will this help industry?

The project will allow Site Licence Companies and supply chain companies to evaluate process capabilities and operating costs, enabling them to select the technology with the knowledge that underlying technical and engineering issues have already been addressed.

More information overleaf



*Laser scabbling - offers major savings in waste disposal*



*Laser cutting - a non-contact method utilising lightweight deployment*

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## Why lasers for nuclear decommissioning?

Water jetting or mechanical scabbling are options for concrete decontamination, but each has drawbacks such as significant secondary wastes or the need for extensive control and deployment systems. Laser scabbling has the potential to avoid these and other problems and offer major savings.

Like laser scabbling, laser cutting is a non-contact method. With small processing heads and minimal reaction forces, deployment systems are compact and lightweight. Only small amounts of fume are generated, and conversion from cutting to scabbling is quick and easy.

### *Laser features and benefits include:*

- Non-contact processing method - minimal wear and damage to tooling
- Small processing heads - easy to manipulate
- Low reaction forces - compact, lightweight deployment systems are less costly and easier to install and remove
- Less sensitive to stand-off - requires less sophisticated manipulation and control systems
- Laser can be located away from task - unaffected by hostile environment
- Single laser can be used for scabbling and metal cutting duties
- Laser scabbling
  - treatment of 'dry' facilities
  - treatment of corners/angles
  - unaffected by reinforcing bars and fixings such as bolts
  - minimal secondary wastes
- Laser cutting
  - pipework
  - size-reduction of other items such as vessels
  - low fume generation

## What are the project deliverables?

After integrating a high power solid state industrial laser with the necessary deployment and control systems, the project will -

- determine process performance
- give representative-scale demonstrations of concrete scabbling and pipe/vessel cutting
- demonstrate the level of operator skill required
- supply system design and process capability information
- disseminate information and results industry-wide through a technology transfer initiative
- provide a future trials and training platform for potential users

**To find out more about this technology and how it can benefit your company please contact Colin Walters at TWI 01223 899 000 [colin.walters@twi.co.uk](mailto:colin.walters@twi.co.uk)**