News story: Snake slithers through to tackle Dragon

The long, flexible – a type of robotic arm – was passed through a narrow hole in the 3-metre thick concrete around the core, then sliced through a 400mm diameter vessel attached to the Dragon reactor core.

Contractors OC Robotics were called in by the Magnox team decommissioning Dragon when it became clear that removing the vessel, known as the Purge Gas Pre-Cooler (PGPC), would be a challenging task: one end was joined to the core in the high-radiation area behind the concrete shielding and several steel plates, while the other end extended outside the shielding.

title of video

The LaserSnake technology, developed by OC Robotics and TWI with R&D funding from the NDA, seemed perfect. Controlled from a distance by specialist operators, LaserSnake can squeeze through a small access hole, manoeuvre easily inside a very confined space and cut multiple layers with its high-powered laser. This allowed the work to be carried out inside the existing radiation shielding of the reactor.

In action at the Dragon reactor

Although LaserSnake had previously been deployed at Sellafield, the thick pipework, complex PGPC layout and limited access meant it was necessary to

prepare 2 mock-ups which allowed comprehensive testing and rehearsals to take place before making the cuts for real.

In the end, less than 3 hours of actual cutting time were needed to free the PGPC from the reactor core.

NDA Head of Technology Melanie Brownridge said:

> This is an excellent example of how early NDA R&D funding support enabled the technology to grow from an exploration of whether laser-cutting could actually be adapted for nuclear into a system that, with further funding and collaborative working, is now mature and being successfully deployed on a number of our sites.

Magnox Senior Project Manager Andy Philps added:

> We believe this is the first time that laser-cutting technology has been deployed directly on the core of a nuclear reactor. The ability of the LaserSnake to carry out ‘keyhole surgery’ on the reactor core meant that the work could be carried out using existing protective shielding.
>
> This has saved at least £200,000 and the radiation dose that would have accompanied building additional infrastructure, and saved four weeks on the programme’s critical path. It has also enabled us to remove this component earlier than originally planned.

Adam Mallion, from OC Robotics, said:

> The difficult environment of the external core of the Dragon reactor was an ideal challenge to show the full capabilities of laser-cutting technology and snake-arm robots. Cutting something as thick as the 400mm PGPC with its complex internal geometry had never been attempted before.
>
> The deployment showed once again that the OCR LaserSnake system could be set up and deployed quickly and efficiently to contribute towards safer, cheaper and faster decommissioning of the plant.

LaserSnake and its housing are lifted into place at the Dragon reactor

Dragon, a prototype high-temperature reactor cooled by helium, was developed in the 1960s as a joint European project involving 13 countries. After opening in 1964, it operated until 1975 when it was closed and defueled before being put into a passive 'care and maintenance' regime.

In 2011, decommissioning began in earnest. All that now remains is the reactor core contained in a pressure vessel surrounded by the concrete biological shield, 7 steel containment plates and an outer containment building.

Under the current programme, it is expected that the reactor core will be removed by 2021 and the facility demolished to ground level by 2022.

Read more about LaserSnake's development

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News story: VMD survey: The Disposal of Controlled Drugs

The VMD is carrying out a survey on the disposal of controlled drugs. Our aim is to understand the extent of the problem vets face when getting controlled drugs witnessed for disposal.

At present vets must destroy schedule 2 controlled drugs in the presence of and directed by any of the following:

- an inspector appointed under the Veterinary Medicines Regulations
- a vet, independent of the practice where the destruction takes place
- a person legally authorised to witness the destruction of CD such as a Police CD Liaison Officer (CDLO)

We note that there is a shortage of Police CDLOs, alongside inspectors not being in the area and no independent vets within close proximity, therefore have commissioned this survey.

By answering the survey, you will help the VMD establish the extent of this problem around the UK and inform any future possible policy development.

The survey is open until 6 June 2018, is voluntary and open to all UK registered vets. It should not take any longer than 15 minutes to complete. Please note no personal data is being collected, however all data will be treated in accordance with the Data Protection Act. Published data will be anonymised and aggregated.

The VMD legislation team is responsible for conducting this survey and can be contacted on 01932 338316 or controlleddrugssurvey@vmd.defra.gsi.gov.uk

The VMD would like to thank you for taking the time to complete this survey, further guidence on controlled drugs is available.

Press release: Government launches microplastics research to protect oceans

A new research project analysing the impact of tyres and clothing on the marine environment has been launched today by the Government.

Environment Minister Thérèse Coffey has pledged £200,000 for scientists at the University of Plymouth to explore how tiny plastic particles from tyres, synthetic materials like polyester, and fishing gear – such as nets, ropes and lines – enter our waterways and oceans, and the impact they have on marine life.

Following the government's ban on microbeads, which is one of the toughest in the world, this comprehensive research will be used to improve our scientific understanding of how microplastics from other sources enter the oceans – whether through fibres released into waste water during a washing cycle, or car tyre friction on roads creating a dust of particles that make their way into the seas through sewers.

The 11 month project will build on the research already underway – with some scientists estimating tyres contribute 270,000 tonnes of plastics per year while a single wash load of acrylic clothing could release over 700,000 microfibres into the ocean.

Environment Minister Thérèse Coffey said:

> The impact of plastic pollution on our oceans is one of the greatest environmental challenges of our generation. The UK is

> already leading the way in this area, but we want to go further – and faster.
>
> Robust scientific evidence should support our policy proposals, and through this exciting project we will build on work underway to better understand how microplastics end up in marine environment and what we can do to tackle this in the future.

The project is being led by Professor Richard Thompson OBE, who oversaw Defra's first research project on microplastics and their impact on the marine environment, which led to the UK's pioneering ban on microbeads in rinse-off cosmetics and personal care products coming into force this year.

The International Marine Litter Research Unit at the University of Plymouth is at the global forefront of research into the causes and effects of marine litter and recently conducted research into the effectiveness of fibre-trapping bags in washing machines.

Professor Richard Thompson OBE, Head of the International Marine Litter Research Unit, said:

> The types of microplastics entering the marine environment are incredibly diverse, but recent estimates in Norway and Sweden have suggested that particles of tyre and debris from the road surface could be a substantial source.
>
> With very limited real data available to confirm the impact from these sources, there is a genuine and pressing need to establish the true scale of this issue. By combining this with an assessment of the quantities of microplastic from synthetic textiles, we can develop a more complete picture on the relative importance of various sources.
>
> We will be able to use our findings to work with the Government, scientists and industry to try to prevent these particles entering the marine environment in the future.

This project will build on the substantial research already underway on marine plastic pollution and the impact of human activities on the marine environment. It will be used to guide future policy priorities as the Government continues in its fight against the scourge of plastics.

This includes the 5p plastic bag charge – which has led to 9 billion fewer bags distributed – and last month's pledge to introduce a deposit return scheme for single use drinks containers, subject to consultation, and recent plans to end the sale of plastic straws, stirrers and plastic-stemmed cotton buds.

It sits alongside the 25 Year Environment Plan commitment to eliminate avoidable plastic waste and the Treasury's call for evidence on how charges

and changes to the tax system could be used to reduce single use plastics.

Just last month the health of the oceans was on the agenda at the Commonwealth Heads of Government Meeting, where the Prime Minister called for collective global action in the fight against plastic pollution through the Commonwealth Clean Oceans Alliance.

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