AQUILA NUCLEAR ENGINEERING

The newsletter for the
NUCLEAR & NUCLEAR MEDICINE PROFESSIONAL

Eagle News

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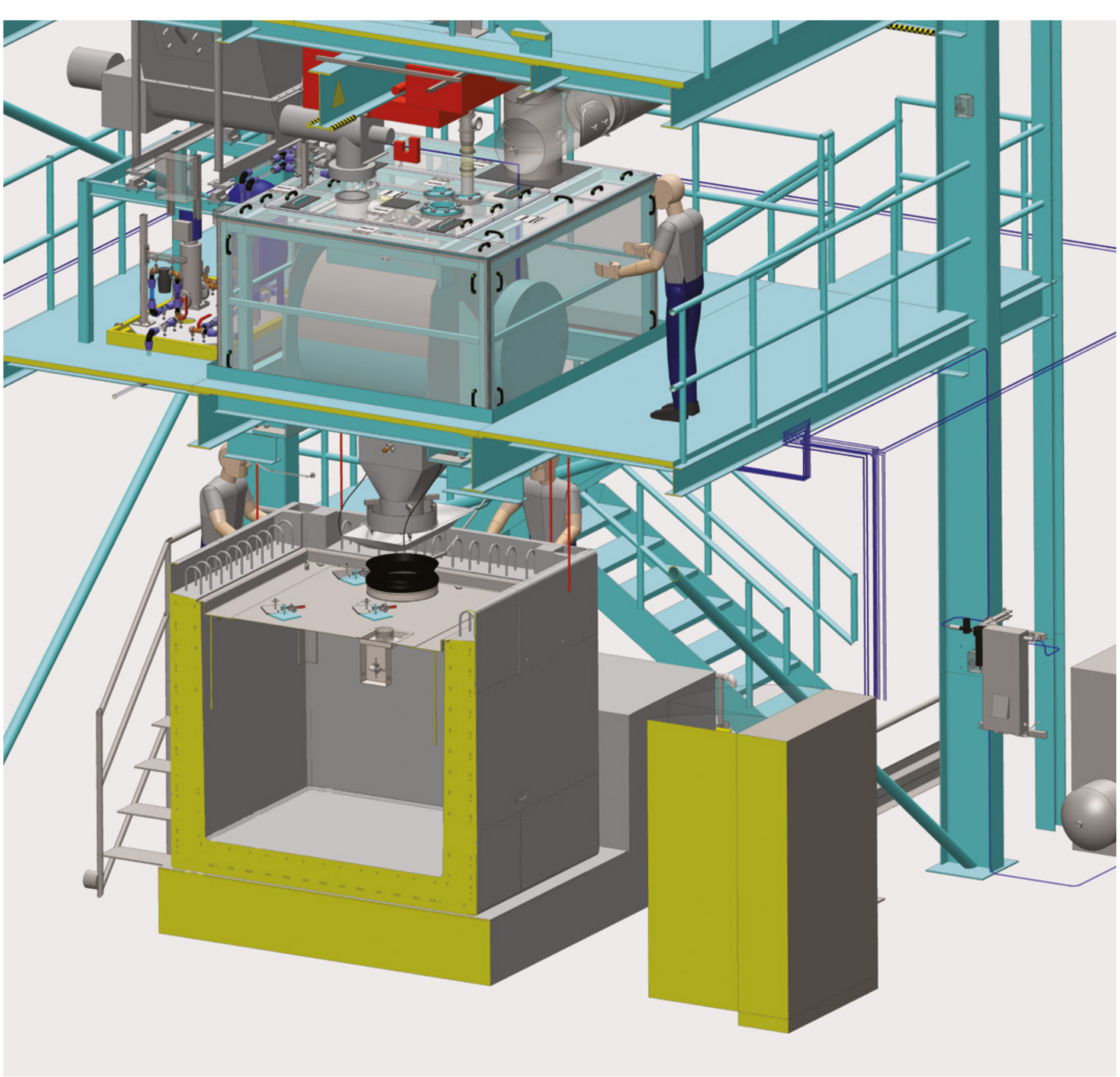

MAGNOX PRE-CONDITIONING LOT 4 CEMENTATION PLANT FOR HINKLEY A.

DREW CORBETT, COMMERCIAL DIRECTOR

ELIZABETH WHEELER, FINANCE DIRECTOR

New Board Appointments

AQUILA UPDATES

Aquila has recently appointed 2 new members to the executive Board. Drew Corbett has been appointed as Commercial Director having joined the business 5 years ago as Business Development Manager. Drew is highly respected in the nuclear industry and has been pivotal in positioning and promoting the Aquila brand. Elizabeth Wheeler has been appointed as Finance Director. Elizabeth has worked within the Nuclear Industry for nearly 20 years, in a finance role, and has been with Aquila since our formation in 2011. Elizabeth provides accurate and timely data and reports on our financial performance.

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Pre-Conditioning Lot 4 Cementation for Magnox

CONTRACT WIN

Aquila was awarded the contract to design, manufacture and factory test plant & equipment to allow Intermediate Level Waste (ILW), that has been generated at the Magnox Hinkley Point A site, to be packaged safely for long term storage and future disposal at the national Geological Disposal Facility.

Aquila Nuclear Engineering designed and supplied Lot 4, providing equipment and services required for pre-conditioning sludge wastes. Lot 4 will pre-condition the waste by mixing it with cement powders in the External Mixer and pouring into a Concrete Box (CB) which will finally be transported by others to the Modular Intermediate Level Waste Encapsulation Plant (MILWEP) for encapsulation by casing the CB lid. Lot 4 will receive into the External Mixer, wet sand from Sludge Retrieval and wet sludge from the Sludge Dewatering and Effluent Treatment.

DAVE BARKER, CEO

Welcome from Dave Barker

WORDS FROM THE CEO

I must praise the Aquila team I work with, day in day out. We function within three departments - Commercial, Delivery and Finance and it's a pleasure working with such a committed band of professionals.

Of course, we all have challenges but the success of any business relies on how these challenges are analysed, dissected, shared and solved. The Aquila team does this extremely well, when the need arises.

> Our STEM programme is now up and running with engagement at local schools.

Our STEM programme is now up and running with engagement at local schools, offering work experience, and we are now in our second year taking on design apprentices with the students having a full year in a supervised workshop environment at SETA in Southampton.

Aquila has committed to working with the Engineering Development Trust (EDT) and we have Year In Industry students supporting product development initiatives. In 2019, we also launched our two year graduate training programme which offers a period within each department and the opportunity to spend time within our sister companies within the Calder Group.

SLUDGE DE-WATERING SYSTEM FOR CAVENDISH.

► | NUCLEAR DECOMMISSIONING

Sludge de-watering system for Cavendish

CONTRACT WIN

Aquila was awarded the contract to design and manufacture plant equipment to receive and dewater sludge and transfer the dewatered sludge to an External Mixer for immobilisation with cement. The remaining supernatant is then treated by ion exchange and flocculation (FIE) and transferred to a discharge tank.

Aquila and Cavendish teamed up to supply the equipment for the end user, Magnox, and this alliance was a contributing factor in Aquila being awarded the contract.

Cavendish was responsible for the process design and Aquila for producing the scheme and detail design for the equipment which essentially comprises:

- Skid containing a 'Settler' and 'Clarifier' tanks with associated process pipework and valves
- Skid containing an 'Excess Supernatant Storage Tank' (ESST) for storage of treated supernatant
- Skid containing dosing equipment to allow for treatment via FIE

The collaborative working proposal and lean programme submitted were important factors in contract award. Aquila and Cavendish completed the design of the equipment in line with Magnox procedures and in accordance with the specifications.

► | NUCLEAR RESEARCH AND DEVELOPMENT

ESS Waste Transfer Trolley for UKAEA

CONTRACT WIN

Aquila was awarded the contract by UKAEA to design and supply a waste transfer system as part of the European Spallation Source (ESS) Active Cells. The Waste Transfer System provides the primary import/export route for materials and equipment into and out of the Active Cell Facility at ESS.

Aquila will be designing a remotely operated transfer system capable of accepting and transporting an ATB-1T transport container weighing 120 tonne SWL.

The Waste Transfer System is to be installed and operated within designated space envelopes and is to interface with the ESS Radiological Safety System, Active Cells Control System and Conventional Safety System.

The Waste Transfer System is another great example of Aquila's consistent approach in developing pragmatic, cost-effective solutions always.

► | NUCLEAR RESEARCH AND DEVELOPMENT

High Integrity Closure Plate Study for UKAEA

UK Atomic Energy Authority

CONTRACT WIN

Aquila Nuclear Engineering has been selected to conduct a feasibility study to investigate and identify technologies allied to reducing the maintenance burden of very large, remotely installed, vacuum-vessel closure-plates. The study, commissioned by the United Kingdom Atomic Energy Authority (UKAEA), Remote Applications in Challenging Environments (RACE) team is key to current scoping studies across a range of nuclear fusion research programmes at the Culham Science Centre, Oxfordshire.

The central theme of the study is to deliver increased vessel availability; principally through pragmatic engineering design that supports effective maintenance. The study focused on three critical aspects: remotely securing 11 tonne Closing-Plates, integrating metal seals, and presenting options to reduce the through-life costs.

Based on current surface-engineering research and advanced engineering methods, the study presented several novel engineering solutions that may well lead to advances in the design of metal seals and vessel maintenance techniques.

INNER GLOVEBOX FOR NRG RADIOPHARMS IN HOLLAND.

► | NUCLEAR MEDICINES

Inner Glovebox for NRG Radiopharms in Holland

CONTRACT WIN

Aquila was awarded the contract to design, manufacture, factory test and deliver a stainless steel Inner Box, including feedthrough for utilities, and a Support Frame. The Inner Box was designed to be installed in a Hot Cell used for the implementation of a new isotope production line. The Inner Box, supplied complete with mobile support frame, was sized and designed to fit inside the shielded Hot Cell G2 of the Hot Cell Laboratory within the NRG facility in Petten. This was to replace an existing box, which was manufactured from plastic, to incorporate many of the existing containment features. It is introduced into the cell via the removable back cell wall and designed to maximise the workspace available within the containment.

An excellent example of working in collaboration with our client NRG, in providing a full turnkey containment solution to support the production of isotopes use in nuclear medicines.

AQUILA MULTI-FUNCTIONAL CELL USED FOR INACTIVE REMOTE HANDLING TRIALS .

► | INNOVATION AND INVESTMENT

Aquila's Multi-Functional Cell

PRODUCT DEVELOPMENT

The Multi-Functional Cell (MFC) consists of a stainless steel containment, surrounded on the front face by façade shielding and cladding, lead glass window, two La Calhene master slave manipulators (MT120), various windows, access ports, glove ports, gland plates and sealing arrangements to allow clients and operators to interact with and trial the In-Cell equipment. These penetrations have been designed and manufactured to both Sellafield and Aquila standards.

The decision to invest in the design and manufacture of a demonstration MFC derives from the level of interest from our nuclear and nuclear medicines clients who want to experience the use of a shielded facility "hands on". The MFC allows our clients to test their own process or equipment inside the cell to gauge ease of use in operation and for maintenance purposes.

Dounreay Wood Alliance

► | NUCLEAR DECOMMISSIONING

Dounreay Alliance – DA Targets DSRL Decom Challenges

CONTRACT WIN

Aquila is delighted to have been invited to join the Dounreay Alliance, a group of partners that compete for and deliver packages of work issued through the Design and Engineering and Decommissioning Services Frameworks. By working closely with the DSRL team and collaborating with Jacobs, the Dounreay Alliance's lead organisation, and our fellow alliance members, GDES, Orano and EDF-Cyclife, we look forward to playing a major role in solving the complex decommissioning challenges faced by the site.

CONCRETE SHIELD DOORS FOR ESS

► | NUCLEAR RESEARCH AND DEVELOPMENT

3 x Concrete Shield Doors for ESS

CONTRACT WIN

Aquila Nuclear Engineering has been selected to design, build and install three large concrete shielded sliding doors at three different levels in the new and exciting European Spallation Source (ESS) facility in Lund, Sweden. Organised as a European Research Infrastructure Consortium (ERIC), ESS is a multi-disciplinary research facility based on the world's most powerful neutron source.

The 20 Tonne doors are 2.8m high x 2.6m wide x 1m thick. Doors are to be mechanical, operated from both sides of the door by hand. The doors' features include safety interlocks and they manoeuvre on wheels running on rails set into the floor.

The doors are placed at 3 different levels in the ESS Target building and protect operators and equipment towards the end of the beam line and monolith, in an area known as the triangular rooms.

INNOVATION AND INVESTMENT

CLOSEUP OF HORIZONTAL ARM AND DRIVE MECHANISMS.

FULLY DEPLOYED MECHANICAL ARM WITH HORIZONTAL SECTION PAYED OUT 3M.

Mechanical Arm & Payload Deployment System

PRODUCT DEVELOPMENT

Ø150mm (6”) inspection ports are standard across the nuclear industry and are often the only means through which access can be gained to highly irradiated environments. These are often found in thick concrete (>1 m), which restricts the movement that can be achieved by traditional long reach tooling.

Aquila Nuclear Engineering has developed a mechanical deployment arm which presents a viable, economical solution to this problem within the nuclear industry.

The construction of the mechanical arm utilises carbon fibre telescopic tubing for the horizontal deployment arm and a unique bi-stable composite tube deployment mechanism which increases the force and load bearing capabilities of the equipment.

This project has involved research, optioneering and conceptualisation, calculations and scheme & detailed design.

The project is being fulfilled by our more than capable apprentices and undergraduate placement student, with mentoring and advice from a senior Aquila engineer.

Equipment Specification:

- Fits within a Ø150 mm (6”) inspection port
- Deploys vertically downwards 1.2m (penetration through concrete)
- Capable of deploying a small tool e.g. a cutting tool or a camera
- Deploys within a 1.5m ullage space
- Capable of horizontal deployment up to 3m
- Capable of supporting a payload up to 10Kg

VIPER – REMOTE DEPLOYMENT SYSTEM USING BISTABLE REELED COMPOSITE.

INNOVATION AND INVESTMENT

Viper – Remote Deployment System using Bistable Reeled Composite

PRODUCT DEVELOPMENT

Aquila Nuclear Engineering and Rolatube Limited, have an exclusive agreement to provide solutions to the nuclear industry for a deployment system, based on the unique Bi Stable Reeled Composite (BRC) technology.

The BRC is manufactured by Rolatube while Aquila will engineer the complete system to meet the clients’ specification. The highly compact and lightweight deployment system can be manufactured in diameters from 50mm to 500mm with deployment lengths of 25m+. The BRC tube can be extended in any orientation and carry payloads in full cantilever. Umbilicals are employed to supply power to the end effector with output from the end effector being wireless or, again, via umbilicals. The viper can be integrated within telescopic carbon fibre mast extensions where higher loads are required at extended lengths.

NEW RECRUITS

Steve Barker

COMMERCIAL MANAGER

I originally joined Aquila in August 2017 as a Commercial Specialist within the Commercial team. Working with various members across the business I managed various tendering opportunities and supported the wider team with contract reviews and risk management.

I’ve always had a strong desire to develop a career in the engineering industry using my legal and commercial background, having previously worked for the likes of Balfour Beatty and Ramboll UK.

In July 2020 I was delighted to be appointed as Aquila’s Commercial Manager. This role is brand new for the business and I look forward to contributing to the continued growth and development of Aquila, and its commercial proficiency in the nuclear industry.

Tomiwa Odulaja

YINI UNDERGRADUATE

I started at Aquila in August 2019 as a placement student working in the Commercial team.

Despite my inexperience, I have been trusted with real work and tasks that have been both challenging and fulfilling and have always been supported along the way. This is a testament to the group of people who work here that always make time to lend a hand where they can.

In the time I have been here I have already learnt so much about the industry and work in general and I’m really looking forward to the rest of my time here.

> “I have been trusted with real work and tasks that have been both challenging and fulfilling”

Brad Fettes

ACCOUNTS TECHNICIAN

I joined Aquila in June 2019 as Accounts Technician within the Finance and Admin department. Since my first day at Aquila, I have been made to feel like a valuable part of the team. I have been given guidance when needed but have also been trusted to carry out projects individually. I have also benefited from additional training, that has allowed me to take on additional responsibilities within the company.

I am really enjoying my time here and am looking forward to being able to progress my career here.

Mark Gimenez

SENIOR MECHANICAL DESIGN ENGINEER

I started at Aquila last autumn, just before the clocks changed and the weather started to turn colder; it was for me, in many ways, a return to Nuclear engineering as I started working for the UKAEA at Harwell when I first left school. The decision to join Aquila was an easy one for two main reasons: Firstly, I have always been involved with science and engineering research and Aquila’s customer portfolio and engineering repertoire presented a fantastic opportunity to continue broadening my engineering experience (albeit along a slightly different, and much heavier tact - as I have mostly spent my career developing satellites and aircraft systems). Secondly, Aquila is a perfectly sized company, sat in the middle ground between a large organisation and high-tech start-up; whereby we all know each other and I can throw myself into the depths of design and engineering calculations one day yet still be expected to get my hands dirty demonstrating the equipment to customers the next, it’s a really great blend of a variety and unique challenges.

INNOVATION AND INVESTMENT

University of Strathclyde - Advanced Nuclear Research Centre

UNIVERSITY of STRATHCLYDE ADVANCED NUCLEAR RESEARCH CENTRE

PRODUCT DEVELOPMENT

Aquila Nuclear Engineering Ltd, has been a Tier 2 member of the Advanced Nuclear Research Centre (ANRC) since October 2019. We will be attending the ANRC Innovation Showcase on the 27th August 2020 in Glasgow.

The theme of the showcase is “From Innovation to Application”, set in the context of Asset Management, Plant Operation and Digital Transformation.

The University of Strathclyde has a track record of supporting the UK and International nuclear industry for more than 60 years. Through the ANRC it supports the safe and efficient operation of nuclear facilities through process, risk and technical innovations. It also supports the design, safe and efficient operation and decommissioning of nuclear facilities through process, risk and technical innovations.

Formed in 2015, the ANRC has grown into a vibrant research centre with strong industry support and collaboration with many academics from both Strathclyde and the wider academic community. The research portfolio of the Centre is continually developing and includes expertise in plant lifetime extension, asset management, decommissioning, waste disposal, data analytics, non-destructive testing, material sciences and structural integrity.