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NEWS

The newsletter for the nuclear & nuclear medicine professional



INSIDE THIS ISSUE

- 02. DALTON CUMBRIAN FACILITY
- 03. NNL GAMMA SCANNER & IRRADIATION FACILITY
- 04. UKAEA NEW MATERIALS RESEARCH FACILITY

- 05. AQUILA EVENTS
- 06. NEWS & CONTRACT WINS
- 07. AWE CATEGORY CODES APPROVALS
- 08. NEWS UPDATE

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AQUILA DELIVERED THE BEAMLINE TARGET CELLS TO THE DALTON CUMBRIAN FACILITY

The University of Manchester, is working with Aquila to design, build, install and commission a major new heavily shielded hot cell end station on the 5MV tandem ion beam accelerator at our Dalton Cumbrian Facility (DCF). Now in the final stages of commissioning, this bespoke equipment will create an internationally unique, experimental capability and enable research that will further our mechanistic understanding of the behaviour of materials when exposed to high energy, high current ion beams.



“ THROUGHOUT THE PROJECT, THE TEAM AT AQUILA HAS CONSISTENTLY ADOPTED A FLEXIBLE, OPEN AND CREATIVE APPROACH THAT ENSURED WE ARRIVED AT THE BEST POSSIBLE TECHNICAL SOLUTION TO SUPPORT OUR WORLD-LEADING RESEARCH CAPABILITY AT DCF. ”

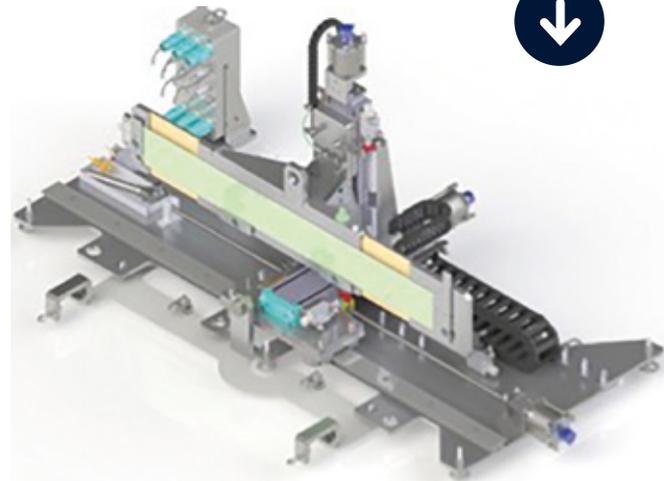
Kevin Warren
*Director of Operations & Sustainability, Dalton Cumbrian Facility,
University of Manchester.*

↓ AQUILA DELIVERS PACKAGES TO NNL



NNL GAMMA SCANNER

Aquila won a contract to design, manufacture, factory test and deliver, a gamma scanner sample handling rig. There were two main aims in designing the new system. Firstly, to integrate the detector system at the cave face without impeding operation of the MSM or other cave face operations, and secondly to eliminate background noise from the high dose cave inventory.



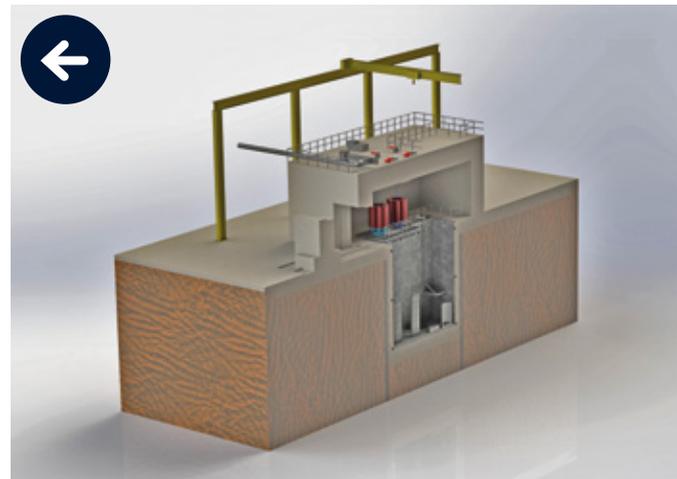
Aquila successfully delivered the 1st of 7 work packages to NNL for post irradiation preparation and examination of activated material. The analysis and breakdown equipment included a remotely operated XY table, together with an integrated radial arm drill winching system and powered hacksaw. All drives are hydraulic and mounted within the cave. The XY table offered an accuracy of $\pm 0.4\text{mm}$ with a speed of 0 – 20mm/second. The powered hacksaw offered a cut 225mm x 225mm cross section and the saw blades are capable of being replaced by an MSM.

FULL PRODUCTION IRRADIATION FACILITY

Aquila completed a concept for a full production, irradiation facility. The irradiation process increases the life of the product due to the changes in the polymer structure of the plastic. The Aquila team produced a comprehensive work breakdown structure and programme for the complete facility.

The overall concept of the facility, comprised a concrete Vault with an entry door (or labyrinth) which provided biological shielding. This Vault houses a sub-surface water filled tank, in which are stored two Source Racks, which house sealed sources in an array designed to emit a uniform dose, distributed when exposed. Turntables were used to support and manipulate the product to be irradiated.

The Source Racks are mechanically guided and suspended from a winch mechanism which facilitates their elevation within the cell, and hence their exposure, enabling irradiation of the product.



“ THE FACILITY IS TO BE USED TO IRRADIATE PLASTIC PRODUCTS FOR THE MEDICAL INDUSTRY. ”



£12 MILLION CONTRACTS SUPPORT NUCLEAR DECOMMISSIONING RESEARCH

The NDA's Direct Research Portfolio (DRP) forms a key part of the NDA's strategic research programme. It focuses on direct funding for research that delivers innovation across multiple sites, develops technical expertise and informs NDA's strategy.

Three new framework contracts were awarded to 10 consortia and will cover the next 4 years. NDA Research Manager, Yvonne Morris, said, 'It was very pleasing to see so many SMEs being engaged in the process and being part of a successful consortia.' The contracts were split into 3 'lots':

- Lot A – University Interactions
- Lot B – Integrated Waste Management and Site Decommissioning and Remediation
- Lot C – Spent Fuels and Nuclear Materials

Following a detailed evaluation of the tender responses and follow-up technical interviews, framework contracts were awarded in each area:

LOT C: SPENT FUELS AND NUCLEAR MATERIALS

One of the three successful consortia is led by the National Nuclear Laboratory and includes Aquila Nuclear Engineering, who has been selected due to its innovative approach to providing engineering solutions to complex and multi-disciplined projects. Other companies in the consortia include: Frazer-Nash Consulting, Galson Sciences Ltd, ALD France, DBD, DAS, IDM, Jacobs, Kurion, Rodgers-Leask, University of Bristol, Lancaster University, University of Leeds, University of Manchester, University of Sheffield, Imperial College.



NEW MATERIALS RESEARCH FACILITY SET TO OPEN

A new UK Nuclear Materials Research Facility (MRF) has opened at Culham Science Centre in Oxfordshire. The MRF is based at the UK Atomic Energy Authority's (UKAEA) fusion research lab at Culham, best known as the site of the Joint European Torus tokamak experiment. It is part of the government's multi-site National Nuclear User Facility initiative, along with complementary developments at the National Nuclear Laboratory (NNL) and the University of Manchester's Dalton Cumbrian Facility.

The MRF will allow researchers to process and analyse material that is too radioactive for university premises but does not need to be handled at a nuclear licensed site. Researchers can use it to examine the effects of irradiation on tiny fragments of material used in both fission and fusion devices, to help understand how neutrons degrade materials in today's nuclear power stations and to select better materials for future, more efficient, fission and fusion systems. The MRF will be equipped with hot cells and a range of apparatus for processing and micro-characterisation of activated materials. While the new building and its hot cells have been designed and built, the analysis equipment has been in use for research on non-radioactive samples at Culham, since 2013, by researchers from several universities including, Bristol, Manchester and Oxford.

UKAEA has developed the new facility in close collaboration with materials researchers around the UK, and held a workshop for potential users in July 2015 to discuss MRF capabilities and future development. Chris Grovener of the University of Oxford who chairs the National Nuclear User Facility, said: "The workshop was an excellent opportunity to see the progress being made with establishing a new active facility, and to experience the strong commitment of Culham staff to designing and constructing the MRF."

"The workshop demonstrated that Culham is very committed to nuclear materials research in the UK, and the participants were impressed with how we've built a completely new nuclear materials research facility in a short timeframe," added Steven Van Boxel, one of the UKAEA scientists involved in the programme.

For details and to enquire about access to the MRF, please visit www.ccf.ac.uk/mrl.aspx

This article first appeared in the January/February 2016 edition of Nuclear Future and is reproduced here with permission of the Nuclear Institute.

AQUILA WASTE MANAGEMENT CONFERENCE

AQUILA NUCLEAR ENGINEERING LTD PRESENTS AT THE ANNUAL WASTE MANAGEMENT CONFERENCE AT PHOENIX.

Chris Thomson, our Engineering and Projects Director, gave a formal presentation at the Annual Waste Management Conference, in Phoenix earlier this year.

The paper focused on fit for purpose design and build, in the decommissioning sector and used the successful project completed at Magnox Berkeley site. This project saved the UK taxpayer over £1m on an original £2m project, simply by going back to, “keep it simple”.

The NDA recognised this achievement with the award of “going the extra mile” in customer satisfaction and teamworking.

The annual Waste Management (WM) Conference, presented by WM Symposia (WMS), attracts thousands of registrants from around the world and is widely regarded as the premier international conference for the management of radioactive material and related topics.

It was founded to provide a forum for discussing and seeking, cost-effective and environmentally responsible solutions to the safe management and disposition of radioactive waste and radioactive materials.

HOT LABS 2015 LEUVEN BELGIUM

Dave Myers, one of Aquila’s principal engineers, gave a presentation at HOTLABS 2015 in Belgium, at the end of 2015. The title of the presentation was, “Design and Manufacture of In-Cell Remotely Operated Equipment”, and surrounded the concept of Early Engagement = getting it right first time.

The conference was well attended and Dave’s paper described the project delivery process, adopted by Aquila, ensuring that there are no surprises during project execution.



HOT LABS 2016 KARLSRUHE ITU GERMANY

This year, another of our principal engineers, Paul Waller, will be presenting at Karlsruhe in Germany. Paul’s paper will focus on the production of the specification, right through design to installation of new hot cell facilities in the UK, located at the UKAEA Culham site and The Dalton Institute in West Cumbria. Again, by following a proven project delivery process, Aquila are able to provide fit for purpose HOT CELLS systems and in cell processes, without fuss and provide a soft landing for all stakeholders.



OFFICE SPACE AT THE HAZELEY ENTERPRISE PARK

Due to the continued march of Aquila Nuclear, we have committed to additional office space at the Hazeley Enterprise Park. This new facility will house additional engineers and project managers, to support our penetration into our 5 chosen nuclear markets, namely, decommissioning, existing generation, R&D, defence and new build. The extensive work in the nuclear R&D field, supporting the National Nuclear Users facility at NNL, UKAEA and The Dalton Institute, has been promoted and recognised within the International Nuclear R&D community with Aquila being invited to the table of many new projects and facilities.



NUCLEAR FUTURE



Aquila Nuclear Engineering



Dave Barker, our CEO, is a member of the editorial committee for the learned journal of the Nuclear Institute called, Nuclear Future. Dave was the topic champion for the decommissioning edition and led the submission of papers for the March/April 2016 edition.

The committee was delighted to receive so many paper submissions that it then had to make the difficult decision of limiting the number. The paper covered a good spread of sites including Capenhurst, Imperial College London, Sellafield, Magnox Berkely and Mayak in Russia.

FRAMEWORK AGREEMENTS



In 2014, DSRL awarded framework Agreements for mechanical services, to three Contractors - Aquila Nuclear Engineering, JGC Engineering and Redhall Nuclear.

With decades of experience between them, Aquila Nuclear Engineering, JGC Engineering and Redhall Nuclear are all specialists in the design, manufacture, assembly, testing and installation of gloveboxes and in-box process equipment for the nuclear industry.

The framework agreements have been used to award a number of contracts for mechanical works including the build

and testing of a number of gloveboxes, required by the Fuels Directorate for the processing of unirradiated material, currently stored at Dounreay. Building on their experience, the three contractors have formed the AJR Alliance, which is now tendering for work at other sites within the NDA estate. DSRL Commercial Manager, Mike Muir, has endorsed the collaborative working approach of the three contractors that has contributed to the success of the Framework Agreement.

He explained: "DSRL has derived considerable value for money from this framework agreement.

"Of particular note was the collaborative working between the three contractors in support of the contracts awarded on behalf of Fuels Directorate.

"I hope that the AJR Alliance is successful in securing contracts at other sites within the NDA Estate."

Following a change in UK Government strategy, DSRL is now considering how best to use the gloveboxes, and how best to share the knowledge gained during the project with the NDA estate.



	DESCRIPTION
24.11.01.00N	Packaging for the Storage or Transport of Hazardous Materials (Bespoke designs, drums, boxes, cradle assemblies etc.)
41.10.20.03N	Gloveboxes
72.10.14.01N	Blast Doors
73.00.00.00N	Manufacturing Support, Machining, Forming, Welding, Fabrication etc.
73.00.00.01N	Machining. Built to Drawing (Non Commercial off the Shelf)
73.31.00.00N	Fabrication Built to Drawing (Non Commercial off the Shelf item)
79.01.00.00N	Task-based Consultancy - Decommissioning
79.02.00.00N	Task-based Consultancy - Design
79.03.00.00N	Task-based Consultancy - Engineering
79.08.00.00N	Task-based Consultancy - Manufacturing
79.09.00.00N	Task-based Consultancy - Procurement
79.10.00.00N	Task-based Consultancy - Project Management

AQUILA HAS AN AWE CORE QUALITY SCORE OF 100%

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The image on the right shows the Getinge La Calhène combination posting port which allows for the safe transfer of nuclear material between a transport container and a high integrity glovebox. This combination port includes mechanical interlocks and can post either 105mm or 210mm diameter products. The length of the container can be manufactured to suit the application.

“ THE GETINGE LA CALHÈNE COMBINATION POSTING PORT ALLOWS FOR THE SAFE TRANSFER OF NUCLEAR MATERIALS. ”



↓ THE UK VOICE ON SMR TECHNOLOGY

WHILE UK PRESENCE AT THE SUMMIT WAS SLIGHT – JUST FIVE DELEGATES – ITS INFLUENCE WAS GREAT.

Professor Tony Roulstone, of Cambridge University, outlined how his research will help SMRs achieve competitive economics in the UK, whilst Mike Middleton, of Energy Technologies Institute, made clear how SMRs are key to future energy security. Rolls Royce's Alan Wood struck valuable comparisons with the aerospace industry, where manufacturing a greater number of smaller planes has proved a model for success. Wood discussed how a drive in efficiency, process and technology, combined with high standards of safety, quality, environmental impact and traceability, had been delivered through this model. Useful lessons for an industry about to follow a similar trajectory. *Paul Waldeck, founder and director of Waldeck Consulting, writing in the summer edition of IndustryLink magazine.*

FUNDING FOR NATIONAL COLLEGES



THE GOVERNMENT HAS RECENTLY COMMITTED £80MILLION FOR FIVE NEW NATIONAL COLLEGES, AS ANNOUNCED BY SKILLS MINISTER, NICK BOLES MP.

Based in Somerset and Cumbria, two of these colleges have been allocated £15million and their main focus will be nuclear. There will be support from the Universities of Cumbria and Bristol and additional industry support from Sellafield and EDF Energy. Chief Executive of the NDA, Tom Greatrex, has welcomed this news, adding 'Initiatives such as this highlight the Government's long-term commitment to the UK's nuclear decommissioning and new build programmes of work.'

↓ NEW CEO FOR HORIZON NUCLEAR POWER

HORIZON NUCLEAR POWER, HAS RECENTLY BEEN APPOINTED DUNCAN HAWTHORNE AS THEIR NEW CEO.

Among other projects; their new apprenticeship scheme, a new office at Wylfa Newydd and the final stages of the Advanced Boiling Water Reactor, Duncan will be leading the project of a pressurised nuclear

new build programme. Duncan has said 'This is an incredibly exciting, and nationally significant project to be involved with, and one which gave me the opportunity to come back to the UK.'

FIND OUT MORE

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ATTENDED AND UPCOMING EVENTS

8TH – 9TH JUNE 2016

SMR conference in London

16TH JUNE 2016

Westminster Energy, Environment & Transport Forum at the Royal Aeronautical Society London

23RD JUNE 2016

NIA decommissioning and existing generation workshop at Arup London

29TH JUNE 2016

Balfour Beatty Social Value and CITB Fairness-Inclusion-Respect workshop

29TH JUNE 2016

LLW conference and exhibition in Cumbria

6TH JULY 2016

BECBC Cumbria

13TH JULY 2016

Nu Scale SMR supplier day

21ST JULY 2016

Sellafield Category Management of gloveboxes in Manchester

22ND SEPTEMBER 2016

Westinghouse Nu Tech exhibition

6TH SEPTEMBER 2016

Karlsruhe HOT LABS conference