

NUCLEAR AMRC
news

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Pumps primed

How a 200-year-old company is investing
in a nuclear future



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Pumps primed

Hayward Tyler is investing for the future with support from the Civil Nuclear Sharing in Growth programme.

Hayward Tyler, a specialist manufacturer of high-integrity pumps which this year celebrates its 200th anniversary, is growing its global footprint with the support of the Nuclear AMRC.

Based in Luton, with facilities in Scotland, China, India and the US, Hayward Tyler is a leading supplier of electric motors and pumps for the most demanding applications.

"Nuclear is absolutely a sweet spot for Hayward Tyler," says Ewan Lloyd-Baker, chief executive officer. "We provided the first pumps to Calder Hall in 1956, and recently won civil nuclear contracts in South Korea and Sweden, so we have a long pedigree of installed equipment. However, we should be developing our presence more in the sector."

The company has undergone a major turnaround over the past three years under Lloyd-Baker's leadership, and is now targeting global opportunities in new nuclear with the support of the Nuclear AMRC's Civil Nuclear Sharing in Growth (CNSIG) programme. The group currently generates around 15 per cent of revenues from nuclear, but sees significant scope for growth.

"The opportunity is to leverage the improvements we've made here to our processes and people, and say we are fit for nuclear. We're looking at investment now, supported by CNSIG and Fit For Nuclear, not just for the UK supply chain but for us globally," Lloyd-Baker says. "We're the market leader in boiler circulating pumps in China, but doing very little in terms of

nuclear opportunities there. I'd like to think our business will eventually be at least a quarter derived from the nuclear sector, and will predominantly be exports."

Driving this overseas growth is the responsibility of James McNamara, the recently-appointed key account manager for nuclear. "In addition to the big-name players with large-scale reactors, we're also keeping a close eye on new reactor technologies like SMRs and molten salt reactors, things that won't come into fruition for ten years or more," McNamara says. "If we can cooperate in equipment development via test rigs or pilot plant, that feeds our future."

Identifying gaps

The CNSIG programme, led by the Nuclear AMRC with funding support from the Regional Growth Fund (RGF), is an intensive business development programme for key members of the UK's manufacturing supply chain. Hayward Tyler joined in early 2014 in the programme's second phase.

To help prepare its bid, HT first entered the Fit For Nuclear (F4N) programme to identify gaps in the business's performance.



Driving growth: James McNamara, Sue Henshaw and Larry Redmond.





Factory transformation: the Luton workshop in January.

"We did F4N so we could benchmark ourselves," says special projects director Larry Redmond. "It made us ask the questions that we had tended to avoid, and gave us a checklist for everything we need to do – we keep coming back to it and saying what is the gold standard?"

"It helped highlight areas we hadn't been facing up to. We would have been compliant with regulations, but that's an awful long way from meeting assumptions in the nuclear industry for health and safety or in process control. It's not so much about making you aware of gaps, but it makes them black and white."

The first six months of CNSIG involved a further detailed diagnostic of the company's performance, focusing on skills and training issues. "F4N fits well with the CNSIG diagnostic, because we could see how much more we had to do," Redmond notes. "CNSIG will help develop the people, and we are working to ensure we have the right processes and we know where the gaps are."

Building a world-class factory

Visit Hayward Tyler's Luton factory today, and you can see a company in transition. Older buildings have been demolished to allow a major expansion of the main workshop, which dates from the 1920s, as part of an ambitious investment programme supported by a separate £3.5 million RGF grant.

The redevelopment, which will complete in July 2016, will extend the workshop by over 40 per cent and create five focused zones based on lean manufacturing methods.

"That will allow us to reorganise and have flowline production for stators and rotors, and a new clean assembly and testing area to comply with nuclear standards," says Redmond. "We've done a lot with methods like 5S to make things good, but it hasn't yet taken it world-class. What we're doing now is combining the support we're getting from RGF with what we're learning through CNSIG – that's started to give us world-class facilities, world-class processes, world-class people and world-class products."

To model and plan the new production lines, Hayward Tyler is working with software group Lanner, after learning about its Witness process simulation tools during a visit to the Nuclear AMRC.

The factory development is led by manufacturing systems director Martin Clocherty. "The biggest value I'm getting from CNSIG is how to design and implement a nuclear-compliant facility," Clocherty says. "There was a knowledge gap there, but the guys have absolutely filled that for me. If I have any doubt about anything, I can go to them and get an answer."

For example, the simple way of creating the new clean assembly and test area would be to enclose it in a clean room – but that might not be able to handle new products as the nuclear business develops. The alternative is an open clean area which requires complex infrastructure to provide a positive airflow, something with which the team had no previous experience.

Sharing in Growth

The Civil Nuclear Sharing in Growth programme (CNSIG) aims to develop the UK manufacturing supply chain for civil nuclear – in new build, operations and decommissioning – and help key suppliers win work in the nuclear industry at home and overseas. CNSIG is part-funded by government through the Regional Growth Fund, and supported by industry leaders including Rolls-Royce.

The 10 participating companies are:

Ansaldo NES – www.ansaldo-nes.com

Goodwin International – www.goodwininternational.co.uk

Graham Engineering – www.graham-eng.co.uk

Hayward Tyler – www.haywardtyler.com

James Fisher Nuclear – www.jfnnl.co.uk

Metalcraft – www.metalcraft.co.uk

NIS Ltd – www.nisltd.com

Tata Steel Projects – www.tatasteelprojects.com

Therco – www.thercoheatexchangers.com

Truflo Marine – www.truflo.co.uk

"We have a lot of expertise on site, but we can't do everything," Clocherty notes. "Where the Nuclear AMRC comes in is plugging these knowledge gaps. They can find someone who has done it before – we're now looking at JCB and others to see how they've made clean areas."

"Some of our products don't need that level of spec, but what we're doing with our factory is taking it to the top spec as a default. A lot of the design of the new facility is to give us increased scope."

Embedding skills

To fulfil its potential, a world-class factory needs world-class people. Training the workforce to nuclear standards is the core of Hayward Tyler's work with CNSIG.

Sue Henshaw was recruited as learning and development manager in August 2014. "Historically, there had been legislative and compliance training, with limited opportunities for additional people

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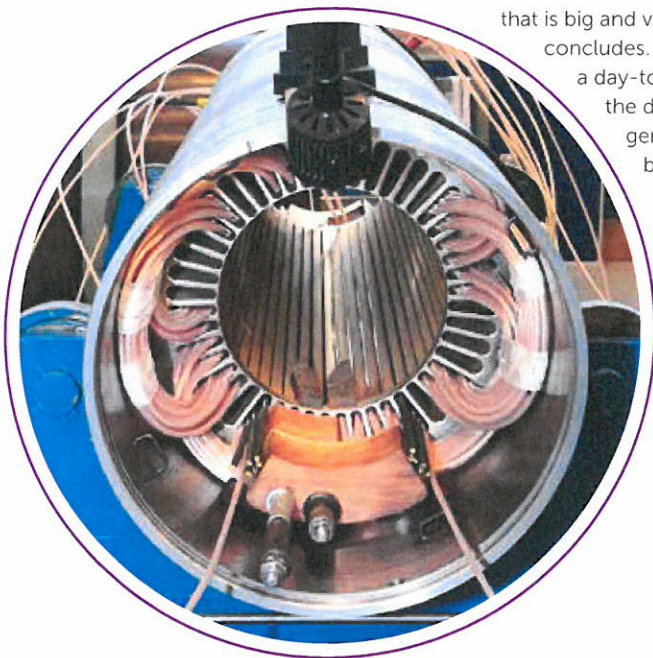
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development activities. Funding was part of that problem, which is where CNSIG has massively supported us," she says.

The training supported by CNSIG includes online learning in areas such as metrology and measurement, NVQs, and specialist industry courses including Triple Bar Nuclear Manufacturing. "So far, it's been about getting everyone to a consistent standard," Henshaw notes. "We've worked with the manufacturing team and spent a lot of time on the shopfloor to see how our people are getting the training and applying it to the work environment. It's not just about attending the training, it's about embedding it into the workplace. The CNSIG team is also supporting with specific development interventions where their expertise is invaluable in preparing ourselves for nuclear bids."

Communication is key to engaging the workforce. "Initially, people can find it quite hard, as with any change. However, once we've explained the training, there is the understanding of what we're aiming for as a business and what we need to do to be ready for nuclear bids," Henshaw says.

"Myself and Martin were on the shop floor and said this is your workplace, how do you see your working area being most effective for you? The penny drops, they see how the development and training interventions can be applied. I believe it's gone from apprehension to embracing the necessary changes very quickly."



Fit for the future

Hayward Tyler aims to use the support from CNSIG and the RGF investment to double revenues across the business and expand its Luton workforce from 170 to 250.

The investment is also allowing Hayward Tyler to push its technical capabilities. The company is investing heavily in tools and resources to develop its core competencies for the nuclear market, focusing on energy-dense and high-efficiency motors, and enhancing its capabilities in finite element analysis (FEA) and computational fluid dynamics (CFD) to support product development.

The firm has also built and commissioned a new R&D facility to investigate advanced engineering materials for the nuclear market. "This area of research will continue as we develop high temperature motor applications for the new nuclear market," notes McNamara.

Working with the Nuclear AMRC has also brought the team other benefits, such as the opportunity to meet the top-tier suppliers for Hinkley Point C (see box). "One thing that we couldn't get from outside is the access to the market," says Redmond. "The networking is a bit of an intangible, but being able to get into a room with Areva and EDF is not something you can do easily."

"The great thing about CNSIG is it's enabled us to look at what's happening in the wider world and feel we're part of something that is big and very exciting," Lloyd-Baker concludes. "When you work hard on a day-to-day basis to be part of the development of the next generation of civil nuclear new build, there's a real sense of pride in being able to do that."

www.haywardtyler.com

○ Long and winding road: Hayward Tyler pushes for continuous improvement.

CNSIG10 meet FID4

The Nuclear AMRC and EDF Energy brought together the 10 UK manufacturers taking part in the Civil Nuclear Sharing in Growth programme with the first four top-tier suppliers for Hinkley Point C.

EDF Energy has appointed four top-tier suppliers to the project in advance of its final investment decision (FID). Representatives from each of the so-called FID4 discussed the scope of their work packages, and met with the CNSIG companies for one-to-one discussions about potential supply opportunities.

Alstom is the lead supplier for the turbine hall, and will be responsible for mechanical systems including the turbine-generator shaft line, main pumps and heat exchangers, 2-3000 tonnes of pipework, and 4-500 valves. Around 70 per cent will be sub-contracted, and the group wants to identify as many suppliers as possible.

Areva will supply the nuclear steam supply system for the EPR, as well as instrumentation and control systems. Areva is encouraging UK manufacturers to partner with established French supplier. RFQs for equipment including pumps, valves, pipings and fittings will be issued from 2015.

Bylor, a partnership between Bouygues TP and Laing O'Rourke, will lead civil works on the project, and will have extensive requirements for reinforcement and structural steel, steel plate containment liner, and specialist coatings.

Costain is lead contractor for marine work, and will require tunnelling and offshore equipment for three marine tunnels of around 11km total length.

EDF Energy is expected to name its final three top-tier suppliers, covering mechanical installation, electrical installation and HVAC, in early 2015.