Managing risk to build trust in nuclear power

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Amid rising energy prices and a rapidly growing global demand for reductions in greenhouse gas emissions, Simon Emeny, Global Head of Commercial - Inspection Services at LRQA outlines the ways assurance can underpin the development of nuclear power. In the following article, Simon will describe some of the risks faced by the sector and explain why assurance services from a reputable third party can lower risk and build trust, confidence and reliability. ***Know more. Risk less***.

Nuclear fusion opportunity

Nuclear fusion involves the combining of atomic nuclei to release energy in a reaction that mimics that which takes place on the Sun. Nuclear fusion therefore represents an exciting opportunity because, if successful, it would provide a virtually limitless source of energy without producing greenhouse gases or radioactive waste.

Nuclear fusion clearly has enormous potential, but commercial viability has not yet been proven, and in common with fission, it will have a high capital cost and a long operational lifespan.

Global nuclear opportunities

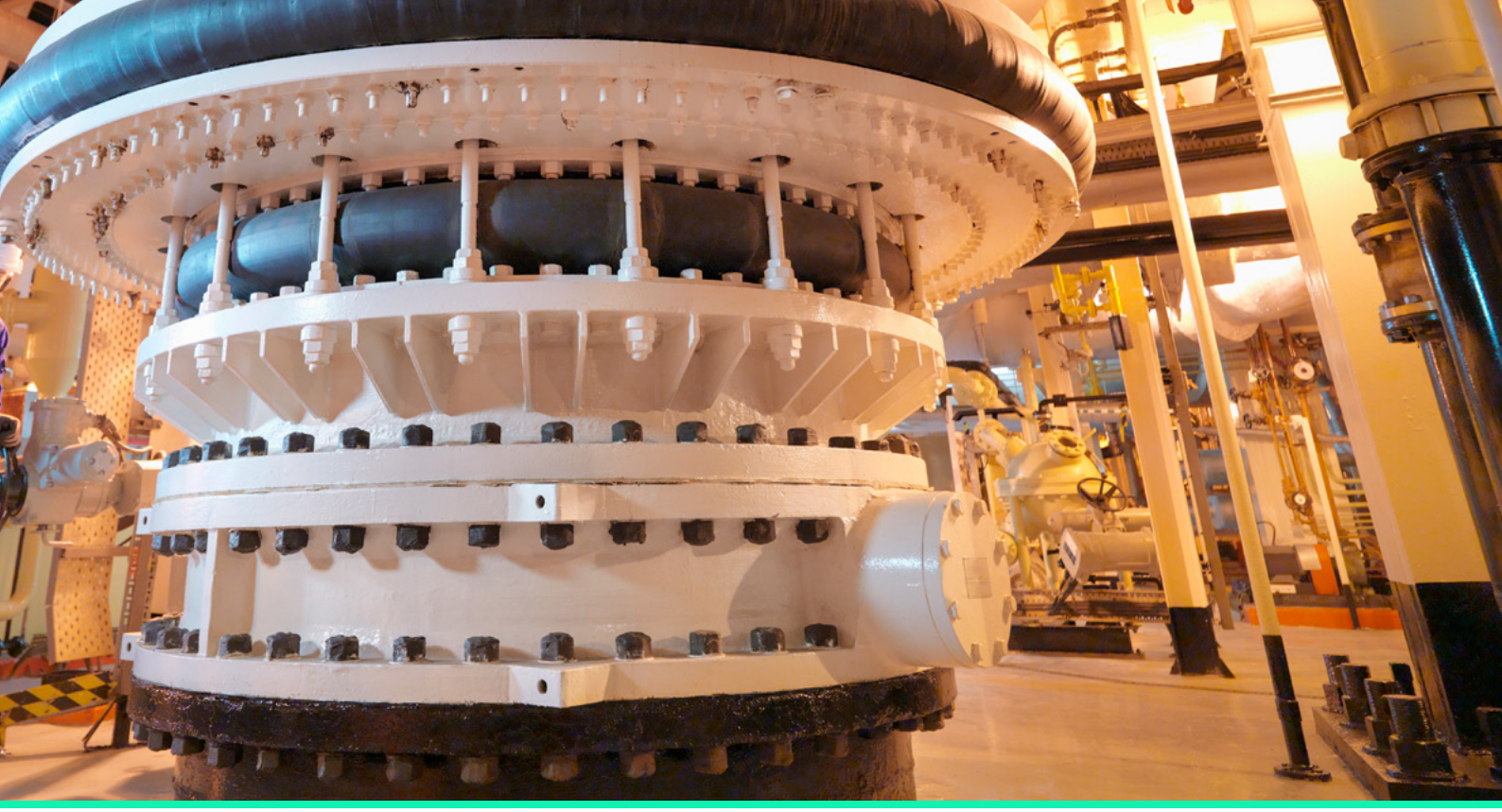
Working with every section of the global nuclear supply chain, LRQA is currently participating in projects all over the world. In Korea, LRQA is working with operators to ensure ongoing safety and compliance during operation. In China with manufacturers on their codes and standards so that they can export their products globally. In the UK, two nuclear new-build projects are currently underway, in addition to work on existing and manufacture and LRQA has also been working on recent nuclear projects in the UAE and Turkey.

Many countries in Eastern Europe and Africa have also shown interest in developing nuclear projects, which will present challenges to their local supply chains. In addition, the established international technology providers have to ensure that they are able to meet national requirements. LRQA therefore works with both technology vendors and regulators to ensure that new rules, procedures and regulations follow best practices learned from other sectors.

Supply chain challenges

The nuclear industry requires a number of specialist, and often large, technologies that may not be readily available in some countries. This includes heavy forgings used within the European Pressurized Water Reactor produced by Framatome, and the AP1000® Pressurized Water Reactor from the Westinghouse Electric Company. Both of these companies have common suppliers – in Japan for example, for some of the heavy forgings – and for components that may come from shared facilities and the Chinese nuclear program is well advanced and there are a number of technology suppliers who have established either a company or a joint venture company who are now looking to export, so there is a truly global supply chain.

Once a country develops a nuclear program it develops a competence for producing nuclear plant equipment such as pressure vessels, valves, electrical control cabinets etc. with a 60-year design life. These products then have to be exported in order to maintain a viable critical mass in the supply chain.



Nuclear industry challenges

Social license

Power sectors that inspire public, media and political attention can experience major problems and delays in projects.

Reputation

Reputational risk exists for the country in which a nuclear power plant is planned, the supply chain within that country, and for the third-party delivering assurance services.

Longevity

With a design-life expectancy of up to 60 years, today's decisions on technologies and supply chains will have long-lasting effects, so it is vitally important to make the right decisions.

Volume in the supply chain

A relatively small number of nuclear projects are underway globally and there will be pressure to lower costs so it is important that quality is not sacrificed, and this relies on knowledge and experience.

How does LRQA lower risk?

Frequently, the provision of assurance services begins with the identification of a local supply chain; work which may include help with gaining approval for their technology to be deployed within a particular country or jurisdiction. Once the supply chain is established, LRQA then supports the technology vendor or lead contractor to ensure that they get what they want, when they need it, and at the quality they expect.

The concept of independent third-party inspection within the nuclear sector was initially established in the UK, and is now recognized by a number of nuclear regulators around the world. Currently, LRQA is the only entity to have been appointed in the UK as an independent third-party inspection agency within the nuclear sector. In this capacity we work with the utility or the operator of a nuclear power plant to ensure that their arrangements and their supply chains are appropriate. This also includes a review of a licensee certificate or a licensee's readiness, which includes a management system audit to ensure that appropriate mechanisms are in place.

More specifically, LRQA will assess the implementation of newer standards such as ISO 19443:2018, which covers quality management systems in the supply chain of the nuclear energy sector supplying products and services important to nuclear safety. Frequently, this results in a requirement for training and education into the specific requirements of the nuclear sector.

LRQA has worked with regulators in countries that are in the early stages of developing a nuclear power capability. While they will be members of the IAEA, there still may be lessons that can be learned from the experiences of other countries and other projects in the practical implementation of effective regulation.

Once supply chains have been established there is an ongoing requirement for assurance to protect quality, reliability and longevity. In recent years, LRQA has been pleased to note a growing demand for assurance services that contribute to an organization's environmental, sustainability and governance (ESG) objectives. To achieve this LRQA is leading the market in the provision of remote inspection or intelligent audit to minimize the carbon impact of our work, while demonstrating the appropriate level of safety for a project.

LRQA's recent expertise in the nuclear sector was developed on the Sizewell B nuclear power project in the UK and subsequently as part of a joint venture at the Hinckley Point C development.

As one of the largest providers of management system certification to the nuclear industry working with standards such as both ISO 9001 for operating plants, ISO 55001 for asset management and ISO 19443. LRQA is also working closely with the United Kingdom Accreditation Service (UKAS) to identify an accredited means of providing certification to ISO 19443:2018.

LRQA has one of the largest networks of ASME authorized inspectors across the world outside of the United States, which means that we provide certification and assurance services to many of the world's leading ASME nuclear licensed companies. We also have a number of expert groups around the world working on processes, supply chains and safety integrity levels across a wide range of countries and jurisdictions.

Why choose LRQA?

We're here to help you negotiate a rapidly changing world, by working with you to manage and mitigate the risks you face. From compliance to data-driven supply chain transformation, it's our job to help you shape the future, rather than letting it shape you. We do this by providing:

Technical expertise

Our people are sector experts. They bring with them a clear understanding of your specific challenges, standards and requirements – then deploy deep knowledge of inspection, certification, assurance, cybersecurity and training to help you meet them.

Global capability

Operating in more than 120 countries, recognized by over 30 accreditation bodies worldwide, and covering almost every sector, we can help you reduce risk, drive improvement and build credibility with stakeholders around the globe.

Unrivalled vision

Our technical know-how, sector expertise and an innovative, forward-thinking approach can help you add value today – and help you become safer, more secure, and more sustainable tomorrow.

Effective partnership

Every business is unique. That's why our experts work with you, to fully understand your needs and goals, and work out how we can best support them.

For more information on our range of supply chain assurance and inspection services visit lrqa.com/us

Get in touch

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