

ENS Interview with Thomas Thor



The nuclear workforce of the future

Opportunities and needs for the international nuclear sector

Interview with Callum Thomas

Thomas Thor



The nuclear sector has to deal with complex, urgent needs for its **workforce**. Let's explore together with **Callum Thomas**, Thomas Thor CEO, what are the main reasons, the main challenges, and the best solutions to overcome them.

Thomas Thor (ENS Corporate Member) has been **building and sustaining the global nuclear workforce** for over a decade. Its clients include nuclear regulators, operators, engineering and construction companies, equipment manufacturers and research organizations.

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- 1. What is the current, global situation of the nuclear workforce? How is the nuclear workforce made up today?*

Nuclear has today huge potential and, like every industry, it has sooner or later to face some **skills shortages in certain disciplines**, technical areas, or locations. There are some skills like I&C, licensing, or major project management that are difficult to find, either because the skills are rare or because competition with other sectors is strong. However, the sector wide **skills shortages that people fear are not there yet**.

Let's imagine the successful realisation of all decommissioning and new builds projects, plus new technologies like SMRs, AMRs, and then some fusion, nuclear medicine and defence projects. Globally, we see a **massive workload**, so the

workforce will get really stretched. Today, we already see this happening as SMR and Advanced Reactor organisations start scaling up.

So, we will see a **nuclear workforce crisis** if we have lots of new projects going on at the same time. In the countries now planning new nuclear power plants, there's going to be a shortage of design, licensing, and project management skills, necessary at the early stage of a project. Anyway, as said, the industry has managed periods of high volumes of projects running concurrently in the past and with the right actions it will manage this coming period as well.,

The problem that nuclear industry has, certainly in Western Europe and North America, **is that it did not hire from the late 1980s until the early 2000's**. During these 15 years, we saw a **significant immobilism**, and a **lack of investment**, which has led to a generation sized **gap in experienced staff and leaders**. On the one hand, we have **a vibrant, nuclear young generation**, while on the other hand, we have **a very talented older generation**, which often decides to postpone retirement. This kind of postponement of retirement is among the factors that saved the nuclear industry facing severe skill shortages in the Western world.

When we created Thomas Thor 13 years ago, I remember huge concerns about this **"cliff edge" of retirees**. In the end, it hasn't happened, because people decided to continue working. They are now starting to retire, so we are now starting to see the consequence of the 15-year gap in hiring.



Callum Thomas, Thomas Thor CEO, at NESTet 2021 in Brussels.

Ph. Adela Chalupova, ENS-YGN

Concluding with the general skills landscape, I would say that **the nuclear industry is unfortunately not the magnet for talent that it should be**. There is **widespread unawareness of the great opportunities that nuclear offers**, as well as **misleading knowledge and negative perception of this source of energy**. All in all, the nuclear industry suffers from not being popular and from not being well-known enough, and as it grows, that would be a problem.

2. What are the main factors behind such a challenging context?

I would say again **the lack of awareness of the industry or negative opinions** on it, sometimes the **remote locations of some sites**, but also **the perceived lack of job security**, mainly due to the recent cancellation or the delay of several new builds projects.

Indeed, there is still **a lack of certainty**, despite the exciting future we expect in the nuclear field. Some projects have been waiting long periods for investment decisions, and political turnovers among pro and anti-nuclear ruling parties or divergent public opinions can also impact **the stability and the support for nuclear programmes**.

One more factor is **competition**. Who are the people that nuclear wants to attract? Where are they going? We have seen in the last 30 years lots of people with engineering or STEM education who have gone to the finance industry, while now they are attracted to Tech. A possible evolution that I believe that could happen in the next decades is that the energy transition sector and climate change action will be the next big talent magnet to follow Finance and Tech. Nuclear is obviously part of that, despite people being largely unaware of the fact. So, making people aware of that is the next, big challenge **to attract talent to clean energy technologies, including nuclear**.

Furthermore, an additional factor is **diversity**. The nuclear industry doesn't often reflect the communities in which it is situated. If it was able to attract more women, and more people representing minority groups, then it would have more talent. This diversity challenge is also shared by other industries generally linked to science, technology, and other STEM skillsets.

3. *Let's now focus on Europe. Could you give us a comprehensive overview of the nuclear workforce in our continent?*

It's actually quite hard to talk about Europe as a whole because there are varying realities and dynamics in different countries.

So, starting from the main nuclear countries, let's take a look at **France**. The nuclear industry there is large, but until recently has been on the decline, because of a national policy aiming to reduce the nuclear share from 75% to 50% and other factors. The French nuclear industry is a very "national" industry – there are some people moving there, mainly from neighbour countries like Belgium, Germany, or Italy, but there is a huge local talent pool for the nuclear sector to hire from. For sure **France has the biggest nuclear workforce in Europe**. The industry has been in a slow mode for the last 8-10 years, and now started growing again. It is mainly dominated by very mature, very big companies, both the main operator EDF and across the supply chain. Now **it needs to grow and it needs to rejuvenate and attract a new generation of employees**. There is a lot of work to do in France, just considering only the fleet's refurbishment, and then there is new build, decommissioning, advanced reactors and defence.

In the **UK**, **the overall future prospects for the sector are exciting**, but there have already been two important nuclear new build projects cancelled, which makes people nervous about joining the industry. **The big topic now is diversity**, so how to balance the male domination of the nuclear workforce. Several discussions are ongoing around **how to attract people to the industry**, and **how to communicate to the public the great opportunities that a career in nuclear offers**. Furthermore, there are several, big infrastructure projects going on in the UK in other sectors, so **nuclear has to compete for the best talent**.

In **Germany**, the industry is being phased out. We have not seen an exodus of talent from Germany moving to other countries. There are three main reasons. First, employers have been very good at looking after their employees, offering them new positions, and transitioning many to different sectors. Then we can consider language barriers of international moves, and the fact that the majority of people actually retire at retirement age rather than extending their careers or becoming consultants.

Belgium has recently had a U-turn on nuclear energy policy and will extend the lives of two nuclear power plants that were scheduled to close. It will be interesting to see whether the nuclear workforce in Belgium can rise to this challenge in short timeframes.

All in all, **we see different goals, plans, contexts, and challenges**. Some countries try **to build a national workforce**, like France or Spain, and some countries are **likely to hire internationally**, like Poland and the UK.

To summarise what's going on at the European level, let's see what **the scenario in five years could be**. As said before, if we take into account, all the new projects ongoing or planned all over Europe (new builds, SMRs new technologies, ITER and other fusion projects, new research reactors, decommissioning and refurbishment works) **there is a lot of work to be done**, and that's where the skills squeeze can come.

I think right now we are in the calm "before the storm". Even if half of the planned projects become reality, **Europe is going to need hundreds of thousands more people in the nuclear industry**. By roughly approximating, I would say that **the nuclear sector could require more than 300,000 new jobs in the coming 15 years**, to replace people retiring, and manage such an increasing workload.

4. What are the European countries' main needs in terms of nuclear workforce? What are those needs due to?

There are two main reasons behind the needs. First is **the lack of investments** in the industry from the late 1980s to 2000s. The second is **the lack of commitment** to invest in the industry, impacted by long-lasting decision making procedures and delays, financing issues, reduced political support and public acceptance.

Globally, **nuclear has been perceived for a long time as an old-fashioned industry**, not urgent enough in a debate about climate solutions that was basically monopolised by renewables. Today, as climate change is more and more pressing, **the perception of nuclear is changing, but not so fast amongst the general public**. So, people have not been keen on nuclear and have not associated it with energy transition. Therefore, until recently politicians have not often spoken positively about nuclear energy in public, and government funding has been hard to secure. However, as nuclear projects require huge investment, government support and financing are crucial to make them happen. Nuclear has faced this vicious circle and it has not been easy.

5. *What necessary steps could be taken at the EU level to respond to these needs? Which role can the institutions, academia, and industry play in meeting both the workforce demand and the young professionals' expectations?*

We recently did a study on the perception of the **nuclear industry as a place to work**. As said before, most people see it as slow and old-fashioned. So, the first thing to do is **to create a working environment in which people want to work**, a sector that offers attractive job opportunities and working conditions.

As we saw in our analyses, but also discussing at conferences like NESTet2021 or FISA/Euradwaste 2022, young professionals today want **flexibility, a good work-life balance, potential for career progression, collaborative and often international, multicultural work environment**. The nuclear industry generally offers most of those opportunities, but not many people are aware.

The second point is **to let people know**. So, it is important to make the **environment and the clean energy sector attractive** alongside the effective realisation of those projects, so the creation of new jobs. Finally, a big, widespread **awareness and attraction campaign** would definitely be beneficial. As we saw, there are different scenarios all over the continent, so the best solution would be to have national, or even European campaigns, but tailored to each country's needs.



Callum Thomas moderating the workshop "Are you ready for the international job market?" co-organised by ENS-YGN, Thomas Thor and ENEN at FISA/Euradwaste 2022, Lyon.

Ph. Mattia Baldoni, ENS

6. *What are the main tools that Thomas Thor uses to monitor the situation and to intercept these evolving trends?*

Thomas Thor's mission is to build and support the future nuclear workforce. We basically act as an **ambassador for career opportunities in nuclear.** So, it's very important for us **to communicate with people outside of the sector and attract them to it,** by using several tools, like social media or initiatives such as EHRO-N and our international networks.

We follow and track all the movements in the industry, including decisions and policies related to major projects. At the same time, we keep track of many non-nuclear projects, their time schedules, budgets, and delivery success. So, **we monitor their status and then we try to attract people with various relevant skills into the nuclear sector.**

A big part of our strategy is being **an active stakeholder in the nuclear industry.** Thomas Thor is a member of several associations, and we are actively involved in Women in Nuclear and young generation networks.

We support and try **to bring HR topics up to the top of the agenda in the nuclear sector.** By doing so, we help people realise how important HR topics are, while contributing to information exchanges with them.

Furthermore, **we see diversity and inclusion as core values.** At Thomas Thor, we have a gender balanced workforce, and we have good diversity in terms of ethnicity, age, and technical and educational backgrounds. We are proud of our results, and we are trying to support the same objectives in the sector, helping companies to become diverse and inclusive.

All in all, we look at macro-factors in the industry while being involved in micro-factors, trying to answer to the nuclear sector's need for people: where do we get them? How do we make sure they are the right ones? How do we attract them to the industry? And how do we retain them?

All those questions fully represent Thomas Thor's mission.