

# “No Other Industry in the World Sees Competitors Collaborate and Share Best Practices under WANO the Way the Nuclear Industry Does”

Interview with Ingemar Engkvist | WANO Chief Executive Officer



## Ingemar Engkvist

WANO Chief Executive Officer

Ingemar Engkvist has been the WANO Chief Executive Officer since January 2020 and is responsible for overseeing the strategic direction and daily operations of WANO worldwide. Before his current position, Ingemar was Director of the WANO Paris Centre. In this role, he was a member of the WANO Executive Leadership Team (ELT), composed of the Directors of the Regional Centres as well as the WANO CEO. He was responsible for the day to day running of the Paris Centre, and accountable to the Paris Regional Governing Board and the WANO CEO for the regional centre's performance.

Prior to joining WANO Paris Centre, Ingemar was the Managing Director for E.ON Nuclear Sweden (E.ON Kärnkraft Sverige AB, EKS) from 2010 to 2015. He was the Managing Director of OKG AB from 2011 to 2012 and the Senior Vice President of E.ON Kärnkraft Sverige AB from 2007 to 2010. He has been on the board of all nuclear companies in Sweden and was Chairman of OKG AB.

***The mission of the World Association of Nuclear Operators (WANO) is upholding a high level and further improving nuclear safety and operational excellence. What are the lessons learned and implemented from the Fukushima accident to prevent it from happening again?***

Our members are committed to collaborating closely with each other and sharing information and best practices through WANO to maximize safety and reliability. Consequently, there were several lessons learnt from Fukushima. After the accident, WANO identified 12 key post-Fukushima projects to implement in more than 460 commercial power plants worldwide to enhance safety. Our members took measures to improve many important areas of a nuclear power plant, including emergency preparedness and planning, severe accident management, onsite fuel storage, and by introducing corporate peer reviews for our members.

Many improvements were complex and challenging and required a significant investment of time and resources to complete.

The lessons learnt from Fukushima resulted in our members collectively implementing approximately 6,000 safety enhancement activities worldwide. I firmly believe that the overall margin of nuclear safety has improved from the levels before Fukushima. And, we will continue to evolve and improve - as our members' collective mission to maximize safety and reliability is never ending. We are always

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looking at new ways to continuously improve performance.

***How can ensuring a good safety culture at nuclear power plants and facilities help maximise safety and reliability?***

At WANO, we define nuclear safety culture as the core values and behaviours resulting from a collective commitment by leaders and individuals to emphasise safety over competing goals. A good

nuclear safety culture is of the utmost importance.

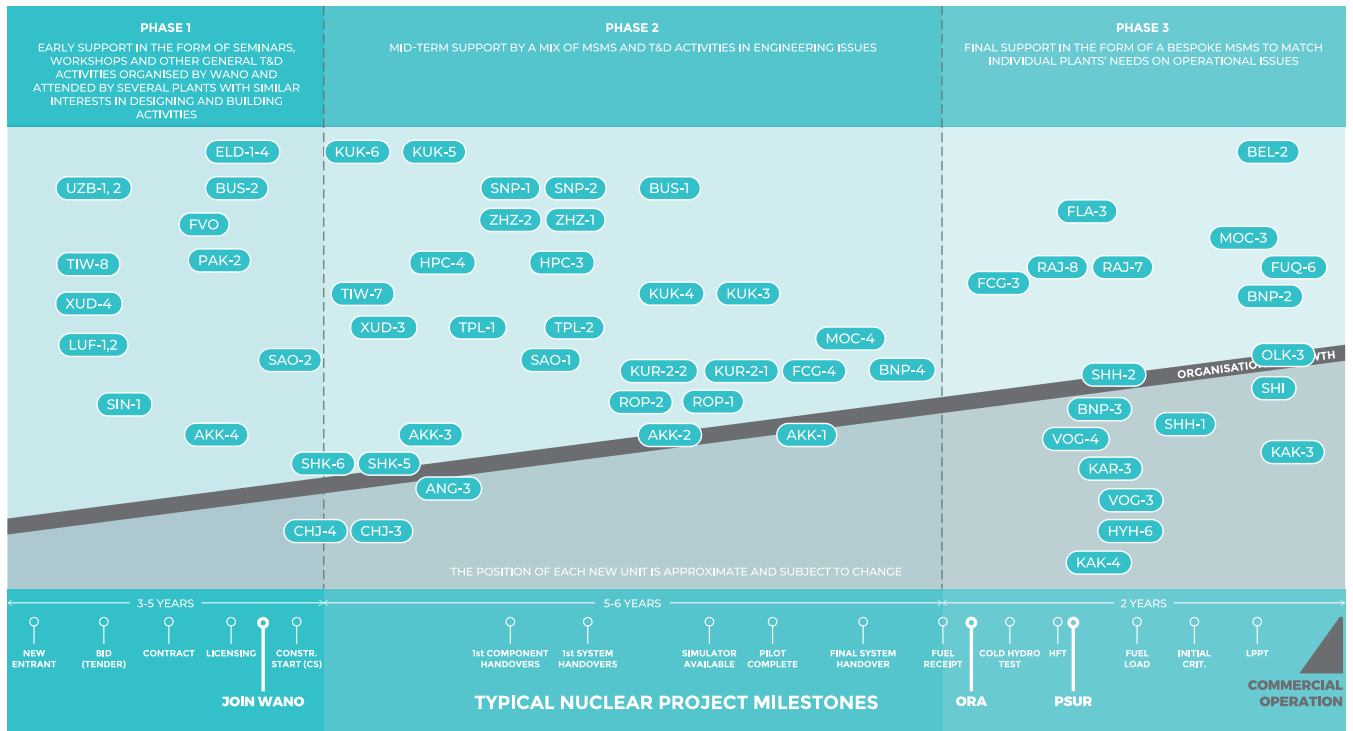
It ensures the protection of people and the environment.

A theme common in the industry's most successful plants is that they maintain a very positive plant safety culture. They challenge themselves to recognize and resolve problems to prevent any significant events from occurring.

A good nuclear safety culture has its foundations in the shared assumptions, values, and beliefs of the organisation, and this is driven by leadership responsibility. Leaders in organisations with a healthy safety culture actively always foster and

## NEW BUILD UNIT STATUS WORLDWIDE

Progress of construction against timeline – Jan 2022



### NUCLEAR POWER PLANTS

AKK - Akkuyu ANG - Angra BEL - Belarussian BNP - Barakah BUS - Bushehr	CHJ - Changjiang ELD - El Dabaa FCG - Fangchenggang FLA - Flamanville FUQ - Fuqing	FVO - Fennovoima HPC - Hinkley Point HYH - Hongyanhe KAK - Kakrapar KAR - Karachi	KUK - Kudankulam KUR - Kursk LEN - Leningrad LUF - Lufeng MOC - Mochovoce	OLK - Olkiluoto PAK - PAKS II RAJ - Rajasthan ROP - Rooppur SAO - San'ao	SHH - Shin Hanul SHI - Shidao Bay SHK - Shin Kori SIN - Sinop SNP - Shidaowan	TIW - Tianwan TPL - Taipingling UZB - Uzbekistan VOG - Vogtle XUD - Xudapu	ZHZ - Zhangzhou
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reinforce safety culture. [WANO PRINCIPLES | PL 2013-1 Traits of a Healthy Nuclear Safety Culture](#) explains the organisational and personal traits required for all nuclear plants and facilities wherever they are in the world.

**More nuclear power plants reach what is called long-term operation (LTO) and recently some studies identified that LTO of NPPs is the most cost-effective tool for decarbonization available. Is there specific consideration for this issue, specific programmes to promote long term safety and excellence?**

Nuclear power plants (NPPs) are safely operating for longer time frames than were originally anticipated at their launch. In evaluating whether long term operation is appropriate, owners and operators of these plants work with their government, regulators, civil society and local communities – and the IAEA – to analyze what is needed to assure that lifetime extension is appropriate.

From our perspective, we apply the highest industry standards – WANO’s Performance Objectives & Criteria – to all plants. The same approach is used whether we are looking at a new unit that has just started up and is achieving first criticality, or a unit that has been in operation for many years and is in

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lifetime extension. The key principle is that we assess the performance of all plants to that of the very best in the world – how to help them achieve excellence in safety and performance. And our key focus is looking at the operations of a plant – ensuring the people, culture and behaviours at each member plant are working together to maximise safety. If we look at broader macroeconomic and societal trends globally, there are signs of a growing acceptance of nuclear energy as a vital part of controlling climate change. WANO’s role is not to promote nuclear energy, but to help ensure that if a company or country chooses to use nuclear generation, that it is operated at the highest levels of safety and reliability. If our members’ plants can continue

to generate safe, base-load low carbon electricity in the years to come, they will shape a positive future for the industry. But we cannot be satisfied with our progress, we will continue to work together to improve performance further.

**Financing and the risks associated with it as well as construction and political aspects are obstacles for nuclear new build in many markets. Is there also cooperation on financing schemes, construction experience and market designs on the WANO level?**

It is the decision of each country, the industry and their local communities as to whether or not to construct and operate a commercial nuclear power plant. WANO is not an advocate for commercial nuclear power – our sole focus is on maximizing safety. So, to answer your question, we are not involved in the early stages when decisions about financing or market design are made. However, once a country chooses to build a plant, WANO is ready and able to help these new units prepare for safe and reliable start up. As soon as the owner of a plant is ready to start construction, we encourage that new unit to join WANO and benefit from the worldwide resources, expertise and experience WANO provides to ensure a safe and reliable start up. Although we don't advise on construction itself, it is important that we work with the operator during the construction phase – many years before start up. Our New Unit Assistance programme provides a comprehensive suite of services for our members. In recent years, we have supported our members all over the world in countries such as UAE, China, India and Pakistan with their new units.

How is WANO supporting new units worldwide in achieving a safe and reliable start-up of their operations? In some parts of the world, in Asia and the Middle East for instance, the nuclear industry is growing – around 100 new units have either started up or will be constructed over around a 15-year period. As mentioned previously, to meet this demand our international team of technical experts provide a New Unit Assistance (NUA) service to help these new units at our members start up safely and efficiently. We offer a suite of 18 modules that are provided to future operating companies at various points along the design, construction, and commissioning phases. The service also includes support for the first fuel cycle, including preparation for the plant's first refuelling outage.

Along a new unit's journey to start-up, WANO provides support in all areas of plant operations – from nuclear safety culture, operator fundamentals, emergency planning, fuel and reactor management, leadership, and turnover for operations. Our modules are tailored to a unit or company's specific needs, and the delivery methods are varied to ensure the member receives the right information at the right point in time. This is delivered through the sharing of best industry practises, benchmarking, use of operating experience, targeted support missions and training.

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The focused support helps members to build-up an appropriate operational mindset through the three key phases of the overall project timeline. At the end of the three phases, and shortly before the first criticality, WANO visits the new unit and the operations teams to help them determine their assets and crews' readiness to operate the new unit safely.

WANO supports all new nuclear power plants, whether they are in newcomer countries such as the UAE, or nations with an established nuclear power infrastructure, such as China. WANO delivers a graded approach according to the type of project and familiarity the company has with the industry.

Early engagement from new build projects with WANO on the NUA programme can significantly reduce the risk of a delay to start-up – or a setback during the construction phase. Lessons learnt have been incorporated into the NUA modules, to enable members to learn from past challenges and ensure their construction and commissioning projects are as successful as possible.

***How will WANO support the owners and operators of power plants in the future that deploy new technologies, such as SMRs? Will it have to revise its services and approach?***

Across the world, our members own and operate many different types of reactors and technologies at their stations. Regardless of the technology, we assess each member plant with the same consistent, rigorous application of our global standards. As such, WANO is technology agnostic. Of course, as new technologies such as SMRs come on stream, we are ready to adapt our approach if needed. However, we are primarily focused on operational performance. We assess individual and team behaviour, the safety culture and how leadership is demonstrated at all levels of a plant. In our 30 years of analysing operating experience globally, we know that driving performance in these areas will make the biggest difference to performance, rather than the technology that is deployed.

***The German operators of nuclear power plants have been active in WANO for decades and German regulation on safety is among the most demanding in the world. Will there be an impact on the work of WANO when no nuclear power plants will be operated in Germany?***

Without question, the German nuclear industry's contribution to WANO has been immense – helping

deliver our shared mission to maximise safety and reliability of commercial nuclear power worldwide. Some plants managed by our German members have been among the best run in the world – they have demonstrated excellence in both safety and reliability. They have set the standard for excellence and been a great support for, and shared best practices with, our global members. Furthermore, our German members have provided some excellent secondees to our organization over the years, helping share their valuable knowledge and expertise for the greater good. We will certainly miss them, and we appreciate all the support they have provided us and our members!

Of course, despite the closures, many will still have jobs in decommissioning in Germany. Also, we hope to continue to have strong, close ties with nuclear professionals from Germany. They are certainly welcome to work for us and others in the industry in the future.

***After the phase-out Germany will not have active operators anymore, just decommissioning. But there still will be front-end companies, suppliers, service companies and nuclear safety research. Despite phase-out the government aspires for Germany to be a recognized and influential voice on nuclear safety. How could this be achieved?***

Germany has a rich pool of expertise and organisations across the global nuclear supply chain. I am sure that in today's interconnected global economy, they will continue to deliver products and services to the nuclear energy industry in Europe and many other countries and regions of the world. They will also obtain a vast depth of expertise on decommissioning, which will be a key service that can be delivered to many countries over the coming decades.

***What is WANO's strategy for helping its members to continue to improve performance over the next few years, and how can nuclear professionals in Germany help WANO and its members in their efforts?***

WANO's focus over the coming years is to support the industry with its long-term improvement initiative, which is called 'Action for Excellence – Shaping the Nuclear Future'. It will raise the performance of nuclear power plants and facilities worldwide. It is

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an important time for the global nuclear industry. By further improving performance over the coming years, nuclear power plants can provide safe, reliable low carbon electricity to the world for decades to come. WANO is supporting its members on this journey. We are currently in the pilot stages – helping plants around the world complete Action for Excellence (AfE) pilots. These pilot stations – in China, Finland, Holland, India, and Armenia to name just a few – are pionee-

ring the deployment of new approaches and innovations to help them – and the industry – raise performance levels. Central to this will be our commitment to provide every member plant with a quarterly report into its performance, with both qualitative and quantitative insights. We call this enhanced performance monitoring. In this way, our members can detect early signs of decline in performance and take mitigating actions to prevent this. It is inspiring to see this shared desire for continuous improvement – no other industry in the world sees competitors collaborate and share best practices under WANO the way the nuclear industry does. As part of our strategy, WANO will be looking for nuclear professionals with a breadth of experience and skills to work for us on secondments in our offices in London, Paris, Shanghai, Tokyo and Moscow. So, for example, we need experts with strong data analytical skills to help us deliver the enhanced performance monitoring, we will need experienced people with technical and interpersonal skills that have already helped plants improve their performance, or have helped high performing plants sustain strong performance. Germany has some of the finest talent in terms of nuclear professionals with a great track record of delivering high performance. We encourage German experts to look out for our secondment and permanent job opportunities, and to come and join us in making this important initiative a success.

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