



1

09.30 Take your place for the opening ceremony for WNE 2021



2

14.00 & 15.00 EDF and Orano tackle social issues of nuclear energy
PANEL DISCUSSION ROOM



3

17.00 2021 WNE Awards winners announced
SEE P4-6



WNE TRIBUNE

NOVEMBER 30, 2021 // PARIS NORD VILLEPINTE



The \$1.2bn revitalisation of Canada's Chalk River Laboratories campus will enable the research facility to continue supporting the clean energy industry, including SMRs and advanced reactors, well into the future



CANADIAN NUCLEAR LABORATORIES

BREAKTHROUGH FOR NUCLEAR AT COP26

The 2021 UN Climate Change Conference, COP26, ended its deliberations earlier this month with nuclear energy's role in the fight against global warming gaining greater recognition.

The final communiqué from Glasgow warned the world against the continued use of fossil fuels and urged governments to adopt clean energy sources – which includes nuclear – fast or risk catastrophic changes to our

climate if temperatures are allowed to rise more than 1.5°C above pre-industrial levels.

As scientists and analysts work to understand the implications of a flurry of national commitments announced at the summit, the global nuclear energy community gathers at WNE 2021 to reinforce the “noticeable shift in interest” towards nuclear technologies evident at COP26.

Rafael Mariano Grossi, director

general of the IAEA, said the conference provided opportunities to continue dialogues and start new ones. Increasingly countries and groups “are looking at nuclear as an evident part of the solution.”

Sama Bilbao y León, director general of the World Nuclear Association, told *WNE Tribune* that COP26 opened many people's eyes to the urgency of combatting

CONTINUED ON p2



DOUG WOODHEAD/ISTOCK/GETTY IMAGES/ALAMY

NET ZERO BY 2050 STATEMENT

NUCLEAR IS READY TO PLAY ITS ROLE

On the eve of WNE 2021, 12 national bodies representing some of the biggest nuclear industries of the world have issued a joint statement calling on governments everywhere to accelerate action toward combatting climate change. They said: “We call for recognizing the full potential of nuclear energy in the worldwide energy transition. Thus, we ask political leaders in the world to put in place the policies and the market mechanisms that will help accelerate the deployment of new nuclear projects, and to support research and development in nuclear technology. Our industry is ready to play its role in tackling the climate change challenge. Net zero by 2050 needs nuclear energy.”

SIGNED BY:

CNA, Canada // EPRI, USA // FinNuclear, Finland // Foro Nuclear, Spain // GIFEN, France // JAIF, Japan // KAIF, Korea // NEI, USA // NIA, UK // NIC, USA // Romatom, Romania // and WNA World Nuclear Association



To read the full statement, visit www.gifen.fr (or scan QR code to go to site)

WNE honours Kirsty Gogan with first WNE Fellow award

Kirsty Gogan, an internationally known advocate of nuclear energy, advisor to governments and co-founder of Energy for Humanity (EFH), has been named the first WNE Fellow.

She received her award last night at a glittering ceremony in Paris.

Bernard Bigot, director general of ITER and chair of the judging panel, said Gogan has introduced “fresh arguments that make sense to the public at large. She plays a quite remarkable and unique role.”

Currently managing director of LucidCatalyst and Terra Praxis, Gogan has built an enviable reputation through her work advising governments,

industry, academic networks and non-profit organisations (NGOs).

The award-winning EFH, an environmental NGO focused on large-scale decarbonisation and energy access, succeeded in raising awareness of issues and solutions over its seven-year life. Gogan co-founded Terra Praxis to build on its work.

Bigot said the new WNE Fellow award is important because it honours someone in civil society whose work supports the development of civil nuclear energy. “It is important to show that nuclear energy, especially in

the context of an urgent energy transition to fight against climate change, is supported by people from all horizons,” he said.

Eleven personalities were nominated for the award by the nuclear advisors network in French embassies around the world based on their work, media and social impact, and their commitment to international institutions.

Gogan was the unanimous choice of the jury of eight, whose other members were Sama Bilbao y León, William D Magwood IV, François Jacq, Toshio Kodama, Jean-Bernard Lévy, Alexey Likhachev, Satish Kumar Sharma.



LUCIDCATALYST



Gogan has introduced “fresh arguments that make sense to the public at large. She plays a quite remarkable and unique role”—Bernard Bigot



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EDITORIAL

OUR INDUSTRY HAS A VITAL ROLE IN THE FUTURE ENERGY MIX

Welcome – at long last – to WNE 2021. It's wonderful that we are finally coming together after almost two years of uncertainty and false starts as the Covid pandemic's malign influence brought the world almost to its knees. At the same time, I extend my condolences to all who have suffered personal losses in these difficult times.

I would especially like to welcome the exhibitors who are new to WNE. This is my first exhibition as President, although I am no stranger to the nuclear industry, having worked to build bridges of cooperation at the industrial and diplomatic levels during my years as an Ambassador of France in China, Russia and the United Kingdom.

The theme of this year's WNE could not be more appropriate, nor its timing more opportune. We have just watched our national leaders grapple with the challenges of controlling climate change at COP26 in Glasgow where scientists stressed that we have less than a decade to take action to prevent temperatures from rising more than 1.5 degrees above pre-industrial levels.

Now, in Paris, under the banner 'The nuclear industry, a key partner for a low carbon society in a responsible future',

we have the opportunity to demonstrate why our industry has to be part of the future energy mix.

Within the framework of our theme, WNE is focused on three topical issues:

- Small modular reactors (SMRs) and advanced modular reactors (AMRs)
- Hydrogen
- Waste management.

We've been talking about SMRs and AMRs for a few years and now we are starting to see projects under way around the world. SMRs, complementary to large reactors, are the future of the civil nuclear industry. Day 3 of WNE is dedicated to SMRs to help promote this important development.

Hydrogen technology is touted as a significant potential addition to the future energy mix, while at the other end of the nuclear life cycle, waste management continues to evolve as one of the most important aspects of our industry.

Here at WNE you will see what nuclear has to offer in clean, reliable, safe energy wrapped up in innovative solutions. We'll be celebrating some of them at 5pm today when the winners of the WNE Awards will be announced. The full list of entrants

is on pages 4-5 of this issue of WNE Tribune. They and all the other exhibitors will be pleased to talk to you at their stands over the coming days.

Have a good show.

Sylvie Bermann
Ambassador of France
and President of WNE



“We've been talking about SMRs and AMRs for a few years and now we are starting to see projects under way around the world. SMRs, complementary to large reactors, are the future of the civil nuclear industry...”

CONTINUED FROM p1

Breakthrough for nuclear at COP26

climate change. Government announcements made headlines but it's clear “more has to be done. They need to take tough decisions.”

As a veteran COP attendee, Bilbao y León (pictured with a young activist at the event) was pleased to see countries and organisations that are long-time supporters of nuclear vocalising their views. “We need to have people talking in favour of nuclear,” she said.

She was “impressed and inspired” by the energy and eloquence of the many young nuclear professionals in Glasgow. They were “passionate and incredibly professional” in their efforts to engage with new audiences.

Glasgow's final communiqué was the first time that coal-fired power generation and subsidies for fossil fuels had been officially identified as barriers to decarbonisation. Even

more important, the communiqué was technology-neutral.

Its definition of the technologies to support the transition to a low-emission energy system, and the call for rapid scaling up of clean power generation, was “in our analysis a clear signal that all low-carbon technologies, including nuclear, are going to be needed”.

“We need to be clearer about the important role nuclear has always had, but also that nuclear has applications beyond electricity generation that are going to be essential to decarbonise the entire economy.”

Some people sometimes forget, she says, that nuclear technology is instrumental to achieving each of the UN's 17 Sustainable Development Goals. This is “not only about decarbonisation. It's also about raising the standard of

living of people around world who do not have access to reliable clean energy in their everyday life.”

It's up to individuals in the industry, she said, to “step outside our bubble” and have conversations with people who don't know enough about nuclear energy to form their own opinions. Communication goes beyond media interviews and webinars. All of us need to become nuclear ambassadors in our every day life.

But one of the best ways of improving the perception of nuclear, she says, is “delivering on our promises”.

“The existing nuclear fleet needs to continue operating safely and reliably, and we need to accelerate the deployment of new nuclear projects, large and small. We need to demonstrate that nuclear energy can be deployed in time and cost effectively to meaningfully contribute to the 2050 targets. It's good that nuclear has a seat at the table – the important thing now is to make the most of it.”

Hear Sama Bilbao y León at 1.30pm today in the Panel Discussion Room



WNETRIBUNE

Want to share a story with us? Find us at the Press Centre or email our editorial team at: wne.tribune.editorial@gmail.com

WNE Tribune is produced by Aerocomm Ltd

edailies@aerocomm.aero on behalf of Reed Expositions France for GIFEN.

Reed Expositions France
52-54 quai de Dion-Bouton
92806 Puteaux Cedex, France
www.reedexpo.fr

Editor in chief

Sylvie Bermann, Ambassador of France and President of WNE

Editorial


Chuck Grieve, Alan Peaford
Alan Dron, Steve Nichols

Photography Ian Billinghamurst


Design and production Amelia Clark
For Reed Expositions France

Laurence Gaborieau,
Gwennaëlle Le Bourhis

Print Advence, Parc des Damiers,
139, rue Rateau - Bat F3, 93120
La Courneuve, France



20%
The recovery programme could double the amount of re-used uranium contributing to France's electricity supply



96%
The French technology can recover up to 96 per cent of the uranium

WNE Awards emphasise industry knowledge

The WNE Awards are a good way for companies to gain visibility, says Mary Alice Hayward, chair of the judging panel for the Skills and Knowledge Management category.

The awards programme, now in its third iteration, contributes to the nuclear industry by recognising and bringing to life innovative thinking, underlining “key values of our industry and how much it values actions to preserve knowledge”.

For Hayward, taking part in the WNE Awards was “an opportunity to support something I’m passionate about; to be part of something big and forward-looking in our industry.”

Currently Principal at Hayward Consulting,


she has spent 30 years in various industry and government roles, most recently serving as Deputy Director General and Head of the Department of Management in the International Atomic Energy Agency (IAEA).

She found it encouraging that after a year and half of a business-crippling pandemic, the awards programme attracted such high-quality entries. For her and her panel of seven – itself a model of gender and geographical diversity – it was interesting to see how entrants interpreted the scope of the category.


Continual improvement and operational exThe key consideration was demonstrable leadership support for maintaining and improving skills, and retaining and

transferring knowledge. “We questioned how a company would share knowledge with a younger generation in a modern, innovative way.”

Judging was a challenge with “excellent entries”, all different, all innovative. Hayward was impressed by the effort had gone into the entries, and convinced by what she saw that there is real “value in making sure we keep our industry as generationally diverse as possible”.



More broadly, she said, entering the WNE Awards “is an opportunity to demonstrate to others what you’ve accomplished, what your company has accomplished. It helps your company name get out there, and telegraphs to others in the field that you’re innovative. That has to be a prize in itself.”



Winners of the 2021 WNE Awards will be announced at 5pm today

FRANCE EYES BOOST TO FUEL RECOVERY, RE-USE

An expanded nuclear fuel recovery and re-use programme is expected to see France’s nuclear fleet loading more recycled fuel from 2025.

This could double to 20 per cent the amount of France’s electricity supply derived from re-used uranium.

Jean-Michel Romary, director of Nuclear Waste Management for Orano (J118), said the company’s MOX fuel assemblies, manufactured from spent uranium fuel and themselves capable of re-manufacture, are at the heart of the recycling programme.

“We have a development plan with our French industrial partners, the French Atomic Energy Commission (CEA) and EDF” to adopt “a large-scale industrial approach”, he said in an ‘Expert Voices’ podcast.

France, he said, has become “the international benchmark” for recycling nuclear materials. Orano’s La Hague facility has recycled materials for European neighbours Belgium, Switzerland and Germany, and for countries further afield, including Japan and Australia.

Countries with large amounts of nuclear fuel to recycle, such as Japan and China, are interested in using French technology to set up their own spent fuel programmes. Up to 96 per cent of the uranium can be recovered in this way. The alternative is long-term storage as waste.

“I think the operation of the circular

economy in France and beyond is a responsible choice,” he said. “It avoids forcing future generations having to choose what to do with spent fuel, and how.”

Also speaking in ‘Expert Voices’, Stéphanie Kerbarh, Deputy for Seine Maritime and rapporteur for the French law on the circular economy, said Orano and French nuclear sector “pioneered the circular economy of materials” with programmes such as the recycling of nuclear fuel.

She said nuclear could well be “a model industry” to encourage other sectors to adopt practices to reduce waste.

Below: Materials from Europe and further afield have been recycled at Orano’s La Hague waste treatment facility



DESIGNING IN SAFETY

A culture of safety doesn’t happen by itself – it needs to be ‘designed in’. That’s the rationale behind the ISO 19443 standard, which focuses on products and services important to nuclear safety (ITNS).

The journey to compliance can be a challenge but it is ultimately rewarding, says Cyrille Molina, chief executive of the first company in France to achieve accreditation to the new standard, Oakridge (J143).

ISO 19443 defines the requirements of a quality management system for supply chain companies and organisations working in the nuclear sector. It builds on the familiar ISO 9001, and is based on three main pillars: the fight against counterfeit, fraudulent or suspicious items (CFSI), growth of a nuclear culture, and a graded approach. It was launched

one month before WNE 2018, and since then – Covid-19 notwithstanding – it has been adopted by major players including EDF, Rosatom and CGN as a requirement for their supply chains.


Before Oakridge’s landmark accreditation in December 2020, it underwent an audit that Molina says “was tough but fair.” Since then, he has fielded requests from partners, clients and even competitors for “feedback on how we did it”.

He will be sharing those insights with WNE visitors in a workshop on 30 November, one of five scheduled over the show’s three days.

For an SME like Oakridge, accreditation is paying off. “We had to work hard to impose a mindset that’s tuned to nuclear safety,” says Molina. “It’s great to see it now in our daily work.”

ISO 19443 IN FOCUS

Day 1 13.00	Workshop 1	Filience & GIFEN
Day 1 14.30	Workshop 1	Oakridge & Bureau Veritas
Day 2 11.30	Workshop 1	Socotec
Day 2 13.30	Workshop 2	DNV
Day 3 10.30	Workshop 1	TüV Süd



GIFEN CELEBRATES SUCCESS AT WNE

The formation of GIFEN (B144) as the umbrella group for the entire French nuclear industry was announced at WNE 2018. Since then, says general secretary Cécile Arbouille (pictured), the organisation has proved its worth in supporting this important national sector.

Its membership, currently standing at 270, is drawn from a wide range of nuclear and related activity, and includes companies of all sizes. GIFEN is also the owner of WNE.

Domestically, GIFEN’S work revolves around eight strategic areas for the French industry; in the international arena, the organisation works to promote the capabilities of French companies. “To this end,” says Arbouille, “we’ve been successful on a number of fronts.”

She cites the French pavilions organised at international nuclear trade fairs, which provide valuable exposure and business opportunities for French companies, and partnerships with corresponding national nuclear industry associations.

“For example,” she says, “in 2021, we’ve signed a Memorandum of Understanding (MOU) with the UK’s Nuclear Industry Association (NIA), and another with the Federation of Indian Chambers of Commerce and Industry (FICCI). These agreements will promote cooperation in two important export markets for our industry. We expect to sign more MOUs in due course.”





GET THE FUTURE YOU WANT

WNE AWARDS 2021



CELEBRATING EXCELLENCE IN THE INDUSTRY



Products & Services
Patrick Landais, Atomic Energy
High Commissioner, CEA



Nuclear Safety
Veronica Garea, president,
Fundación INVAP



Operational Excellence
Daniella Lulache, Head
of the Office of Policy and
Coordination, OECD-NEA



Skills & Knowledge Management
Mary Alice Hayward, Principal,
Hayward Consulting

The WNE Awards have once again proven popular among exhibitors, attracting 137 entries despite the delays and uncertainties of the past 18 months caused by the global health crisis. The winners will be announced at 5pm this afternoon in the Conference Centre.

The awards, now in their third edition, celebrate excellence across all parts of the civil nuclear industry with categories for Products and Services, Operational Excellence, Skills and Knowledge Management, and Nuclear Safety.

Fourteen countries around the world, including all the main markets of the industry, are represented among the 84 companies in the 2021 programme. Companies of all size are again taking part, with large and mid-cap companies making up 59 per cent of entries.

No award will be made this year in the SME/VSE class for Skills and Knowledge Management. After careful consideration, the jury decided that the difficulty of scoring and judging against the criteria left them with no other choice.



FLASHBACK TO OUR LAST AWARDS...
How the line-up of award-winners looked in 2018

NUCLEAR SAFETY

BIG COMPANIES AND MID-CAPS

ASE (D62) – Project Development of Passive Heat Removal System (PHRS) from the Nuclear Power Plant

CEA (D124) – CORTEX

DOOSAN BABCOCK (D85) – Development of a Phased Array Ultrasonic Inspection process for Sizewell B (SZB) Dry Fuel Store Multi-Purpose Canister Lid-to-Shell Welds

EDF (D117) – Radiation protection shells

EDF ENERGY NUCLEAR GENERATION (D117) – Fuel Storage Pond Sampling Innovation

MIRION TECHNOLOGIES (D96) – High Temperature Gamma Dose rate detector

ORANO DS (J118) – Escape Game, Serious Game: training by playing games improves human

performance and nuclear safety

ORANO GROUP/CEA (J118) – A new therapeutic approach for the decorporation of transuranium radionuclides using inhaled DTPA

ORANO PROJETS (J118) – Emergency Autonomous and Mobile Long-Range Remote Wireless Monitoring System

ORANO PROJETS (J118) – Remote Foldable Drone for Inspections in Hot Cells inaccessible for Humans

ROSATOM/FEDERAL ENVIRONMENTAL

OPERATOR (D62) – Creation of a unique infrastructure and accident-free unloading of spent nuclear fuel from spent removable parts of reactors with liquid metal coolant of nuclear submarines, preparation and transfer of spent nuclear fuel for reprocessing

SMES AND VSES

ASVAD INTL SL (J26) – ASVAD, the valve to achieve nitrogen-free reactors

BAUMERT (F24) – The smart plug-in

CATHELAINE/OPSENS (J80) – C-Bolt

CEOTRONICS AG (F89) – CT-DECT Multi: The digital communications network

DAES SA/TRANSMUTEX (K17) – Producing Carbon-Free Energy from Nuclear Waste

DELTA SERVICES INDUSTRIELS (C66) – Syscade

FASTPOINT (K143 bis) – VISION

LONGMEN TECHNOLOGY (H40) – POCT (Passive Overcurrent Trip System) Nuclear Safety Management

PIERCAN SAS/IDEALEX (K130) – Secure and quick glove change with ejector ring system STIC

137

entries in the
2021 awards

84

exhibitors
submitted
entries

41%

of entries
came from
SMEs/VSEs

55%

of entries were in
Products
& Services

SKILLS & KNOWLEDGE MANAGEMENT

BIG COMPANIES AND MID-CAPS

ASE EC (D62) – System of training and adaptation of young specialists in the Engineering Division of ROSATOM State Atomic Energy Corporation

BOCCARD (D95) – “DO IT RIGHT THE FIRST TIME”

🌐 **CEA/FRAMATOME (D124)** – Create your MOOK

CEA-INSTN/CEA/DRT (D124) – EVOC – the Enhanced Virtual Open Core

EDF (D117) – A virtual reality training course that combines safety and performance

EDF ENERGY/CYCLIFE UK (D117) – Hunterston B: Large Component Feasibility Studies

EDF ENERGY NUCLEAR GENERATION (D117) –

Hunterston B: Lifecycle Asset Management Plans

JSC ‘CONCERN ROSENERGOATOM’ (C38) – Transformation of innovation management process of the integrated management system at Rosenergoatom JSC

JSC ‘CONCERN ROSENERGOATOM’ (C38) – Digital Atom.WhiteNet. Emulator for PR-teams

ORANO DS (J118) – Virtual Reality simulation-based training to improve the performance and safety in nuclear activities

🌐 **ORANO GROUP (J118)** – COOC (Corporate Online Open Course): Orano Nuclear Fuel Cycle Process

ROSATOM/RADON (D62) – Innovation center for nuclear knowledge

ROSATOM (D62) – RECORD Mobile

🌐 **ROSATOM CORPORATE ACADEMY (D62)** – Rosatom for Rosatom knowledge transfer project

TECNATOM (H37) – SOUL

URENCO (C10) – The Richie Education Programme

SMES AND VSES

MECAPOLE ENERGIE (H86) – ESPN - DESP Heat exchanger

OREKA INGÉNIERIE/INSTN (K134) – OSIRIS

SICA NUCLÉAIRE (D33) – Bringing the RCC-E to a wider audience



ICON DESIGNATES SHORTLISTED COMPANIES

Award-winners will be announced at 5pm on Day 1

OPERATIONAL EXCELLENCE

BIG COMPANIES AND MID-CAPS

ASSYSTEM (D53) – DeepREXT for automatic requirements extraction, classification and rationalization

ATOMENERGOMASH (D62) – Methodology of using information systems in requirements, configuration and change management

ATOMENERGOMASH (D62) – Application of digital methods for management of the life-cycle stages of the main equipment of the reactor plant: Reactor Coolant Pump Set GTsNA-1753

BOCCARD (D95) – BocTrack

CORYS/FRAMATOME (F124) – ELVEES – Early Launch of Validation via an Evolving Engineering Simulator

🌐 **DASSAULT SYSTEMES/EDF (F54)** – 3DEXPERIENCE - Plant Conformance and Quality

DEF (H68) – DEF Network collaborative approach

🌐 **EDF/DSP S.A.S (D117)** – Stop Corrosion

INGÉROP CONSEIL & INGÉNIERIE (D79) – Industrial architecture

JSC ‘CONCERN ROSENERGOATOM’ (C38) – Machine-learning mobile voice translator fully complying with industry security requirements

🌐 **NORD LOCK GROUP (K29)** – Hydraulic closure systems

ORANO DS – Video inspection and object recovery using an underwater drone

ORANO GROUP (J118) – Additive manufacturing applied to obsolescence management at Orano Tricastin plant

ORANO PROJETS (J118) – A pit stop at the heart of the La Hague process

URENCO (C10) – The Multi-Purpose Cascade (MPC)

WESTINGHOUSE/OMEXOM NDT (D54) – Piping – Internal Diameter (ID) automated multi technics Non-Destructive Examination (NDE)

SMES AND VSES

INGERIS CONSULTING (H90) – PANDORE software

MECAPOLE ENERGIE/BETRI (H86) – On-Site Specific Repair

🌐 **MONTEIRO/ITECHCANA (D23)** – CRYOCONTROL

OAKRIDGE SAS/EDF - UNIE/GMAP (J143) – NESTERS: Nuclear Ex-core instrumentation sysTEm (Rpn) System App

🌐 **SITEFLOW (D18)** – Siteflow

TECHNODOC (L8) – GDT (with Tii)

PRODUCTS & SERVICES

BIG COMPANIES AND MID-CAPS

APAVE (J100) – Business Lines Nucléaire

ASSYSTEM (D53) – Parametric Virtual Model (PVM)

ASSYSTEM ENGINEERING AND OPERATION SERVICES (D53) – Optimizio

ASSYSTEM ENGINEERING AND OPERATION SERVICES (D53) – GDI : Global Data Inquire

BERTIN TECHNOLOGIES (J76) – AB100 SCORPIO, a SaphyRAD probe

🌐 **BERTIN TECHNOLOGIES (J76)** – SaphyGATE GN: Radiation portal monitor for Special Nuclear Materials detection

BOCCARD (D95) – OPTIM Technologies - LMT1 machine

BUREAU VERITAS EXPLOITATION SAS (J90) – Certification of Additive Manufacturing for Nuclear Use

CEA/ORANO (D124) – INSPECT

CEA/ARL (D124) – MAUD, Autoradiography, alpha beta camera

DEF (H68) – DEF Fireye smart camera for smoke & flame detection through image analysis

EDF/RiXPer (D117) – Gri-L (linear fire resistant system)

EDF ENERGY R&D UK CENTRE/NNB GENERATION CO (SZC) (D117) – Nuclear Energy Hub

ENSA (H33) – Development of tools, procedures and welding technologies, qualification, testing and documentation for the Vacuum Vessel Assembly Welds

FRAMATOME/INTERCONTROLE (F124) – HEmispherical Light Oriented Sensor - HELIOS

🌐 **FRAMATOME (F124)** – QuarTec Coating Technology

GD ENERGY SERVICES (H110) – VIGIA SYSTEM: Optimising control and monitoring of materials entering in Foreing Material Exclusion (FME) zones using RFID technology

GE STEAM POWER (J70) – PULSAR generator inspection technology

INGÉROP CONSEIL & INGÉNIERIE (D79) – Digital immersion for the realization of 3D reinforcements

INGÉROP CONSEIL & INGÉNIERIE (D79) – ScredIn - Secure digital engineering 4.0

KRANTZ GMBH (G142) – Mobile Re-cleanable Filter Systems RHF hightec

MIRION TECHNOLOGIES (D96) – ASGS - an innovative method for waste characterization

NORD LOCK GROUP (K29) – Superbolt Load Sensing Tensioner

NUVIA (D71) – NuVISION on the fly

ORANO DS (J118) – Anemone: Universal grabbing tool for restricted environments “When wildlife inspires nuclear engineers”

ORANO GROUP/IRSN (J118) – MIODOSE: The new

generation software to assess doses for internal contamination and to optimize individual monitoring

ORANO PROJETS (J118) – An Electrical Battery Powered by Recycled Americium

REEL (J65) – Inflatable equipment to handle precisely heavy underwater loads with or without crane

ROSATOM/JSC SRC RF TRINITY (D62) – Prototype of the x-ray device with high spatial resolution (min 2 microns) intended for the study of various biological objects

ROSATOM OVERSEAS/ATOMENERGOMASH (D62) – ROSATOM innovative SMR solutions based on RITM-200 reactor: land-based SMR NPP and Optimized Floating Power Unit (OFPU)

SIEMENS ENERGY (H62) – Life time extension of NPP steam turbine rotors

TECHNETICS GROUP (L100) – Helicoflex® Texeal®, High Performance Texturised Metal Seal

TRILLIUM FLOW TECHNOLOGIES FRANCE (J109) – On-site testing innovative solution

URENCO (C10) – The Tails Management Facility (TMF): A sustainable long term solution to closing the nuclear fuel cycle

🌐 **VEOLIA NUCLEAR SOLUTIONS (D80)** – Treatment of Problematic Nuclear Waste Streams - GeoMelt® Vitrification of Reactive Metals

VTT TECHNICAL RESEARCH CENTRE OF FINLAND (C86) – LDR - low-temperature district heating and desalination reactor technology

WESTINGHOUSE ELECTRIC COMPANY (D54) – Main Steam Line Repair

WESTINGHOUSE ELECTRIC COMPANY (D54) – Compressible Thermal Sleeve repair

WESTINGHOUSE ELECTRIC COMPANY (D54) – Successful Swirl Vane replacement

WIKUS-SÄGENFABRIK (B27) – WIKUS band saw blade technology - Your competent and powerful partner for efficient dismantling

SMES AND VSES

ABGX S.A.S (L23) – ABGX

🌐 **AVNIR ENERGY/AZUR DRONES (M93)** – SK-DIZI (Surveillance System for Ionized Zones)

AXS INGENIERIE (J16) – Vigilev™ - Assessment of integrity for secured cranes in nuclear industry

BRAUN RÜCKBAUTECHNOLOGIEN/IP-SYSTEMY (H76) – BRAUN Bridge Saw

BRAUN RÜCKBAUTECHNOLOGIEN/NUCLEAR ENGINEERING SEIBERSDORF (H76) – BRAUN Drum Disassembling Machine for Radioactive Waste

DAMAVAN IMAGING (L25) – 2D/3D compton contamination mapping

DAMAVAN IMAGING (L25) – Binocular Compton Camera: The sensitivity of a Germanium but with an Image

ERMES ELECTRONICS (M68) – Hardened camera without refresh time

FASTPOINT (K143 bis) – NUCLEOT - Saas

FASTPOINT (K143 bis) – NUCLEOT - Screen

FEVDI/ORYS (B98) – Innovative robotic solutions for nuclear reactor cavity decontamination

FIRST SWITCHTECH/STPI (H13) –

Low Consumption Relay for severe environment with power indication by lighting gasket

FIRST SWITCHTECH/STPI (H13) – Ground fault locator

FITTINGO SRL (F41) – ITER project VVPSS forged wye

🌐 **HAPTION (L26)** – Tele Robotics

HTDS (K78) – Detective X HX radioisotope identifier

IDEALEX/VOKKERO (L118) – VOKOVER IP

LATTY GROUPE (K62) – LATTY E 48Z11 LY 1700, EPDM elastomer seal

LATTY GROUPE (K62) – LATTY Packings for Valve and LATTY gaskets

LONGMEN TECHNOLOGY (H40) – High and ultra high voltage circuit breaker product innovation

MAGICS INSTRUMENTS (C66) – Plug&Play radiation-hardened closed loop motion control system.

MANOMETER FACTORY (L14) – Analog LOCA Qualified Pressure Transmitter Safir 2xxx Ns

MANOMETER FACTORY (L14) – Level Transmitter for PAMS Safir 2536 Ns 1(2;3)

MIRAEX (M19) – Harsh environment Photonics Sensor & AI solution for predictive maintenance & monitoring

MY NETWORK DIAGNOSTIC SOLUTIONS (L27) – NL camera

NUKEM TECHNOLOGIES ENGINEERING SERVICES (D62) – Application of FREMES to Characterize and Sort Soil During Site Remediation

OLYMPUS (H19) – iPLEX GAIR

OLYMPUS (H19) – OmniScan Weldsight

OPSENS SOLUTIONS (F28) – Radiation resistant fiber optic differential pressure sensor

ORA (M100) – Portable single/impuls plastic welder/ PAL 400/ ORAtec

OREKA INGÉNIERIE (K134) – HOLOREKA

PROBENT TECHNOLOGY (J129) – Aestal Tubular Connector

RADICS (H48) – RadICS platform

SHAREMUNDO (L24) – sharemundo links - Projet Management Platform

SILÉANE/ORANO (B32) – Kamido: The robotics solution to sort and quantify legacy nuclear waste

TECHNODOC (L8) – DocuMENTIC

inbrief

CHINA URGED TO WORK WITH DEVELOPING COUNTRIES

China should look beyond its borders and work with developing countries to transition to clean energy, Li Junfeng, founding director of the National Centre for Climate Change Strategy and International Cooperation (NCSC), told a recent environmental conference in Beijing.

Quoted by the *South China Morning Post*, he said: "Energy transition around the world has the same goal, which is to reduce carbon dioxide emissions. If countries were to achieve carbon neutrality around mid-century, their pathways should be basically the same... The technologies are highly consistent, so we should pay attention to experience sharing and international collaboration."

MAJOR INVESTORS TO DROP FOSSIL FUEL HOLDINGS

Dutch pension fund ABP, one of the world's largest, will divest €15bn (\$17.5bn) of investments in fossil fuel producers by 2023, a move described by Reuters as a major turnaround. The move by ABP comes as financial firms around the world change their investment portfolios in support of new international climate policies.

FRAMATOME JOINS RWE IN CYBERSECURITY PROJECT

Framatome (F124) has signed a contract with RWE Nuclear of Germany to assist in the development of autonomous cybersecurity at a shutdown nuclear power plant in Germany. The project, which leverages Framatome expertise in safeguards of instrumentation and control systems, is expected to be completed in 2024.

EDF'S SIZEWELL C IN LINE FOR NEW UK FUNDING

The UK government has pledged up to £1.7bn (\$2.3bn) for a new nuclear power plant. *The Guardian* reported the "most likely" project is Sizewell C plant in Suffolk, which is being developed by EDF (D117). The funds would help secure a final investment decision before the end of the current parliament.

'Green' finance calls for a clean record in ESG reporting

The nuclear industry has to be clear in its understanding of ESG (Environmental, Social and Governance) non-financial accounting and the metrics the industry needs to report against to be able to open up access to 'green' finance.

Fiona Reilly, (pictured right) managing director of consultancy FiRe Energy, says the onus is on "every company that wants access to money to look across the lifecycle of their project" to report its performance on greenhouse gas (GHG) emissions, pollution, ethical behaviour, workforce treatment etc.

Reilly, who presents the case for investment in nuclear in a WNE workshop today, led the Generation IV International

Forum (GIF) taskforce that published a report in 2020 establishing how nuclear energy, as an asset class, has the potential to report well against a wide range of ESG. It also highlighted the need for standardised ESG reporting to determine the credentials of all energy companies across their lifecycles and throughout their supply chains.

In the absence of a standardised set of metrics, the GIF adopted those defined last year by the World Economic Forum (WEF) but also mapped the WEF metrics against the Task Force on Climate-Related Financial Disclosures (TCFD) and SASB metrics to ensure that a wide range of metrics were



considered. The GIF report can be viewed as a blueprint for how to set up a company or project to enable that project/ company to report well and to access financing. For example, she says, "you need to have board diversity, stakeholder management, good health and safety practices in offices as well as out on site."

"Well-established projects can report well against a broad range of ESG metrics, so nuclear should be able to access finance to help us meet our net zero obligations."



Nuclear Energy: An ESG Investable Asset Class - Workshop 2 , 13.00 today

Westinghouse thrives on innovation

WNE sponsor Westinghouse (D54) is at the forefront of nuclear research and development (R&D) with such innovations as accident-tolerant fuel (ATF), its eVinci™ micro-reactor and a digital-first mindset to clean energy, all of which are "helping to meet our climate deadlines".

"Today, Westinghouse technology is the basis for approximately one-half of the world's operating nuclear plants," says chief executive Patrick Fragman (pictured).

The Westinghouse AP1000® – "the most advanced and compact of its generation" – is already in commercial operation with four units running in China. "It's clearly the right choice for a century of carbon-free baseload power and it is available now," says Fragman. "We have seen a double-digit cost

reduction learning curve in the four-unit programme in operation in China."

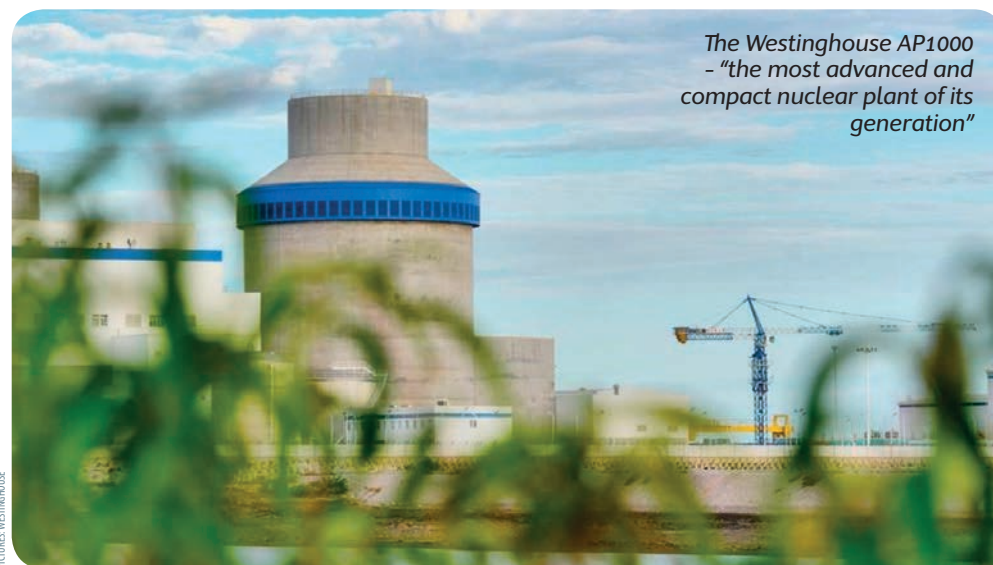
Elsewhere, two AP1000 units are nearing completion at the Vogtle site in the U.S. The AP1000 technology has also been selected for a six-unit project in India and is under consideration by several countries in Central and Eastern Europe, Asia, and utilities in the United States.

"The AP1000 is so small and modular that its footprint is smaller than many of the SMRs being developed and advertised today," says Fragman.

Even smaller is the eVinci™ micro-reactor, which he describes as "a game-changer" for on-grid and off-grid applications. "It will revolutionize the way we power communities and industries in remote areas [and] provide much-needed carbon-free energy solutions for



Above: The "game-changing" eVinci micro-reactor



The Westinghouse AP1000 – "the most advanced and compact nuclear plant of its generation"

stationary and mobile applications."

The eVinci™ reactor core is designed to run for at least six years, eliminating the need for frequent refueling. It has built-in "inherent safety" with automatic emergency shut-down, and is easy to transport. Development is "fairly advanced".

Fragman says Westinghouse teams are "excited" about the endless possibilities that go beyond traditional and nontraditional use of its reactors. For example, Westinghouse is partnering with Canadian medical company Nordion to develop new isotope production technology that will allow Cobalt-60 to be produced in Pressurized Water Reactors.

"As we continue to innovate, we can anticipate other uses for nuclear energy as well."



Learn more about Westinghouse AP1000 reactor technology - today at 14.00 in Workshop 2

Nuclear engines, NPPs could propel space industry

Recent successes by both the US and China in landing spacecraft on Mars have helped rekindle interest in nuclear-powered space travel with all its potential for the nuclear supply chain.

In the UK, Rolls-Royce (D138) and the UK Space Agency recently signed a contract to look into future nuclear power options for space exploration.

In the US, three reactor design concept proposals have received development funding through the Department of Energy's Idaho National Laboratory (INL).

And last week the American space agency

NASA, with the INL, called for proposals by February 2022 to build a nuclear power plant (NPP) on the moon by the end of the decade as part of its Artemis programme to put people back on the moon, and eventually Mars.

US Representative Eddie Bernice Johnson said in a recent debate in the House science, space and technology committee: "For decades, the space community has identified nuclear propulsion as a required and enabling technology for our human exploration goals."

"However, building an operational space nuclear propulsion system is hard and the technical challenges are many."

Rolls-Royce agrees, but although space is a challenging and growing sector, space-based nuclear propulsion has the potential to revolutionise space travel.

Spacecraft powered by a nuclear engine could conceivably travel to Mars in just three to four months – roughly half the time of the fastest possible trip in a spacecraft using current chemical propulsion methods.

It may also solve another energy problem. In the outer Solar System, sunlight gets too dim for solar panels, and other technologies such as fuel cells are often too patchy as a source of energy.



Above: Out of this world – How the fission surface power systems may look on the surface of Mars

180
To date, nearly 180 nuclear reactors
have been shut down worldwide

160
projects globally over more
than 40 years in D&D for Orano



ORANO'S D&D DIVISION FOLLOWS THE WORK

The all-important end-of-life management of nuclear power plants (NPPs) is a growing market where the demand for decommissioning and dismantling (D&D) services is likely to increase over the next decade.

"The worldwide nuclear fleet is ageing," says Alain Vandercruyssen, senior executive vice-president of Orano Dismantling and Services (DS) division (pictured left). To date, nearly 180 nuclear reactors have been shut down worldwide; about 70 additional units are estimated to cease operations by 2025.

"D&D and Waste Management is a small part of Orano's business but we consider it a key challenge for the future of nuclear energy in the industry's drive to manage its liabilities

and not transfer responsibility to the next generations."

WNE sponsor Orano (J118) benefits from a unique position in the market: as an operator, it carries out dismantling operations at its own facilities in France. "Being a nuclear operator ourselves helps Orano understand customers' pains, as we have experienced all the complexity of their situations."

Exporting this expertise was therefore a logical step, and one that has been successful. To date, Orano has worked on 160 projects globally over more than 40 years in the demanding business of D&D.

Vandercruyssen says the most active D&D markets currently are Germany and the US. Other countries such as South Korea and Belgium are also preparing to implement

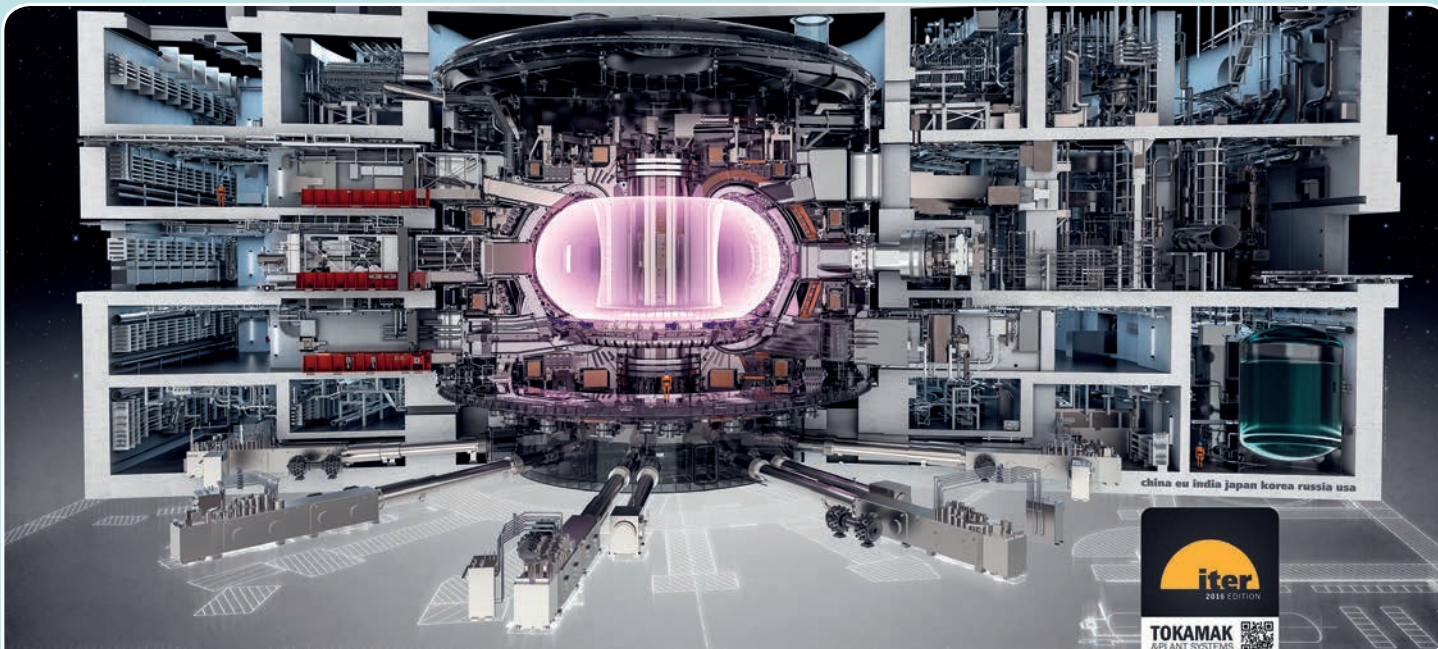
D&D programmes. Nuclear is "an innovative industry" and provides opportunities to pioneer new activities, processes and business models while improving performance and attracting new talent.

Among its recent achievements, Orano has won contracts through joint ventures (JVs) and consortiums in the US, Germany and Japan for dismantling work, and is also active in the UK. Teaming up with partners leverages synergies with local suppliers and builds the best value proposition for nuclear operators.

"We expect there will be more consortiums or JVs with Orano to address the D&D market worldwide," says Vandercruyssen.



Orano capabilities in waste management. Workshop 1 at 15.30 tomorrow



Nuclear fusion projects build on growing interest

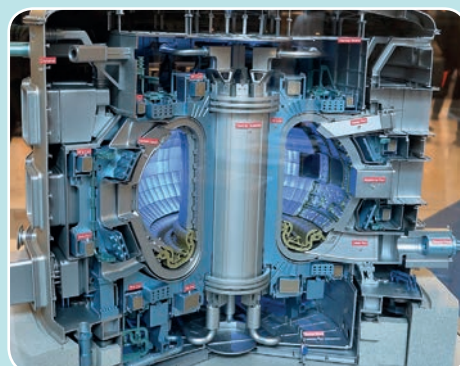
The possibility of harnessing nuclear fusion in a not-too-distant future is gaining momentum around the world, attracting the interest of investors and academics alike, writes Steve Nichols.

Leading the way is ITER (C150), the showpiece International Thermonuclear Experimental Reactor, currently under construction in southern France.

But venture capitalists and billionaire investors are also pouring money into fusion start-ups, with hopes of commercialising fusion power within the next decade. About 20-25 closely held companies backed by the likes of Bill Gates, Jeff Bezos and Peter Thiel are believed to be in the game.

Much of the research focuses on the use of tokamaks, but other technologies are also in the frame.

In the UK, five sites were shortlisted in October as the potential future home of the UK's prototype fusion energy plant, the Spherical Tokamak for Energy Production (STEP). First operations of the government-



backed STEP programme are targeted for the early 2040s.

In France, ITER continues to make steady progress despite challenges including the Covid-19 pandemic. Meeting earlier this month to review progress, the ITER Council noted a number of project milestones. The second of ITER's superconducting magnets, poloidal field coil No 5, has been positioned in the tokamak pit, with fabrication of the remaining coils steadily progressing.

Above: An artist's impression of the showpiece International Thermonuclear Experimental Reactor and (below) a model

Progress is also being made on the vacuum vessel sub-assembly and the cryostat top lid.

Meanwhile, the US's National Ignition Facility (NIF), located at the Lawrence Livermore National Laboratory in California, is using lasers to heat and compress a small amount of hydrogen fuel to induce nuclear fusion reactions.

In August 2021, using nearly 200 laser pulses lasting less than nine billionths of a second, scientists at NIF believed they had achieved a major milestone.

The target was a small gold-uranium cylinder and the burst of energy threw off more than 10 quadrillion watts of fusion power — about 700 times the generating capacity of the country's electrical grid and eight times better than experiments conducted last spring.

Even non-nuclear Australia is getting in on the act. A startup called HB11 Energy claims to have discovered a simpler and cheaper way to create a fusion chain reaction using hydrogen and boron atoms. So far it's still a theory.

ANDRA SHARES WASTE MANAGEMENT EXPERTISE

WNE sponsor Andra (D61) sees part of its global mission as sharing — nationally and internationally — the experience it has gained as France's national agency for radioactive waste management.

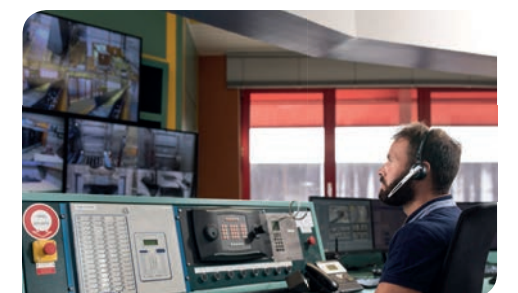
Over the years, said Daniel Delort, Head of the International Affairs Department at Andra, cooperation "has intensified through increasing and dense institutional exchanges and also thanks to our foreign business activities based on bi-lateral or multi-lateral agreements, and commercial contracts.

"All of these enrich our practical knowledge, enhance our scientific and technical competences and contribute to a safer global management of radioactive waste."

Andra's international activity takes several forms, but at its core is the vast experience gathered through years of designing and operating disposal facilities, conducting large waste management projects, and the clear mission of sharing this knowledge with customers and partnering public bodies, Waste Management Agencies (WMOs) and companies engaged in the safe and efficient management of radioactive waste and materials.

In October, for example, Andra finalised a key contract with KA Care, part of Saudi Arabia's King Abdullah City for Atomic and Renewable Energy, to support the company on radioactive waste management challenges.

Andra conducts its international activities through the International Affairs Department, part of its Dialogue and Prospective Directorate. This department uses the resources of more than 650 staff, 350 experts and experienced engineers to actively participate in cooperation, assistance or commercial operations.



Andra has years of experience designing and operating disposal facilities

DAY ONE Programme highlights

LIVESTREAM / REPLAY CONTENT

Look for this icon to
watch this content
live or on replay
via the WNE LIVE &
CONNECT platform



Venue: Panel Discussion room
unless otherwise stated

-  **09.30-11.30**
Opening ceremony
and inaugural tour
-  **11.30-12.30** Start-up pitches;
Start-up Planet
-  **13.30-13.45** Speech by
WNA director general
Sama Bilbao y León
-  **14.00-14.50**
EDF: Young people
interview Jean-Bernard Lévy
-  **15.00-15.50** Orano: The
growing importance of
corporate social responsibility
and the response of the
nuclear industry
-  **17.00-18.00** WNE 2021
Awards ceremony
-  **18.00-19.00** WNE 2021
Happy Hour, Hall 7

PAVILIONS: FLAG-WAVING FOR NUCLEAR INDUSTRIES

Seventeen countries are exhibiting in national pavilions at WNE 2021 – a strong sign of the exhibition's importance as a forum for the international nuclear industry to meet and do business.

Clustered under the various flags visitors will find national trade organisations as well as individual companies, large and small. France, as host nation, has by far the largest area with more than 130 companies sharing the space managed by Gifen.

Among those expected to host VIP delegations during the event are the pavilions of Argentina, Canada, Korea, Poland and the UK.

A spokesman for the Argentinian pavilion organiser, INVAP, said exhibitors see WNE as an opportunity to "strengthen Argentina's position" in the civil nuclear industry by increasing cooperation with other international nuclear organisations and "promoting our technology to the world".

The Canadian Nuclear Association (CNA) spokesperson expressed a similar sentiment, saying WNE "provides a key forum for Canada to highlight its ongoing nuclear achievements and continue building partnerships with the global nuclear industry to help reach international climate targets."

For Germany, WNE provides an excellent opportunity for mainly medium-sized companies from German-speaking countries to present their nuclear know-how. The



Flashback to WNE 2018 where companies exhibiting in the French pavilion attracted a steady stream of trade visitors

event "will also contribute to strengthening international networking and technical exchange among nuclear experts," said a spokesman.

He added that events such as WNE "support the future competitiveness of the German nuclear industry" whose reputation for quality products and services offers "hope for the future" despite the planned phase-out of nuclear energy in Germany itself.

Romania is represented by Romatom, the trade association for its fledgling nuclear industry. Teodor Chirica, Romatom's president emeritus, said WNE "is a gateway to the world."

"As we witness a European revival of the

nuclear industry, led by countries which include nuclear objectives in their national energy plans and recovery strategies, we believe that the nuclear industry must solidify its supply chain in Europe, increase the number of qualified jobs and economic positive impact, preserve and transfer knowledge to new generations of specialists and be at the forefront of the transition to a net zero economy.

"To develop its projects, Romania aspires towards partnerships under the North Atlantic umbrella, focusing both on future developments on its Cernavoda site, as well as on the new small modular reactor (SMR) technology."



Program of events of the day Stand J100

11h30 / Design Assessment

Added value of design assessment and associated numerical analysis by an independent third party

14h00 / Product Qualification

Enhancement of the Sopemea range test capabilities

15h30 / Construction Site : HSE & Construction control

«Nuclear Project Health & Safety & Nuclear Construction Inspection» solutions developed on the ITER project

**Supporting you in France
and abroad for an efficient
and safe nuclear industry**

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JOIN BUREAU VERITAS FOR A CEREMONY WITH OUR NEW ISO 19443 CERTIFIED COMPANIES

AT WNE, BUREAU VERITAS IS GLAD TO GATHER ITS CUSTOMERS AND PARTNERS ON ITS BOOTH J90, THE 1ST OF DECEMBER, FROM 12 PM TO 13 PM.

This event will be a unique way to meet and exchange with representatives from major companies (EDF EPR2, SEIMAF, SCHNEIDER ELECTRIC and FIVES NORDON), newly certified according to ISO 19443 standard. Published in 2018, ISO 19443 is being recognised by licensees and major contractors. It becomes a referential in many procurements, intended for the whole nuclear supply chain.

Visit the Bureau Veritas booth. You will have a unique opportunity to discuss the benefits, cornerstones, rules and modalities of the ISO 19443 certification. Ask questions and share feedbacks with leading companies as well as suppliers that made the choice to use ISO 19443 as their management guideline.

Participate in a certificate presentation.
And share with us a nice moment during a cocktail afterwards.

Contact at WNE :
Victoria.Larina@bureauveritas.com
or +33 7 76 57 77 72

