



IDOM

Nuclear Services



IDOM

Our commitment, your success

About IDOM

We are an independent company providing consulting, engineering and architecture professional services, united in our way of doing things, shared objectives, at the service of our clients.

○ €369M
turnover

○ 66
years

○ 125
countries

○ 5125
professionals

○ 45
offices

○ 968
partners

Official figures from 2023

Our pillars

Our activity is guided by those elements that add **value to the professional and solve the challenges of our clients.**

- We seek **excellence**.
Our way of working is to do the best we can.
- We believe in the **power of human relationships** as a motivating force to overcome difficulties.
- We are passionate about **solving problems** that no one has solved before.
- **Innovation** is present in each of our actions.
- **Sustainability**, as the focus of our activity that maximizes the value for the environment, people, local communities and the planet.



If you want to learn more about our operations and projects, scan the QR code and watch our corporate video.



Our activity

We work in the fields of consulting, engineering and architecture, with **multidisciplinary teams**, **developing sustainable projects that contribute to a more livable world.**



- **Industry**

- Nuclear services
- Oil & gas
- Metals & minerals
- Energy
- Manufacturing
- Environment
- Advanced analysis

- **Infrastructure**

- Transport & mobility
- Rail systems
- Ports
- Airports
- Water
- Telecommunications

- **Architecture**

- Sports & stadiums
- Health
- Corporate
- Hospitality
- Residential
- Mixed use
- Aviation

- **Consulting**

- City & territory
- Digital transformation
- Strategy & operations
- Innovation & competitiveness
- Healthcare



IDOM Nuclear Services

“ Striving to develop reliable, net-zero emissions, sustainable and safe energy. This is our part in protecting our natural environment and making our world a better place to live. ”

Ranked among the top 10 global nuclear engineering firms, IDOM has been involved in the nuclear industry since the development of early nuclear generation projects since the late 70s. With over 40 years of experience, IDOM has remained at the forefront of the industry.

IDOM Nuclear Services - IDOM NS - a specialized division of the wider IDOM group is currently delivering projects in more than 30 countries.



IDOM NS offers a dedicated and diverse international team, committed to high levels of performance, ensuring safe and effective project planning and delivery.

Our merger of international experience and multidisciplinary knowledge enables a holistic approach that ensures the clients' satisfaction.

We can seamlessly integrate into the client's team or provide specialized services from our own offices.



An independent and highly skilled nuclear quality assurance team guarantees the safety of the work we undertake

Nuclear quality & safety

IDOM has an Integrated Management System certified by Lloyds Register in accordance with:

- **ISO 9001:2015** - Quality Management System.
- **ISO 14001:2015** - Environmental Management System.
- **ISO 45001:2018** - Occupational Health & Safety Management System.

Additionally, IDOM has developed a Nuclear Services Management System and a Nuclear Quality Assurance Programme with a focus on meeting our clients' needs and satisfying the primary worldwide regulations, codes, and standards applied in the field of nuclear energy. These systems have undergone successful audits against the following standards:

- 10CFR50 Appendix B to Part 50
- 10CFR21 Part 21
- ASME NQA-1
- IAEA No. GS-R (Part 2)
- ISO 19443.
- UNE 73400 Series

Our nuclear safety culture is aligned with the best practices in the sector and from operational experience.

Ensuring nuclear safety lies at the heart of IDOM NS's activities. The process involves continuous identification and assessment of hazards and risks to mitigate potential issues through preventive measures.

Our nuclear safety culture is shaped by specific project activities, processes, and organizational practices. All employees play a vital role in this approach driven by management. Feedback is utilized to further enhance a culture of safety, while new colleagues are introduced to it during onboarding training.

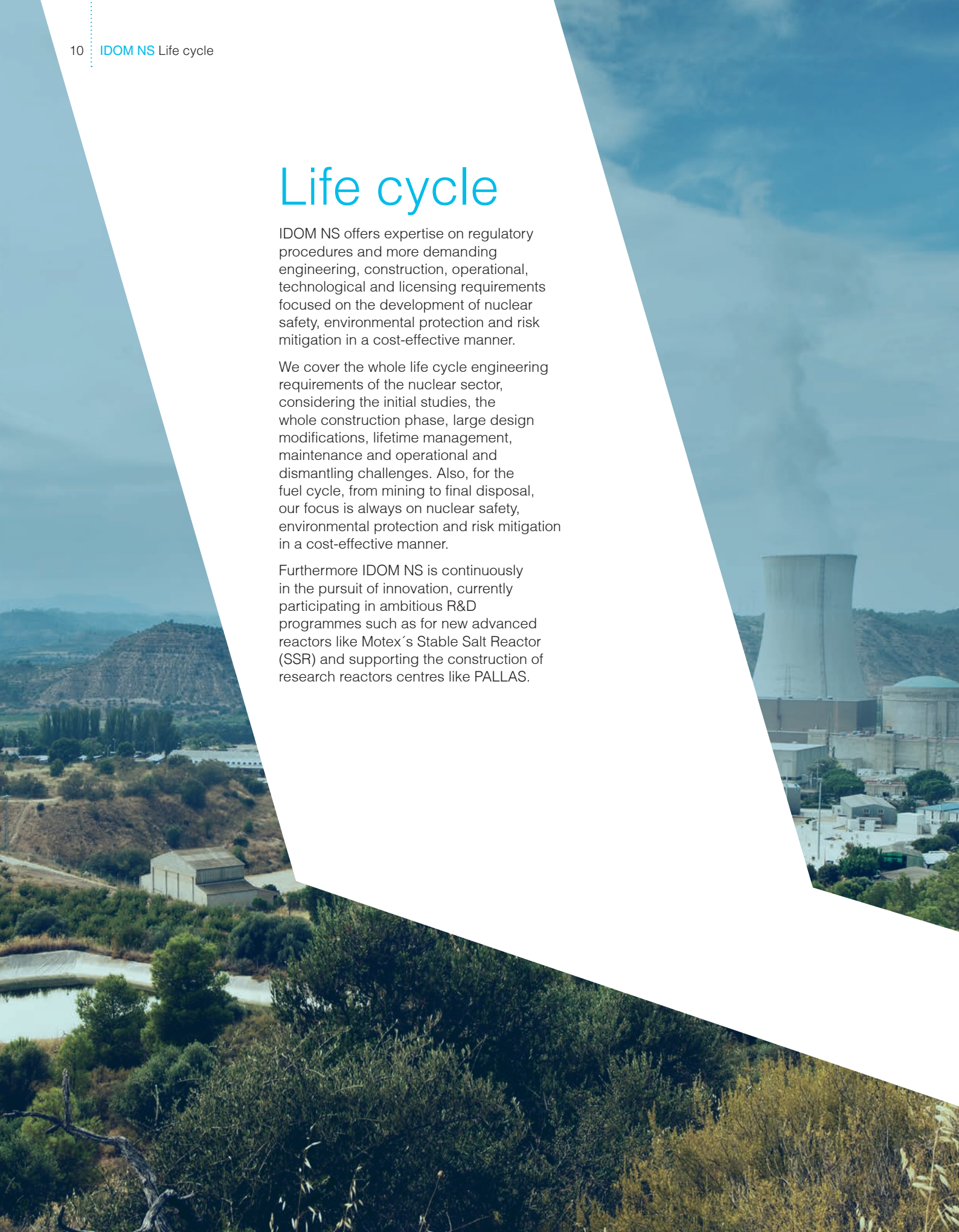


Life cycle

IDOM NS offers expertise on regulatory procedures and more demanding engineering, construction, operational, technological and licensing requirements focused on the development of nuclear safety, environmental protection and risk mitigation in a cost-effective manner.

We cover the whole life cycle engineering requirements of the nuclear sector, considering the initial studies, the whole construction phase, large design modifications, lifetime management, maintenance and operational and dismantling challenges. Also, for the fuel cycle, from mining to final disposal, our focus is always on nuclear safety, environmental protection and risk mitigation in a cost-effective manner.

Furthermore IDOM NS is continuously in the pursuit of innovation, currently participating in ambitious R&D programmes such as for new advanced reactors like Motex's Stable Salt Reactor (SSR) and supporting the construction of research reactors centres like PALLAS.



Throughout the entire
life cycle of nuclear
energy & research



Business lines

IDOM NS addresses the current challenges of delivering nuclear new build while supporting existing nuclear operations and safely decommissioning legacy infrastructure.

We offer core services that fully integrate environmental, social and financial sustainability into the projects we deliver in the nuclear sector throughout the asset life cycle.

Working across the board



Nuclear
consultancy



New
build



Operation &
maintenance



Back end



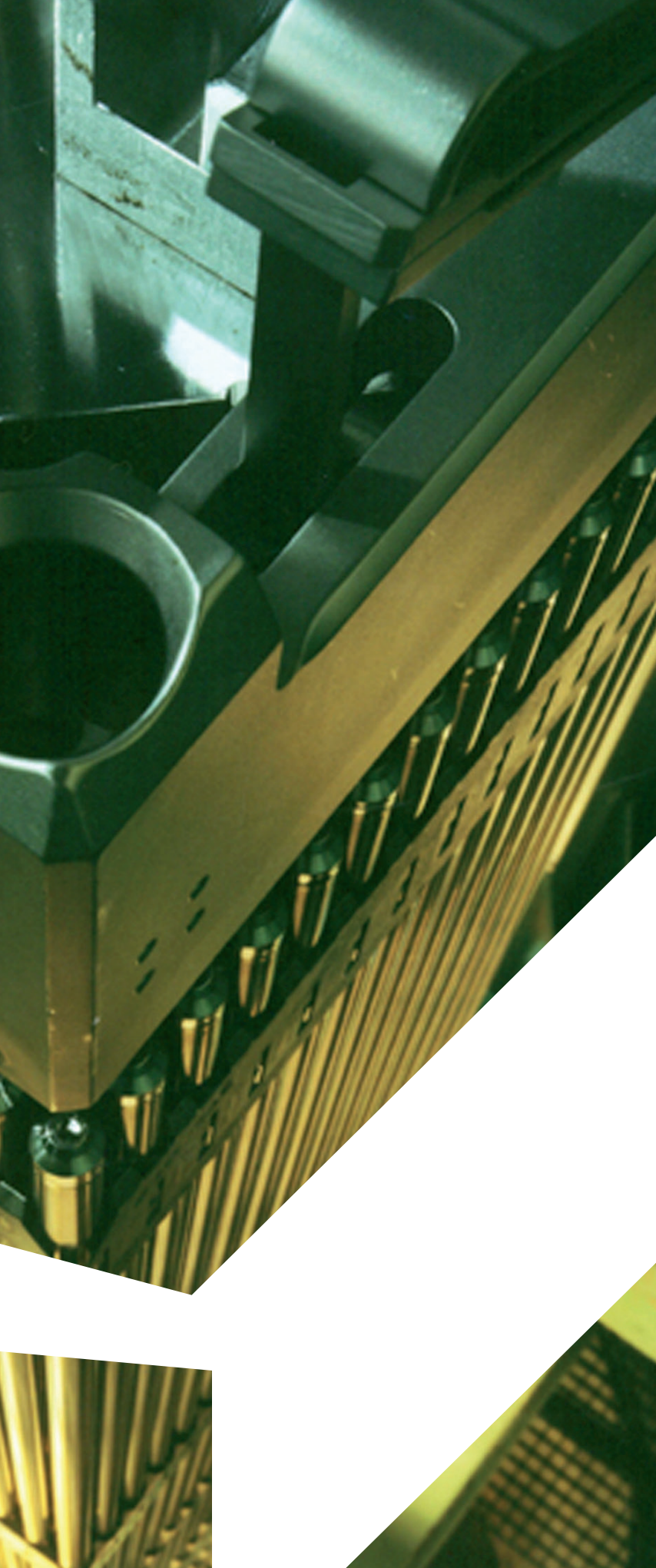
Fusion



Small modular
reactors



Other nuclear
applications



Main services

- **Strategic consultancy**
Offering professional expertise and guidance to ensure the efficient planning, execution and management of nuclear-related projects.
- **Operational consultancy**
Technology and engineering services to deliver sustainable, efficient, safe and profitable operations and maintenance.
- **Project management consultancy**
Assisting our clients in managing the most complex international projects using the most advanced tools and methodologies.
- **Support to the owner**
A trusted ally to help clients deliver their projects while meeting predetermined KPIs.
- **Design & engineering**
Value-added engineering that strives to achieve exceptional project outcomes for clients.
- **Advanced analysis**
Using the most advanced methods, analysis and tools to solve the world's most critical problems.
- **EPCM**
By providing expert advice and meeting our clients' specific objectives and requirements, we enable our clients to implement successful and efficient nuclear construction projects.
- **Turnkey solutions**
Delivering comprehensive turnkey projects, focusing on engineering, procuring and constructing, ensuring high quality results.
- **Safety & licensing**
A complete range of services for assessing safety and obtaining the necessary licenses to meet the demands of nuclear regulatory bodies.
- **Quality assurance**
Assisting the client in meeting the highest nuclear quality assurance standards and legislation.

IDOM NS supports all members of the nuclear ecosystem in overcoming the challenges involved in initiating a nuclear programme, ensuring success.

Nuclear consultancy

IDOM NS offers bespoke strategic, technical, and financial advisory services across several nuclear business sectors, encompassing technology, economics, safety, regulations, and organizational structures. Our services are tailored to the diverse perspectives of stakeholders involved in the development of a nation's nuclear program.

We specialize in offering assistance to government entities in making decisions at any stage of the nuclear programme. This includes defining the country's strategy roadmap, planning the territory, logistics, and electrical grid infrastructure, as well as engaging stakeholders and gaining public acceptance. We strive to maintain objectivity, use clear and concise language, adhere to conventional academic structures, employ formal register, and ensure grammatical correctness.

Regulatory authorities depend on IDOM NS's assistance to advance safety requirements and guides and to enhance their capacities and organisational structure.

Technical and economic feasibility studies, independent technology solutions assessment (optioneering), site selection, environmental assessments, asset management and digital transformation are advisory services that aid in the development of new infrastructure in the country or the optimization of existing infrastructure.

IDOM NS provides valuable support to local suppliers in defining their market business plans and assessing the business value chain.





Some projects:



● NATIONAL NUCLEAR REGULATOR. SOUTH AFRICA

EC. Gap analysis on ageing management for Koeberg NPP and Safari-1 RR and regulator training in ageing management program review.



● SINOP NPP. TURKEY

EUAS ICC. Technical advisory services to develop nuclear engineering skills for a NPP operator.



● NUCLEAR PROGRAMME. CHILE

CCHEN. Strategic Evaluation and Consultancy for the Safe Implementation of a Nuclear Power Program: Model and Cost Estimation Study for a Nuclear Power Plant.



Safety, sustainability, risk mitigation and cost-effectiveness are our primary objectives. Our vision is to assist both our clients and society in achieving a future with lower carbon emissions and universal access to energy by participating in the development and construction of new power facilities.

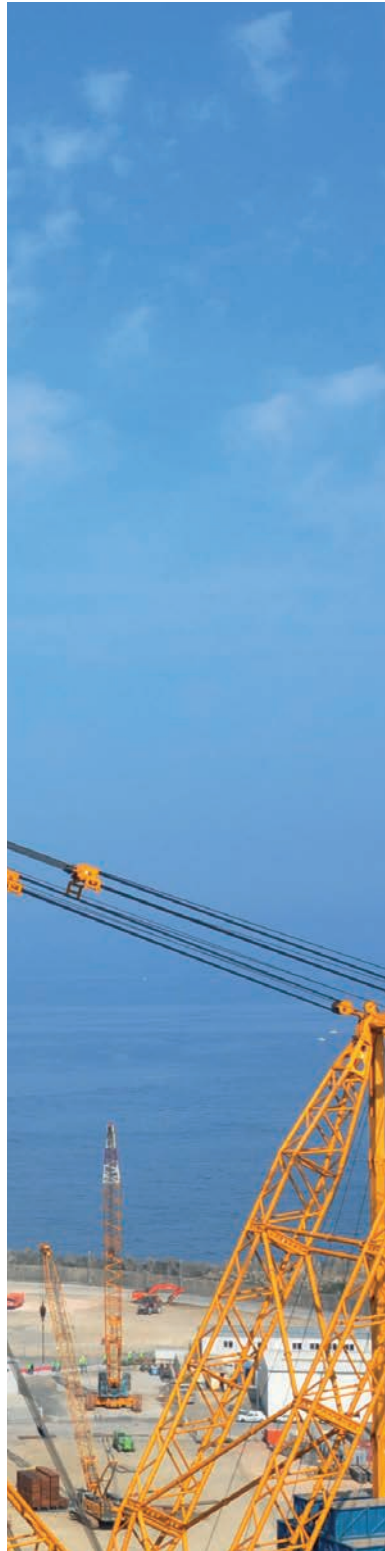
New build

IDOM NS provides services for every stage of the Nuclear New Build, ranging from front-end loading to project management:

- **Design & detailed engineering:** civil, mechanical, electrical, I&C.
- **Advanced analysis:** thermal hydraulics, Computational Fluid Dynamics (CFD), Finite Element Analysis (FEA), fire simulation, ionizing radiation, neutronics, seismic...
- **Safety analysis.**
- **Procurement management.**
- **Construction management:** via EPCM or EPC.
- **Commissioning support.**
- **Planning.**
- **Economic control.**
- **Risk management.**
- **Interface management.**
- **Quality assurance.**

We cover all the essential components and areas of expertise required for the successful management of large, complex projects in order to achieve objectives effectively and efficiently.

Contemporary digital technologies present novel opportunities to enhance the competitiveness of services provided and augment the experience of project delivery, including the employment of Building Information Modelling (BIM) methodology.



Some projects:



- **KUDANKULAM 3&4 NPP. INDIA**
RINFRA. Design and engineering of structures, grade slabs and auxiliary buildings.



- **VANDELLOS NPP. SPAIN**
ANAV. Design, construction and commissioning of the EJ system (technological safeguards cooling water system).



- **HINKLEY POINT C. UK**
CONFIDENTIAL. Basic and detailed design of balance of nuclear island heat exchangers.

Operation & maintenance

In addition to the need for new build capacity to be brought online, there is also a need to maintain the current fleet and to continuously improve its operations and safety. Our spectrum of activities covers a wide range of projects, from minor component or subsystems and systems analysis to major design modification packages within different vendors technology: III/III+, SMR and advanced reactors.

IDOM NS delivers most of the technological and engineering activities inherent to a nuclear facility in operation, ranging from geological and technological studies and site evaluation against extreme natural events, to the development of basic and detailed engineering, equipment purchasing, construction, installation and commissioning of new safety systems of the plants through EPCM or EPC approach.

- **Life management** (ageing management, life management and long-term operation) based on 10CFR54, NUREG-1800 (PSR) and NUREG-1801 (GALL), SRS-82 (IAEA-IGALL) and AP-913.
- **Asset management.**
- **Obsolescence solutions:** Commercial grade dedications, requalification, regulatory and/or material reconciliation, reverse engineering, generation of standards, etc.
- **Stress tests and IPEEE.**
- **Maintenance & operation support.**
- **Design modifications:** both engineering solution from conceptual to detailed and EPC and turnkey integral approach.
- **Design & detailed engineering:** civil, mechanical, electrical, I&C.
- **Advanced analysis:** thermal hydraulics, Computational Fluid Dynamics (CFD), Finite Element Analysis (FEA), fire simulation, ionizing radiation, neutronics, seismic...
- **Reactor, process & equipment engineering.**
- **Operational safety studies:** thermal hydraulics, neutronics, fire engineering, internal floods and external hazards.
- **Licensing support:** PSR and new regulations analysis.
- **Training.**



After four decades of delivering diverse projects, IDOM NS merges sustainability and innovation to steer our clients towards safe, reliable, sustainable and efficient operations

Some projects:



- **LAGUNA VERDE NPP. MEXICO**
CFE. Containment building thermal hydraulic analysis.



- **SPANISH NUCLEAR FLEET**
Ageing management, life management and long-term operation in Spanish NPPs.



- **KRSKO NPP. SLOVENIA**
NEK. Turnkey project of the emergency control room in Krško NPP.

Providing safe, sustainable, and cost-effective solutions for the decommissioning of facilities and disposing of radioactive waste and spent fuel is pivotal to future promotion of nuclear power.

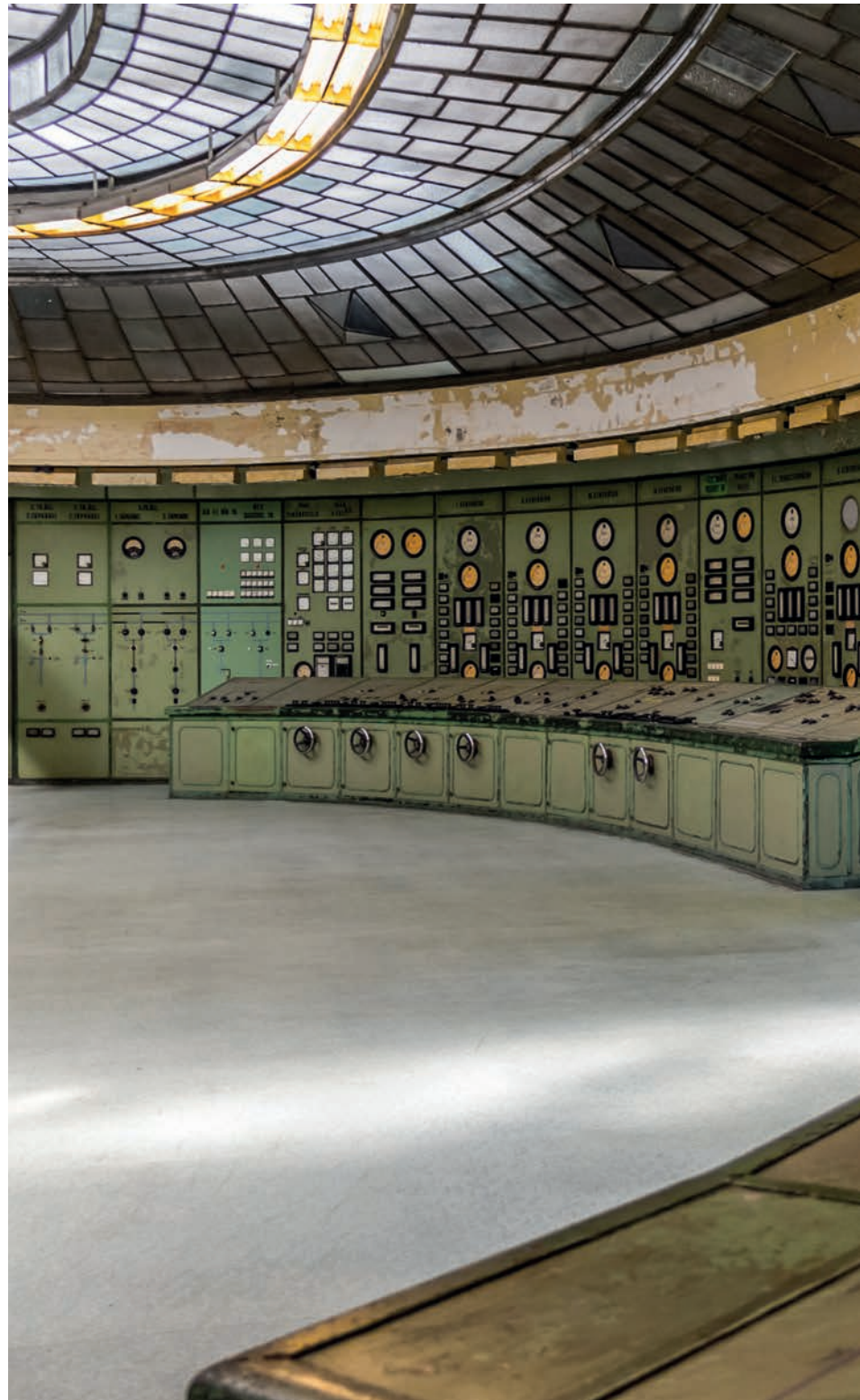
Back end

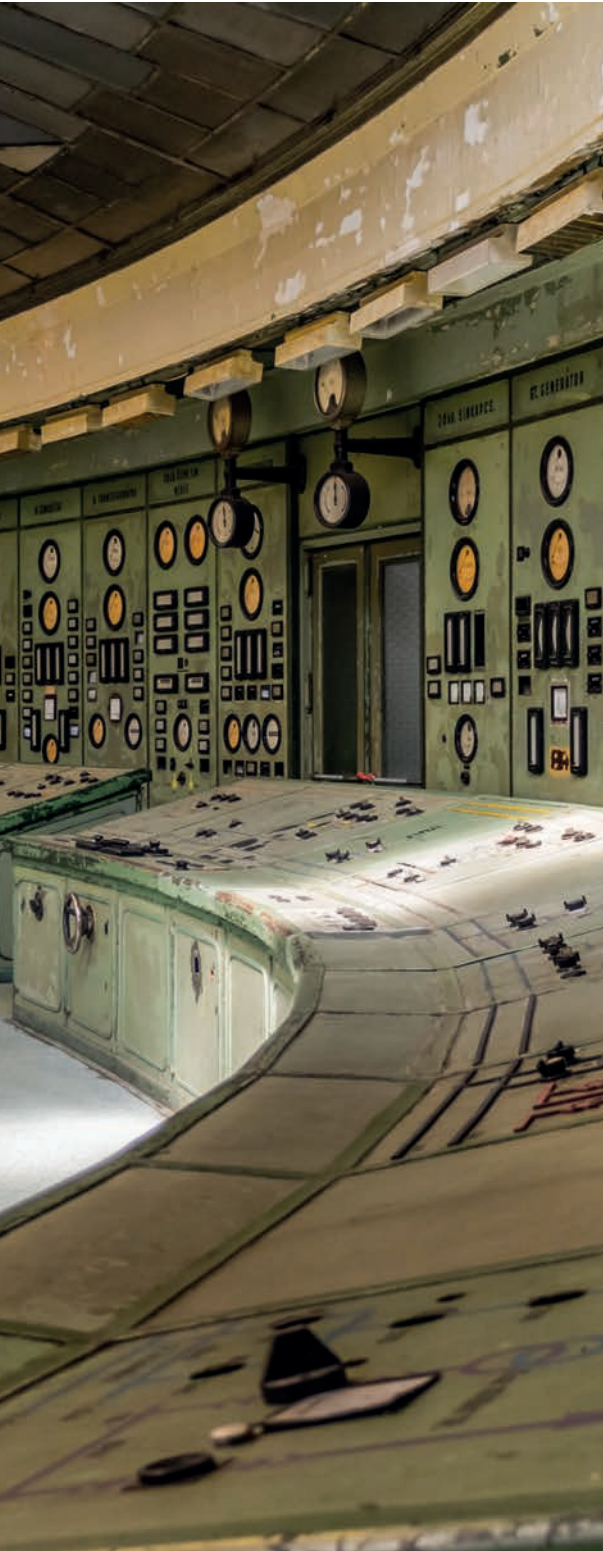
The use of nuclear energy has an ethical dimension: the generations that have benefited from its use should take responsibility for the final stage of its life cycle, rather than passing it on to a future generation.

IDOM NS offers bespoke engineering and technical design services to support clients in overcoming the challenges associated with the end stage of nuclear facilities.

Building on our vast understanding and comprehensive methods surrounding the management of nuclear waste, we provide expert consultancy services to assist with strategic planning and managerial aspects. These include project management, risk assessment, and the analysis of safety-cost-benefit. We also offer expertise in knowledge management and the optimisation of organisational processes through the implementation of new digital tools.

IDOM NS has extensive experience in regulatory procedures, as well as demanding operational, technological, and licensing requirements. This expertise is based on our cooperation with international Nuclear Safety Regulators and Waste Management Organizations (WMO) over the past 40 years. We have developed a deep understanding of these fields and apply it to provide effective solutions for our clients. This extensive experience in delivering professional services for the design, engineering, licensing, and management of decommissioning, as well as handling, treatment, and storage of radioactive waste and spent nuclear fuel, positions IDOM NS as a highly valuable partner.





Dismantling & decommissioning

Many nuclear facilities will be closed over the coming decades, requiring safe and effective decommissioning and the availability of these sites for new uses, including the potential construction of new nuclear facilities.

Our end clients, including NPPs, research reactors, and laboratories with a shared commitment to environmental safety and risk reduction, can benefit from our comprehensive range of services.

Spent nuclear fuel

The management of spent fuel is a crucial part of the nuclear fuel cycle, with a focus on safety, security, and sustainability. This includes storage after withdrawal from the core of the nuclear power plant, followed by processing/recycling or final disposal.

IDOM NS offers comprehensive design and engineering solutions for dry storage facilities for spent fuel, using different canisters and storage systems technology that is currently being utilized at specific operational sites.

Radioactive waste

The management of radioactive materials must ensure the safeguarding of workers, the public and the environment from the adverse impacts of ionizing radiation now and in the future.

IDOM NS has extensive expertise in managing radioactive waste, with world-wide references in waste classification, treatment, segmentation, waste stream feasibility studies, technical application and procedures for decontamination, sorting, storage, packaging and shipment of waste.

Some projects:



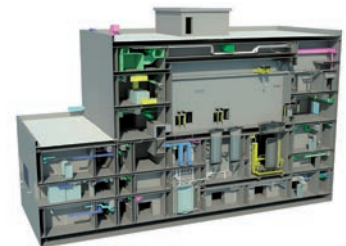
● KOZLODUY NPP. BULGARIA

EBRD. Technical design and update of SAR for modernization of "SD RAW- Kozloduy" to receive and process decommissioning RAW.



● SM GAROÑA NPP. SPAIN

ENRESA. Engineering services for Garoña NPP decommissioning.



● CSFSF. SPAIN

ENRESA. Design and engineering of the cask maintenance facility at the Central Spent Fuel Storage Facility (CSFSF).

Advanced and small modular reactors represent the future of nuclear energy, offering increased safety, scalability, and financial efficiency compared to current nuclear power generation technologies, playing a crucial role in mitigating climate change, and addressing the complex global energy landscape.

Small modular reactors

Small modular reactor (SMR) technologies require significantly less financial investment than large reactors. This is due to their basis in Gen-IV principles, incorporating inherent safety features and passive systems that drastically reduce capital expenditure (CapEx) and operating expenditure (OpEx) costs, resulting in a much lower levelised cost of electricity (LCOE). Further advantages of this technology include its modularity, enabling rapid deployment due to economies of scale, its flexibility in catering to an unpredictable power demand from weak grids, and its adaptability to be sited in areas where building traditional reactors presents difficulties, such as in remote or temporary locations.

Within its range of services, IDOM NS provides professional support, covering feasibility studies, detailed design, as well as conceptual, basic, and specialized technical and advisory assessments for this type of technology. IDOM NS focuses on the following areas:

- **Design & detailed engineering**, civil, mechanical, electrical, I&C.
- **Thermal-hydraulics analysis** of normal and emergency cooling loops.
- **Advanced analysis**, thermal hydraulics, Computational Fluid Dynamics (CFD), Finite Element Analysis (FEA), fire simulation, ionizing radiation, neutronics, seismic...
- **Structural and seismic analysis.**
- **Plant layout distribution.**
- **Licensing and regulatory compliance.**
- **Business model assessment.**
- **Technology due-diligence.**



IDOM NS has been involved in the engineering and design of Moltex Energy's reactor portfolio since 2019, and has a strong track record in small modular reactors (SMRs) and advanced reactors (AA).

Moltex is developing a number of Generation IV Molten Salt Reactors (MSRs), including the Stable Salt Reactor Wasteburner (SSR-W) and the Stable Salt Reactor Uranium-based (SSR-U). IDOM NS has been closely involved from the early stages, covering various areas such as:

- **Specialized and option-engineering studies** for the preliminary sizing and definition of the key structures, systems and components:
 - Fuel assemblies.
 - Reactor flow pattern definition - CFD.
 - Reactor vessel.
 - Core neutronics.
 - Primary coolant loops configuration.
 - Primary loop heat exchangers and pumps.
- **Licensing support** according to regulatory authority requirements covering the following areas:
 - Emergency heat removal.
 - Instrumentation & control.
 - Out of core criticality.
 - Pressure boundary.
 - Containment.
 - Radio protection.
 - Decommissioning.
- **Preliminary layout of complete facility** and specifically:
 - Nuclear island.
 - Reprocessing facility.
 - Auxiliary facilities.
- **Cost, risk and reliability assessment.**

Some projects:



● **MOLTEx. CANADA**

MOLTEx ENERGY. Design & engineering services for Moltex Stable Salt Reactor Wasteburner (SSR-W) 300 MW.



● **MOLTEx. UK**

MOLTEx ENERGY. Design & engineering services for Moltex Stable Salt Reactor Uranium (SSR-U) nuclear power plant 40 MW.



● **KINGDOM OF NORWAY. NORWAY**

NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY. LNG ship tanker powered by an SMR: NuPro Ship I.

Nuclear fusion aims to deliver on the promise of a safe, economic and virtually limitless source of energy, but it also presents a number of scientific and engineering challenges.

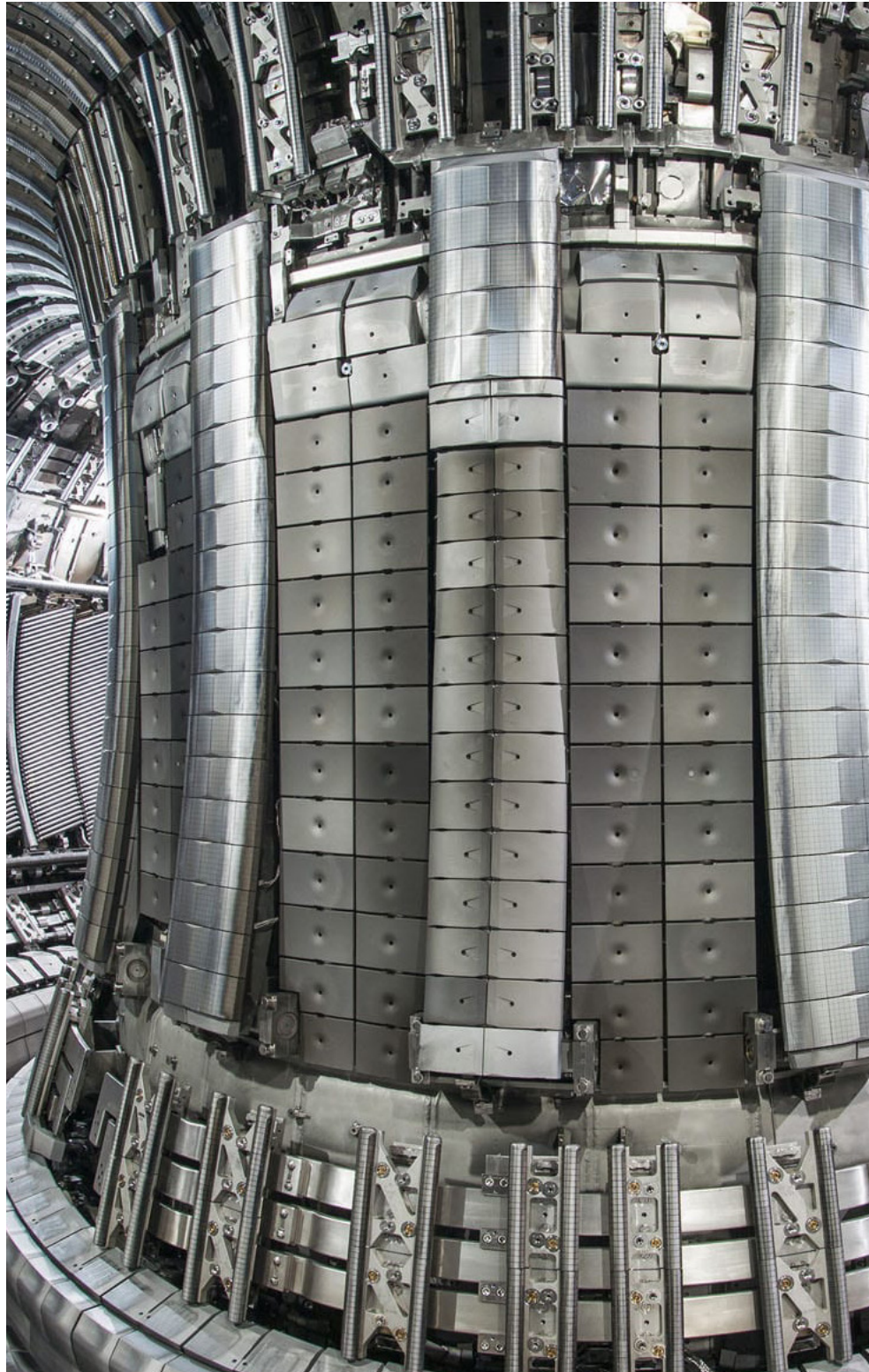
Fusion

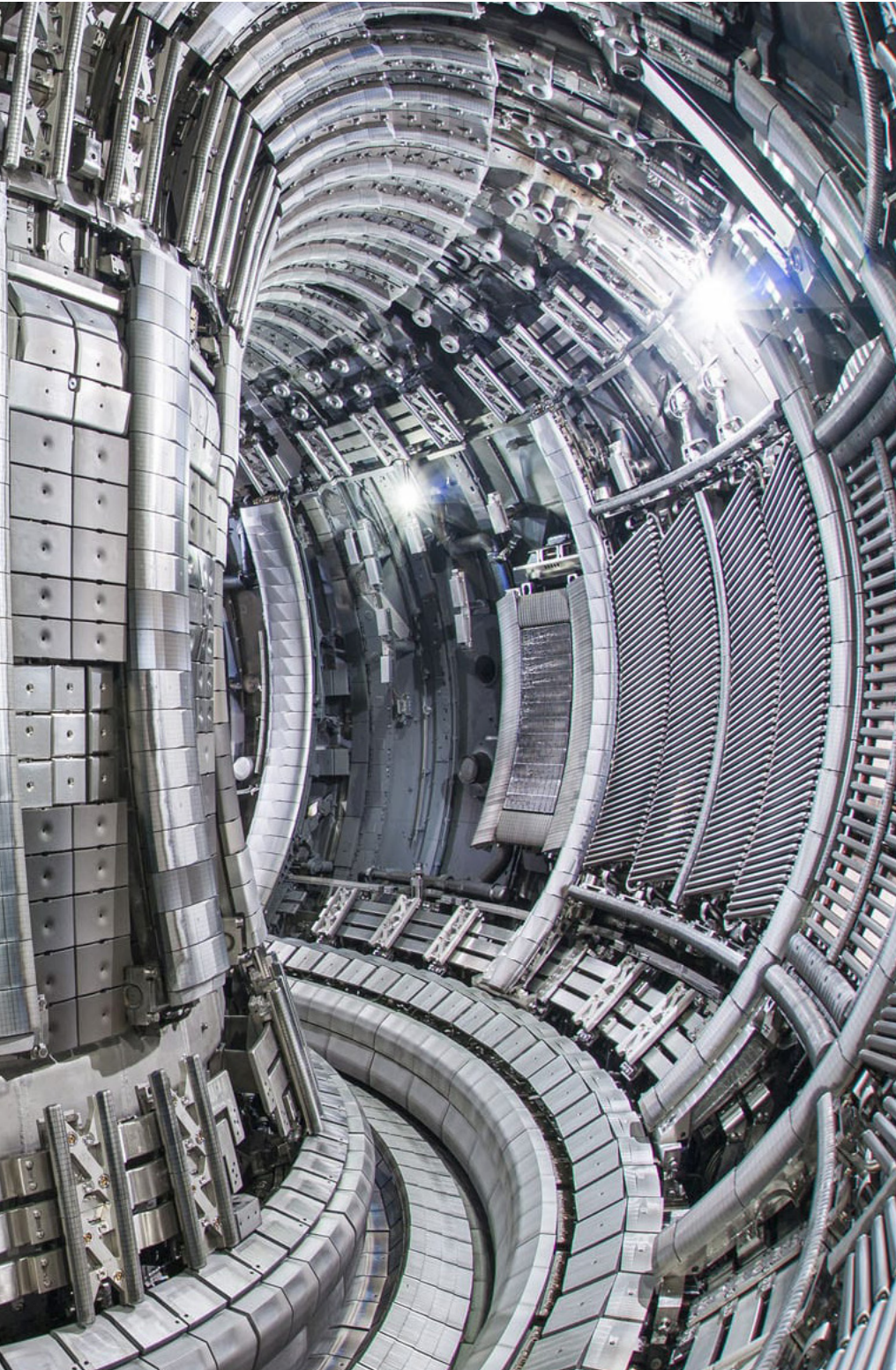
Since 2007, IDOM NS has been involved in over 180 projects relating to nuclear fusion for various clients, countries and facilities. These encompass JET, STEP and ITER, the latter being the largest ever fusion experiment. ITER is being built and maintained by thirty-five collaborating nations, featuring a tokamak of unprecedented size.

IDOM NS is participating in the UKAEA engineering design services framework for the Spherical Tokamak for Energy Production (STEP) programme, while also providing engineering and commercialization support for various fusion energy start-ups.

IDOM NS has been extensively involved in a wide range of activities and systems, including blanket and fuel cycle, vacuum and leak detection systems, nuclear safety, diagnostics integration, cryogenics, construction management, hot cells, and instrumentation, among others. We also provide advanced mechanical, structural, civil, neutronic, computational fluid dynamics, and thermal hydraulics analyses in support of our fusion clients.

The outlook for nuclear fusion is optimistic. Our vast expertise, staunch dedication to safety, and determination to establish a sustainable future through nuclear fusion provide an assurance of success for our clients.





Some projects:



- ### ITER. FRANCE

F4E. Engineering support in the area of Test Blanket Modules (TBM) systems design and technological demonstration.



- ### ITER. FRANCE

F4E. Support to the owner during the civil engineering and construction works for F4E in ITER project.



- ### STEP PROGRAMME. UK

UKAEA. Engineering design services and fuel cycle tritium engineering.



Nuclear science and technology possess numerous applications which are essential to our daily lives, beyond mere electricity generation.

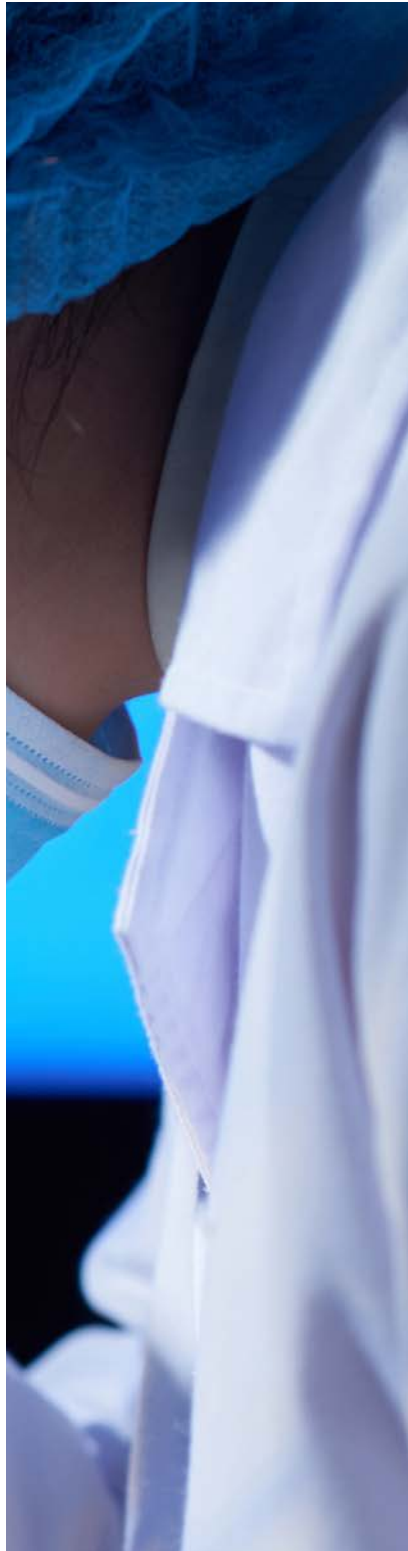
Other nuclear applications

We combine our deep know-how and extensive experience to support our clients to successfully develop the most cutting-edge nuclear technology projects worldwide. At IDOM NS, we also contribute, through our projects, to the use of nuclear science and technology in applications intimately linked to Sustainable Development Goals of the United Nations such as medicine, agriculture, industry, defence, research and mining.

IDOM NS participates in the entire life cycle of any nuclear or radioactive facility that uses nuclear science and technology in any application, from the technical and economic feasibility study to the design, engineering and construction management of the facility.

The range of activities in which IDOM NS has been involved has been very broad, covering, among others:

- Radiopharmaceutical production facilities.
- Nuclear health centres.
- Proton therapy centres.
- Nuclear research reactors.
- Particles acceleration facilities.
- Explosive detection systems.
- Materials testing facilities.



Some projects:



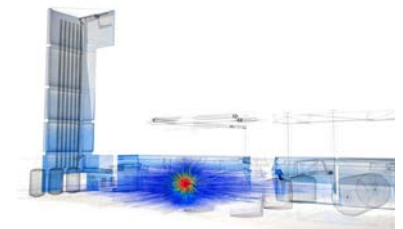
● JULES HOROWITZ REACTOR. FINLAND / FRANCE

VTT. Underwater X-Ray and Gamma-Ray radiography and tomography stations that analyze the test devices with experimental samples, in the reactor pool itself.



● QUIRÓN HOSPITALS. SPAIN

RADIOTERAPIA DE PROTONES S.L - QUIRÓN SALUD. First proton therapy centre in Spain including operation license application.



● IFMIF. SPAIN

CDTI. Analysis of dynamic effects on the beam dump in the IFMIF accelerator.

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