Tavola Rotonda per Studenti di Ingegneria Nucleare

Energy Days – UniBo
In collaborazione con ENEA
Bologna, 12 Maggio 2023
Since 1966, Ansaldo Nucleare (formerly Ansaldo Meccanico Nucleare) is responsible for the nuclear business in the Ansaldo Energia group.

- **Employees**: 440
- **R&D&I Projects**: 10
- **2021 Revenue**: 80 € million
- **2021 Backlog**: 150 € million
- **In-house skills**: 42
- **Workshops (UK)**: 9000 sqm

**Ansaldo Nucleare in a snapshot**
Major Nuclear Projects in our Portfolio

**Nuclear New Builds**
- **Cernavoda** (Romania)
  - Units 1 & 2 Completion
- **Sanmen Unit 1 AP1000** (China)
  - Steel Containment Vessel - Passive Residual Heat Removal
- **ESS** (Sweden)
  - Shield Doors

**Decommissioning & Radioactive Waste Manag.**
- **Sellafield** (UK)
  - Silo Emptying Mobile Caves (MSSS) Machines
- **SRP Gloveboxes** (UK)
  - 2 manufacturing lines of gloveboxes for encapsulation of Pu
- **Caorso** (Italy)
  - Drum Retrieval Machine

**Services for Nuclear Power Plants**
- **Embalse** (Argentina)
  - PLEX & Diesel Station Refurbishment
- **Cernavoda** (Romania)
  - Component Cooling Upgrade and Post Fukushima Evaluations
- **Krsko NPP**
  - Safety Upgrade Program Bunkered Building 2 Project

**Fusion**
- **ITER** (France)
  - Tokamak Assembly – TAC2
- **ITER** (France)
  - Steady state electrical network – TB13
- **DTT** (Italy)
  - Engineering (plant, systems, components)
Our In-house capabilities

- QHS&E
- Manufacturing
- Procurement
- Projects
- Engineering
- Central Services (IT, HR, Accounts and Admin)
- Sales, Marketing, Business Development and Tendering

Based in

40% 10% 50%
Italy France UK
Vision driven Innovation

Ansaldo Nucleare’s main commitment is to innovate nuclear solutions to protect the planet and power our future.

**Short-term**
Timely and efficient solutions for the safety upgrade, life extension and dismantling of old plants, accelerating the return to green-field of nuclear sites.

**Medium-term**
Integrate new flexible and more sustainable nuclear power plants, to make the energy transition smoother and cheaper.

**Long-term**
Make fusion available to future energy needs, with the highest sustainability standards for a new source of clean energy.
Innovative technologies and products for WM&D

- Cutting, handling, conditioning technologies in a rad-hard environment
- Ansaldo Nucleare has a long tradition in bespoke machine, from concept design to manufacturing
- Cooperation with technology centers keep us at the forefront of robotic innovation in the nuclear field

- Disposal of radioactive waste in containers for homogeneous and heterogeneous wastes
- Recent qualification of a high integrity container for Intermediate Level Waste
- Manufacturing capacity

- Competences for EPC contracts in waste management facilities and repositories
- Development of technologies for the wet oxidation of spent resins
- Development of technologies for acid pickling solution and production of vitrified wastes
Small and Advanced Modular Reactors

Ansaldo Nucleare plays a key role throughout the whole value chain (from concept to prototype) as system integrator with manufacturing capabilities in IT and UK.

**Key to success**

- nuclear vendor possibly engaged both with utilities and policy-makers
- trans-national marketability through a high degree of standardization
- innovative features for higher competitiveness in an open energy market

**Goal**

- more traditional concepts = shorter time to market
- more innovative concepts = higher opportunities for a key role as technology provider

**Two-folds strategy**

Short-term: engagement in concept(s) developed by vendors with higher potential in terms of marketability

Longer-term: co-developer of advanced technologies (namely, LFR) based on the demonstrated competences and capabilities

Now: EPC of experimental facilities to support demonstration of performances and licensing process.
Fusion mainstream and emerging initiatives

Improve **presence** at ITER, and position for assistance to Tokamak operations and upgrading

Pursue a **role of Architect Engineer** for DTT (design and integration) and supply of key components

**短期项目**

**中长期机会**

**新兴机遇**

**Ansaldo Nucleare Strategy**

**ITER**

**DTT**

**STEP**

**DEMO**

**SPARC**

**General Fusion**

Pursue positioning for **Special Component delivery and industrialization** for emerging opportunities

Play a **significant role** in the next Fusion Domestic Programmes (as STEP in UK)

Be key player in DEMO

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At the forefront of nuclear innovation

- Mechatronics
- Containers
- Treatments plant
- LFR
- SMR
- Plasm facing components
- High-tech
- From cradle to site
Skills

SMR and AMR

- Verification and Validation
- Power conversion Eng.
- Balance of Plant
- Material specialist
- System Eng.
- Nuclear Safety
- Reliability Eng.
- Multi-physics simulation
- Digital Platforms Operations
- Large components assembly
- Mechatronics
- Pressure equipment
- Metrology
- Superconductores Eng.
- Cryogeny Eng.
- Ultra High Vacuum Systems
- Tritium management

WM&D

- Mechanical Module Design
- Special components
- Process instrumentation
- Radiation Shielding Eng.
- Chemical specialist
- Supply chain Eng.

Fusion

- Soft-skills
  - Curiosity
  - Pro-activity
  - Open-minded
  - Multi-cultural
  - Questioning attitude
  - Agility
  - Self-management

- Licensing
- Thermal-hydraulics
Thank you for your participation
Grazie!