The Company

Ansaldo NES provides an in-house, fully integrated capability, which includes design, engineering, manufacture, assembly, testing, commissioning, site installation and through-life support. These core competencies and capabilities allow the company to offer a broad range of products and services for the nuclear decommissioning, energy and defence markets.

Ansaldo NES is wholly owned by Ansaldo Nucleare, part of Italian Group Ansaldo Energia. The financial strength and backing provided by Ansaldo Energia supports the group. Headquartered in Genoa, Italy with offices located worldwide, Ansaldo Energia employs more than 3,500 employees and is a worldwide recognised brand in Power Generation with an installed capacity of more than 176 GW over 1,800 projects completed in over 90 countries.

Together the companies offer over sixty years’ of UK and international experience in design and manufacture of safety critical engineered products and specialist support services for the nuclear and related industries.

With extensive experience in the international nuclear market, the Ansaldo Group brings a wealth of knowledge, capability and skills to support UK programmes in nuclear decommissioning, service to operating plants and new build in particular.
2014 sees two companies joining forces, both exclusively nuclear, to support forthcoming challenges facing the UK’s nuclear decommissioning and energy markets.

Our vision
To establish Ansaldo NES in the nuclear industry as the supplier of choice for the design and manufacture of safety critical engineered products and specialist support services; acknowledged for consistently adding value, delivering excellence and delighting clients in the nuclear decommissioning, nuclear energy and defence markets.

Our values
Our six values guide and inform our behaviour in all our activities.

- Put safety at the forefront of everything that we do
- Deliver on our commitments
- Strive to continuously improve
- Promote passion and pride in our achievements
- Deliver success through our people
- Act with integrity and respect for others
Experience gained through past and current involvement, in both nuclear new build and nuclear decommissioning operations, ideally positions Ansaldo NES to meet the challenges and assist in the timely and safe delivery of the UK’s nuclear new build programme.

Historically, Ansaldo NES has supplied safety critical components to all of the UK nuclear sites, since the first contract for Dounreay in 1955. This was followed up by the supply of fuel route equipment for Berkeley NPP in 1956. Other contracts for nuclear design and build quickly followed from other Magnox Power Stations.

More recently, the Ansaldo Group has successfully completed Cernavoda Units 1 and 2 Nuclear Power plants in Romania, with Cernavoda 2 being completed in 2007, on schedule and on budget. This is the only nuclear new build project to be completed in Europe in the first decade of the 21st century. The group has also provided support to the Westinghouse AP1000 programme in China, with the design of the prototype Steel Containment Vessel and design and supply of components such as the Passive Residual Heat Removal Heat Exchangers.

Ansaldo Nucleare is currently providing fundamental components for the ITER (International Thermonuclear Experimental Reactor) plant and other technical support. In partnership with other nuclear suppliers it also provides technical support for the NSSS (Nuclear Steam Supply System) and BOP (Balance of Plant), designing and supplying systems and components for various NPP technologies.

The significant UK and international experience within the Ansaldo Group puts Ansaldo NES in an excellent position to support the nuclear renaissance in the UK.

Nuclear New Build support provided has included:

- **European Pressurised Reactor (EPR)** - Concept design of specialist safety related equipment for fuel and waste handling applications
- **Cernavoda Unit 1 & 2 NPP, Romania** - Design authority, project management, site management, engineering, procurement, installation, commissioning and continued service
- **AP1000 Design Activities** - Design of the systems, structures and components internal to the reactor building and of the shield building roof
- **MYRRHA Research Reactor, Belgium** - FEED, in joint venture with AREVA and Empresarios Agrupados
- **AP1000 Sanmen Unit 1, China** - Design of prototype steel containment vessel, design and supply of nuclear class 1 Passive Residual Heat Removal Heat Exchangers
- **Mochovce Units 3 & 4, Slovak Republic** - Involvement in the completion programme; on-site engineering support, procurement of the BOP components, evaluation of the impacts from area-events (High Energy Line Breaks), quality surveillance
- **ITER, France** - Ansaldo Nucleare in a consortium with Mangiarotti and Walter Tosto, design and supply of the tokomak vacuum vessel sectors
Ansaldo NES provides a wide range of service activities in support of operating nuclear power plants; focussed on safe operations, system optimisation and performance enhancement.

This experience has been developed across a number of reactor technologies, for example, PWR, BWR, VVER, FBR and CANDU.

Activities Include:

- Plant Life Extension (PLEX)
- Plant upgrades based on Balance of Plant (BOP) optimisation
- Thermal, hydraulic and computational fluid dynamics analysis
- Post-Fukushima and stress test analyses, to increase plant robustness in exceptional circumstances
- OEM equipment maintenance and spares provisioning

Extending the life of the UK’s current fleet of Advanced Gas Reactors (AGR) and Pressurised Water Reactors (PWR) is vital to support demands for secure energy supply. Internationally, Ansaldo has over 50 years’ experience providing service support to many nuclear power plants during outages and in support of plant life extension.

Service and support provided to operating plants has included:

- **Existing UK NPPs** - Original Equipment Manufacturer (OEM) for a wide range of safety related components for all AGR, FBR and Magnox power stations including most recently, Flask Leak Test Equipment (FLTE)
- **Embalse NPP, Argentina** - BOP condition assessment, residual life evaluation (RLE), Replacement of standby diesel generator station, PLEX and repowering / modifications to the steam turbine
- **Tianwan NPP Units 1 & 2, China** - Design and supply of No. 2 control system sets for fuel handling machines

- **Post Fukushima Beyond Design Basis Event Equipment** - Mobile emergency spent fuel pond water cooling systems, mobile emergency reactor repressurisation systems
Ansaldo NES has a proven track record in nuclear decommissioning and is currently tackling some of the most complex engineering and manufacturing challenges within the UK and European nuclear decommissioning programme.

Offering a complete range of services from concept design, through to on-site installation and operator training, Ansaldo NES is able to draw on 60 years' nuclear experience and apply this to the most challenging decommissioning projects. Retaining all the required engineering skills in-house, our innovative approach ensures the best value option is selected and delivered through highly experienced project teams.

Ansaldo NES is a major supplier to Sellafield Ltd and is currently engaged in delivering complex waste retrieval, handling and packaging solutions in support of the site decommissioning programme.

The Italian government decided in 1999, to pursue the decommissioning of the country’s four nuclear power plants. This has enabled Ansaldo to develop specialist knowledge in decommissioning and waste management which is also used to support European programmes.

The company delivers decommissioning solutions worldwide, across a wide range of nuclear plants and research sites.

- Engineering - from concept to detailed design
- Component and material procurement, manufacture, assembly, test and on-site construction and commissioning of complete systems and plants, including turnkey projects for the treatment of radioactive waste resulting from site operations and decommissioning activities

Decommissioning support provided has included:

- **Sellafield, West Cumbria, UK** - MSSS Silo Emptying Plant Mobile Caves, complex waste retrieval machinery to extract Intermediate Level Waste (ILW) from silo storage.
- **Ignalina NPP, Lithuania** - Retrieval Unit (RU1), Landfill Separation Facility (LSF) and Control Building (CB) technological systems for low level Solid Waste Retrieval Facility. Fuel Inspection Hot Cell (FIHC) handling crane, fuel export bogie, gamma gates and alpha lid removal device.
- **Chernobyl NPP, Ukraine** - Liquid Radwaste Treatment Project (LRTP), retrieval and conditioning of spent resins, perlite sludges and concentrates, by centrifugation or evaporation followed by cementation.
- **Berkeley NPP, UK** - Chute Silo Retrievals, design, supply, installation and commissioning (including full scale mock-up) of retrieval equipment and associated control systems for the retrieval of miscellaneous active components from silo storage.
- **Superphenix NPP, France** - Operation Assistance for Decommissioning, fuel element removal, installation of an electric heating system to keep sodium liquid, detailed dismantling and size reduction studies, sodium sampling, preparation for final disposal.
- **EC Joint Research Centre, Ispra, Italy** - Retrieving, dismantling and packing of irradiated test rigs and nuclear materials.
- **Andreeva Bay & Gremikha project, Russia** - The design of solid and liquid radioactive waste management treatment and storage facilities.
Defence

Ansaldo NES has over 20 years’ experience in successfully developing and delivering innovative, bespoke solutions and services to the UK defence industry and is an approved vendor to the UK Ministry of Defence, Babcock Marine, BAE Systems, AWE and Rolls-Royce.

Ansaldo NES is the Original Equipment Manufacturer (OEM) of heat exchangers for most of the in-service Royal Navy Nuclear Submarine fleet, providing regular inspection and maintenance to ensure safe and reliable operation.

It regularly undertakes design, manufacture, testing, servicing and repairs both off and on-site, using security cleared, suitably qualified and experienced personnel (SQEP).

Defence support provided has included:

- UK Submarine Fleet, heat exchanger manufacture, maintenance and refurbishment
- Astute Class Tunnel Floor Platform
- Submarine de-fuelling equipment for use at both refit and decommissioning
- Specialist handling equipment, such as high integrity stainless steel glove boxes, bogies, lifting equipment and transport frames
- Ministry of Defence (MoD) - safety critical spares for all HM Royal Navy, Nuclear Submarines
Ansaldo NES offers a range of products and services which span across 4 market sectors. These include:

**Engineering design of safety critical equipment in a Nuclear environment**
- Mechanical concept and detail design
- Fluid and piping concept and detail design
- Nuclear and radiation analysis
- Electrical, Control and Instrumentation (EC&I)
- Software design and development
- Civil / Structural analysis
- Design substantiation
- Design for manufacture / design for operations and maintenance

**Testing and commissioning**
Unique, dedicated facilities support specialist assembly, testing and commissioning:
- Factory Acceptance Tests (FATs)
- Pre operation test and commissioning
- Operating and Maintenance (O&M) manuals
- Training documentation

**On Site Specialist Support**
- Equipment installation
- Original Equipment Manufacturer (OEM) maintenance and through-life support
- Plant upgrades, refurbishment and repair
- Operational support

**Programme Management**
- Project management
- Project controls
- Programme Procurement
Products

**Nuclear material handling equipment**
- Waste material retrieval and handling
- Lifting equipment and cranes
- Fuel route and fuel handling tools

**Nuclear containments**
- Shield doors and gamma gates
- Gloveboxes
- Fuel storage and transport

**Nuclear process equipment**
- Control systems
- Fuel and waste package integrity
- Modular packages
- Heat exchangers
Ansaldo NES provides in-house specialist facilities for manufacturing and assembly and is able to complete a variety of contracts from small hand-held equipment to large electromechanical plant and equipment.

**Wolverhampton, West Midlands**

- Office facilities housing engineering, project management and support services
- Manufacturing facility 10,000 m²
  - Quality Assurance & Inspection
  - Material Preparation
  - Machining
  - Fabrication
  - Assembly and test
- 55t crane capacity (12.5m under hook)
- 30m high test tower
- 6m deep test pits
Beckermet, West Cumbria
- Office facilities housing engineering, project management and support services
- Workshop, 1,500 m²:
  - 60t crane capacity (12.5m under hook)
  - 28m high test tower and test pit

Risley, Cheshire
- Office facilities housing engineering, project management and support services.

Genoa, Italy
- Specialist nuclear engineering support from Ansaldo Nucleare Head Office
Ansaldo NES operates a Continuous Sustainable Improvement Plan (CSIP), which drives improvements in people, processes, facilities and equipment.

Continuing to build on previous capital investment including Wolverhampton CNC machines, fitting cells, inspection and measurement equipment and IT software and hardware.

As part of the UK Government’s Civil Nuclear Sharing in Growth (SiG) programme, Ansaldo NES has access to external expertise and resources. This national programme is designed to develop UK manufacturing capability to support nuclear new build requirements.

Ansaldo NES has access to up to £1m of specialist consultant expertise to deliver improvements in manufacturing, planning and procurement. This will support activities in our Continuous Sustainable Improvement Plan (CSIP).
Investment in People

The availability of Suitably Qualified and Experienced Personnel (SQEP) is essential to deliver projects successfully. Recruiting and retaining personnel is key to meeting growing business needs. Encouraging and enabling personal development for employees ensures that capabilities and competencies are improved in line with industry demands.

Recognising the wider industry challenge to bridge the skills gaps, new people are encouraged into the business through the company’s graduate and apprenticeship schemes, offering specific training programmes designed to support and develop people in the work environment; for example, covering specific disciplines such as project management, engineering design and manufacture. The graduate training programme is accredited by the Institution of Mechanical Engineers (I MechE) and Institution of Engineering and Technology (IET). The Ansaldo NES apprenticeship scheme works with specialist training providers and the National Skills Academy - Nuclear Manufacturing.
Project Management

Ansaldo NES has aligned its procedures with the APM, establishing a “best-in-class” training and development programme for the entire project management team. Its project management programme has been widely recognised as amongst the best in the UK, with corporate accreditation achieved through the Association for Project Management (APM).

With a flexible resource approach to project management, through the use of Integrated Project Teams (IPTs), resources can be easily moved between projects and activities as demand requires.

Capabilities and tools include:

- Primavera P6 integrated project management and planning tool
- Scope management based on a defined work breakdown structure
- Integrated cost and management scheduling
- Trend analysis (EVA, SPI, CPI)
- Risk and opportunity management (Pertmaster)
- Single source change control process

Nuclear Advanced Manufacturing Research Centre (Nuclear AMRC)

Ansaldo NES is a Tier One Board member of the Nuclear AMRC, giving access to world-class nuclear research and development facilities and programmes.

This is a key element of the UK Government’s Nuclear Policy which is designed to:

- Enhance the capabilities and competitiveness of the UK civil nuclear manufacturing industry
- Work with members to develop world-leading manufacturing processes and technologies
- Help British manufacturing companies to succeed and grow

Certification

Certification to ISO 9001 and ISO 14001 affirms our Quality Management System and Environmental Management System to internally recognised standards, along with a high performance for safety; Ansaldo NES holds the prestigious RoSPA Gold Award.

In addition, Ansaldo Nucleare certification includes:

ASME; RCC-M for mechanical components of PWR nuclear islands; ACI for concrete and steel structure design; AISC for concrete and steel construction and the National Board of Boiler and Pressure Vessel Inspectors (NB) Certificate of Authorisation.

With continued investment, stronger capability and greater capacity, there has never been a better time to select Ansaldo NES as your nuclear industry specialist ‘supplier of choice’.