

Where

Nuclear Engineering

Meets Delivery Excellence

End-to-end engineering across new builds, life extension, SMRs, and advanced reactor programs.



Where programs break down

Global nuclear capacity is projected to reach 992 GW(e) by 2050, 2.6 times today's installed base. About 80 reactors are under construction across 15 countries, and over 80 SMR designs are advancing through development worldwide.

Programs that plan for engineering capacity as deliberately as they plan for capital are setting the pace this decade:

Canada's nuclear sector will need more than 5,000 full-time skilled workers between 2025 and 2040 to support its SMR fleet alone, a pattern repeating across every market scaling in parallel.

The Barakah Nuclear Energy Plant in the UAE delivered four APR1400 units with capacity of 5.6 GW to commercial operations, with each unit commissioned faster than the last, built on standardized design and engineering depth resourced from program start.

Engineering readiness planned at program start separates predictable deliveries from the rest.

The advantage belongs to programs that treat engineering capacity as a first-order decision: balance-of-plant depth, documentation continuity, and systems integration built in from the start.

How leading programs approach execution

Specifications before procurement



Long-lead equipment technical specifications are baselined before orders are placed. Vendor fabrication runs in parallel with the rest of the detailed design.

BoP resourced early



BoP scope is staffed and coordinated alongside the nuclear island from program start.

Documentation built continuously



As-built accuracy and design intent are carried forward from engineering through commissioning.

Integration before construction



Mechanical, electrical, civil, structural, piping, and I&C disciplines are coordinated through engineering while the design is still flexible.





What Cyient delivers across the nuclear program lifecycle

Core nuclear

Nuclear system engineering

ASME Section III-compliant nuclear systems and piping design, safety and non-safety I&C engineering, containment optimization, and site-specific civil and structural design.

Interface management

Engineering support for integrating different discipline engineering outputs to a coherent common design platform through strong interface management and control.

Operations through decommissioning

Plant operation support and obsolescence management that extend plant life and reduce unplanned downtime, with documentation and regulatory support.

Balance-of-Plant engineering

Structural, civil, and mechanical

Auxiliary and turbine building and their foundation design qualification by seismic and dynamic analysis. Secondary system pipe routing, equipment layout design reconciliation as per ASME B31.3

Electrical, instrumentation, and controls

Power distribution, cable tray and grounding layouts, and panel engineering, with control room design, PLC logic, HMI and historian engineering covering safety and non-safety system integration.

Phased delivery

BoP scope advances through concept, basic design, extended basic, and detailed engineering on predefined cycles. Long-lead equipment procurement begins once the layout locks in. Basic design, and design maturity verified at 30%, 60%, and 90% milestones.

Documentation and lifecycle management

Documentation control

Documentation processes and structures are built per phase, with packages compiled at each program milestone and metadata verification running throughout.

Qualification and commissioning

Construction plans, suitability analyses, and FAT support for suppliers and components, supported by commissioning manuals, startup procedures, and O&M documentation.

As-built continuity

As-built drawings are maintained through installation, with operational instructions, spare part catalogs, and service manuals preserving design intent across handoffs.

Multidisciplinary integration

Cross-discipline coordination

Reactor vendor and BoP interface management across mechanical, electrical, civil, structural, piping, and I&C disciplines.

Systems engineering

System integration for safety and non-safety I&C systems, and cross-discipline design reviews completed before modules ship.

Sourcing and supply chain

Sourcing and vendor coordination through detailed engineering, with single-source accountability across the program.

What we bring to the table

Export compliance and authorization



With 10CFR810 export authorization and DAE-approved Centers of Excellence, Cyient brings demonstrated experience in navigating the licensing process and sustaining compliance within export control boundaries, supported by dedicated facilities built for IP protection and IT security at the level nuclear programs require

Execution scale



1,600+ engineers in power plants with 250+ nuclear domain engineers operate across two Centers of Excellence, Hyderabad and Mumbai, having delivered over 3.0 million engineering hours on nuclear programs, with full lifecycle capacity from design through commissioning inside one continuous team.

Partnership depth



16+ years of continuous engagement with OEMs, utilities, and EPCs spans new builds through life extension programs, with lessons from every engagement carried forward into the next.

Global sourcing footprint



Presence across the USA, Europe & India drives sourcing and supply chain efficiency for nuclear-grade components, wherever the program is based.

What sets us apart

Nuclear domain experience

700,000+ engineering hours delivered across control systems, safety systems, and turbine controls on a single 4×1000 MW programme.



Export control compliance

15+ years of operating inside 10CFR810 and DAE-authorized environments, from Technology Control Plan execution to sustained compliance across every engagement.



Documentation discipline throughout the full lifecycle

As-built accuracy and design intent preserved from engineering through commissioning, proven on aging management programmes built to NRC acceptance criteria across multiple reactor internals.



Multidisciplinary integration before construction

Systems coordinated through engineering while design stays flexible. 125,000+ engineering hours delivered on component and system qualification work.



Proven across global nuclear programs

Engineering a 1000 MWe reactor from design to commissioning



End-to-end multidisciplinary engineering for Gen-III+ reactor program. Civil and structural design of auxiliary and turbine buildings, piping analysis, containment calculations, control systems and global supply chain coordination.

A mobile safety solution built for reactor-grade reliability



Designed and commissioned trailer-mounted mobile boration skid for continuous coolant supply to reactor systems. PLC logic and calculation-based controls with safety and historian systems integration enabling flexible reactor safety margin management.

Turning documentation chaos into audit-ready compliance



Six-year engagement to improve documentation quality and metadata management for European reactor OEM. Metadata issue resolution, QA process implementation, and lifecycle management improving efficiency and audit readiness.

Long-term engineering excellence with a U.S. Nuclear OEM



15+ years of partnership with established U.S. nuclear leader. Asset management and engineering across mechanical, civil, structural, and I&C domains supporting ongoing programs.

16⁺
Years of
experience
in nuclear

3.0 Mn⁺
Engineering
hours

250⁺
Nuclear
domain
engineers



Ready to close the execution gap on your next nuclear program

Contact us for more info

Cyient is a global lifecycle engineering services company powering mission-critical industries from design to aftermarket across products, plants, and networks. With 300+ customers and 15,000+ associates across 30+ countries, we combine human expertise, deep domain knowledge, and AI to deliver intelligent engineering for every lifecycle across Aerospace and Rail, Automotive and Mobility, Connectivity, Energy, Healthcare, Mining, Utilities, and beyond.

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