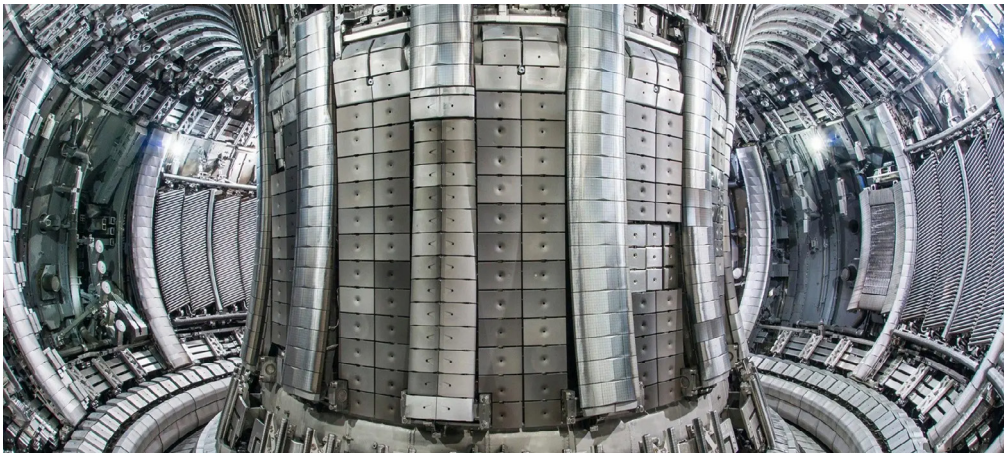
ITER

ITER ACHIEVES ACCURATE ESTIMATES FOR ITS LARGEST PROJECT WITH CLEOPATRA



The tokamak is an experimental machine designed to harness the energy of fusion. ITER will be the world's largest tokamak. The image shows the inside of the JET machine at CCFE, UK.

Introduction to ITER and Cleopatra's Collaboration to Enhance Cost Estimating

On behalf of the ITER Organization, which oversees one of the most exciting projects in the world, **Cleopatra Cost Estimating Solution** was used to estimate the assembly and installation costs of over 20 of the project's core systems. After familiarizing themselves with the project and its specific requirements, an assessment phase followed, in which Cleopatra Enterprise identified and described recommendations to increase the quality of the estimates to achieve a Class 3, 30% accurate estimate.

After 12 months of collaboration, the result was a large set of very well-structured estimate reports, each containing the estimating methodology, estimate basis, allowances, labor rates, productivity & cost factors, indirect costs, exclusions, contingency, and escalation. This extensive way of reporting has led both to an increase in accuracy and to high levels of transparency, which ITER values highly.

Cleopatra Enterprise also structured the estimates along the different breakdown structures used throughout ITER to ensure all can be used directly in the project without any conversion or alteration.

Finally, quality checks were performed to verify and validate whether the proper scope had been estimated. As is common practice for Cleopatra Enterprise, the accuracy of all cost estimates has been determined based on the level of definition of the input deliverables, according to the AACEi estimate classifications.

iter
china eu india japan korea russia usa

ITER ("The Way" in Latin) is one of the most ambitious energy projects in the world today. In southern France, 35 nations are collaborating to build the world's largest tokamak, a magnetic fusion device that has been designed to prove the feasibility of fusion as a large-scale and carbon-free source of energy based on the same principle that powers our sun and stars.

The experimental campaign that will be carried out at ITER is crucial to advancing fusion science and preparing the way for tomorrow's fusion power plants.

ITER will be the first fusion device to produce net energy, the first to maintain fusion for long periods, and the first to test the integrated technologies, materials, and physics regimes necessary for the commercial production of fusion-based electricity.

Facts & Figures

- Machine weight - 23000 ton
- Plasma temperature - 150 million ºC (10x the core of the sun)
- Output power - 500MW
- The steel plasma chamber alone is heavier than the Eiffel Towe

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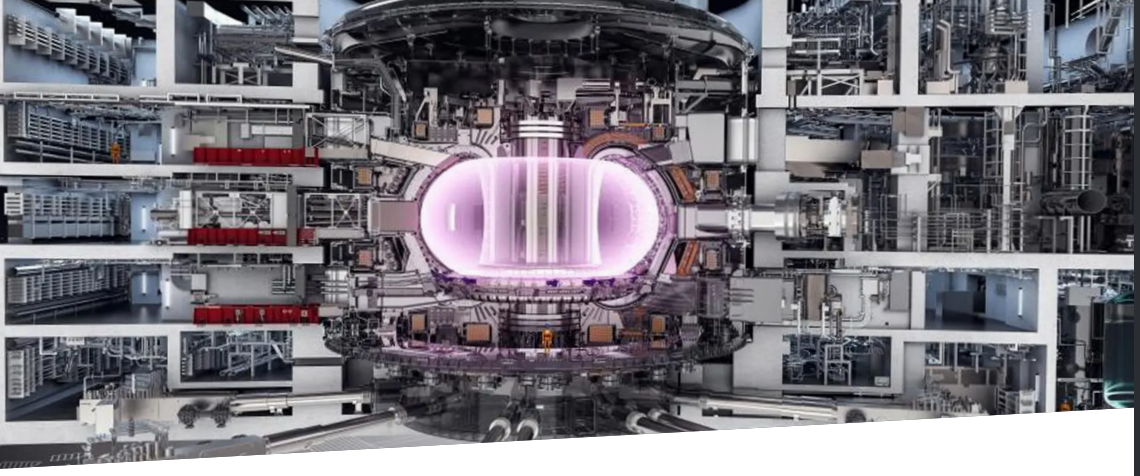

As a result, there are no example projects that could be used as a reference point, and it all came down to knowledge and experience. For example, labor hours for installation were based on:

- Expert judgments
- **Cost Engineering Standard Knowledgebase (CESK)** to determine total labor hours
- Comparison with "similar" components from the CESK

Additionally, the site construction of the ITER machine and plant is technically challenging, in particular concerning complexity, nuclear safety, regulatory aspects, size, weight, tolerances, scope sharing, cost, and schedule.

Furthermore, estimating efforts have to be adjusted due to, for example, congestion at the work site, complexity, safety regulations, working height, etc. Cleopatra Enterprise established so-called efficiency factors and applied them to the individual estimates to account for all of these.

To manage such complicated estimates and, at the same time, make sure they remain transparent, it is necessary to use dedicated cost estimating software. Cleopatra Enterprise, therefore, used its own software, which ITER appreciated highly.

The Project Structure

The ITER Organization, and specifically its Construction Department, was looking to develop an overall Class 3 cost estimate for the complete project scope within its first phase. The first construction phase will allow ITER to achieve the first plasma. This construction phase will stretch from 2017-2025. The construction includes the assembly, installation, and testing of the ITER machine, plant, and auxiliary systems (e.g., Magnet, Cooling water, Vacuum, fueling and wall conditioning, Ion cyclotron heating, etc.). Cleopatra Enterprise has been asked to prepare separate capital cost estimates and reports for the different systems and machine assembly phases to structure this effort.

The total scope of the project is split over 8 construction works and support contracts encompass no less than six independent worksites covering 35 buildings, increasing its complexity.

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Since 1996, Cleopatra Enterprise has empowered over 500 industry-leading companies across 75 countries to deliver complex projects and turnarounds with confidence.

Cleopatra offers a Total Project and Turnaround Management Software that supports the entire project lifecycle through an integrated project cost management solution. It is the only tool that combines cost estimating, work package management, BIM, scheduling, cost control, form tracking, benchmarking, and more—helping you build robust project controls capabilities to stay on schedule and within budget.

With cutting-edge technology and a team of experienced professionals, Cleopatra enables companies to streamline processes, improve project performance, and achieve their goals with confidence.

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Future Steps for ITER and Cleopatra

ITER has rewarded Cleopatra Enterprise with a new contract to execute the following major tasks:

- Estimating Construction Phase Two
- Running simulations to reduce cost by looking at schedule and execution strategies
- Implementing a fully integrated Cost Management process within Cleopatra Enterprise
- Assisting ITER in the tender evaluations

Key Benefits for ITER:

- Clearly defined scope of the project
- Integration between planning, estimating, and cost management
- Thorough challenge of the technical baseline, ensuring alignment with actual costs
- Detailed resource planning for the next phase

"Working with such a professional, highly motivated team is very rewarding. On behalf of the ITER Organization, we express our gratitude for the excellent work performed by the Cleopatra team".

- ITER

Read More Case Studies

Request a Demo

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