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2017 French National Engineering Awards Alain Baudry and the ENGAGE consortium team receive the Industry and Technology Prize for the ITER project

Supported by the ENGAGE consortium (Egis / Assystem / Atkins / Empresarios Agrupados), Alain Baudry and the ENGAGE team have won the Industry and Technology Prize for the ITER (International Thermonuclear Experimental Reactor) project. Launched several years ago in Cadarache in the south of France, the ITER experimental project aims to create a new type of power station functioning on nuclear fusion. In terms of its scale, this project is considered to be the most ambitious energy project in the world.

The ENGAGE consortium is tasked from 2011 to 2018 with a project management consultancy mission and the engineering, procurement and construction management across in all specialities for the construction of the entire site. Their joint efforts have today been rewarded by the prestigious Industry and Technology Prize in the 2017 French National Engineering Awards (GPNi).

[A worldwide cooperation project to test nuclear fusion](#)

The ITER project consists of recreating on Earth - and in a controlled environment - the fusion reaction of hydrogen atoms, in the same way as it occurs in the centre of the sun and stars. The programme was designed to demonstrate the scientific and technical feasibility of this process. Research into fusion could constitute a sustainable alternative to all current forms of energy generation, by developing a safe, inexhaustible and environmentally friendly source of energy.

The largest experimental fusion facility ever built, ITER is also the first global cooperative project of its kind. Europe contributes to nearly half of the construction cost of the machine, and the other six members of this international partnership (China, Japan, India, the Republic of Korea, the Russian Federation and the United States) all contribute in equal parts to the remainder.

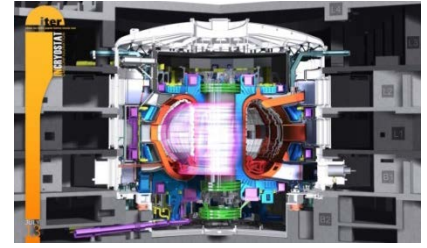
[An exceptional project for outstanding challenges](#)

ENGAGE is committed to a constantly creative approach to fulfil the challenges thrown down by the ITER project: in addition to the technical specificities of the project, the operation's volume and the level of safety and reliability, aligned on the very highest standards, are elements which have led the consortium to develop prolific expertise in all the areas of its engineering mission.

The programme consists of building the platform's infrastructure spanning half a hectare, created by the European agency F4E (Fusion for Energy), representing around forty industrial buildings, and two nuclear buildings: one to accommodate the Tokamak (an experimental reactor 30 metres in height and weighing 25,000 tonnes) and the other a plant for the preparation and reprocessing of a hydrogen isotope, tritium.

These buildings must house a large number of facilities and processes, and must additionally be scaled to resist an entire series of accident scenarios: earthquakes, leaks in the cooling circuit, loss of vacuum in the Tokamak, etc. The programme therefore essentially contains security requirements (approximately 300 for nuclear buildings at the beginning).

Furthermore, nuclear fusion reconciles energy generation and sustainable development (no highly radioactive nuclear waste, inexhaustible fuel, possibility of immediate emergency cut-off). In view of such a challenge, the design and construction was duty bound to incorporate sustainability as an input data for the project, according to three conditions: protect the environment, promote social cohesion and promote a responsible economy.



The first structures rise up from the ground

The project is currently in construction phase of the infrastructure and buildings. Three floors out of eight have so far been built on the central Tokamak building. Four auxiliary buildings are watertight in which technical building and fitting works have started. The other auxiliary buildings are still in their structural works phase.



With regard to infrastructure, the first high-voltage (400 kV) substation has been delivered. Some of the platform's developed zones will soon be handed over to ITER in time for the arrival of the process assembly teams.

In all, approximately 1,800 people work on this highly complex and dense work site, always complying with rigorous timeframes and quality and safety standards.

An array of technology and innovation

The essential originality of this project lies in the **digital model** under "3D as master", coordinated and managed by ENGAGE for the building part, to guarantee the convergence of the building and process concepts, configure input data, identify and resolve interfaces and control modifications.

The **management of the security requirements** of the buildings was developed by ENGAGE on a database to enable the tracking of requirements, their versions and the way they have been addressed by the different designers and builders.

Managing the configuration of all of the contributors additionally required the implementation of a dedicated base to deal with the very high volume of modifications (one per day on average) of variable size, and constantly affecting the design and construction master plan.

ENGAGE deployed a **common database for all project contributors** which guarantees the consistency of document use in terms of recording, tracking, distribution and changes. Considering the sizeable volume of information and queries (1.87 TB of documents stored, 70,000 connections a month, 10,000 documents published per month), ENGAGE contributed to the development of version 4 of SGTI (an Egis shared construction project management solution) and introduced specific utilisation processes and the required efficient validation circuits (further information at www.sgti4.fr).

The French National Engineering Awards are organised by Syntec Ingénierie, the national engineering trade association, in partnership with the French Ministry for the Ecological and Inclusive Transition and the Ministry of Economy and Finance's directorate general for enterprise (DGE), and in association with Le Moniteur group.

Photos: ITER

About the Egis group

€1 Bn managed turnover in 2016
13,800 employees



Egis is an international group offering engineering, project structuring and operations services. In engineering and consulting, its sectors of activity include transport, urban development, building, industry, water, environment and energy. In roads and airports, its offer is enlarged to encompass project structuring, equity investment, facilities delivery and operations. The Group additionally deploys its expertise in areas such as new mobility services and turnkey energy systems. Imagining a sustainable future for the benefit of populations is our vocation. We strive to meet the planet's challenges and support the energy, ecology, digital and territorial transitions, working to serve the common good.

Employing 13,800 people, including 8,300 in engineering, the group generated a managed turnover of €1.02 billion in 2016.

Egis is 75%-owned by the French "Caisse des Dépôts" and 25%-owned by Partner managers (Iosis Partenaires), and employees ("FCPE" shareholding fund).

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About Assystem

Assystem is an international engineering group. As a key participant in the industry for 50 years, the Group supports its clients in managing their capital expenditure throughout the product life cycle. Assystem S.A. is listed on Euronext Paris. For more information please visit www.assystem.com Follow Assystem on Twitter : @Assystem

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Atkins

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Empresarios Agrupados

EA is an engineering organisation committed to quality and the environment. Our main objectives are customer satisfaction, leadership and integrity in our actions, the creation of value and the fostering of reliance on innovation. <http://www.empresariosagrupados.es/>