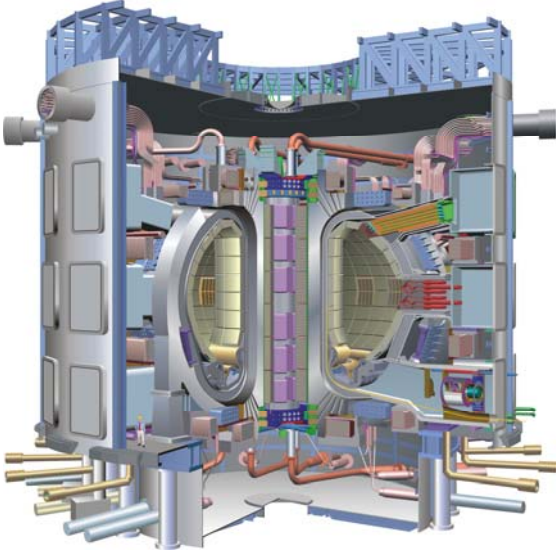


## Plant and Mechanical Design, Equipment and Systems



*International Thermonuclear Experimental Reactor (ITER) concept fusion tokamak reactor design*

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### Highlights

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- **Single engineering and construction platform with integrated PLM for plant as well as mechanical design**
- **Full spectrum of structural and civil engineering capabilities for plants and offshore**
- **Design for piping, HVAC, structural, electrical and equipment**
- **Logical schematics and instrumentation diagrams**
- **P&ID-driven 3D design**
- **Automatic production and management of technical documents**
- **Knowledge-based engineering and specification-driven design**
- **Integrated analysis**
- **Advanced visualization and collaboration environment**
- **Reverse engineering tools**

As the energy industry's longstanding infrastructures age and alternative energy solutions demand innovative systems, the industry is faced with building new plants and facilities, while upgrading older ones. The requirements of such multi-disciplinary and cross-geo projects are both dynamic and high risk, with tight schedules and high costs for delays and overruns.

New plants and refurbishments require complex equipment and systems that rely on technologically advanced embedded electronics systems, mechatronics, specification-driven design and upgrades in facilities with no digital records. All this in an industry faced with an aging workforce that threatens to take with it the critical skills and project experience needed to push energy into a new age.

With multiple design and analysis systems, siloed applications, poor technical documentation, high-cost prototypes and a need to get construction right the first time, today's leading energy companies are seeking integrated design-build environments with a full spectrum of plant and equipment functionality, including steel structures, equipment arrangement, piping, HVAC, electrical and other major disciplines. Smart energy companies also are demanding PDM support for project requirements, design development, technical documents and records retention, as well as design task automation capable of capturing and reusing best practices and a collaborative environment that supports owner/operators, EPCs and equipment suppliers.

Plant design solutions must facilitate the replacement of physical prototypes with digital and virtual work environments, provide automated technical documentation, change management and records retention, feature dashboards for project management and review, and enable reverse engineering.

IBM PLM solutions, including CATIA Equipment & Systems and ENOVIA by Dassault Systèmes, support systems definition, real-time collaboration, 3D visualization, complex linear and non-linear analysis and as-built and reverse engineering for plant and offshore structures, mechanical and plant design, civil structures, and routed systems including piping, HVAC and electrical. And with 3DVIA Composer, designers can automatically generate animations, kinematics, publication quality images, 2D line art and technical illustrations with no programming required.

With PLM solutions from IBM, plant, equipment and systems designers benefit from a single, integrated and complete solution that's easy to learn and requires no data transfer between the portfolio of integrated applications. With immediate 3D visualization and navigation, energy companies realize added value for project review, eliminate 2D interpretation errors, perform efficient clash analysis and integrate disciplines for design review. Accurate preliminary studies allow more design iterations from conception through collaboration and with knowledgeware, designs can be optimized based on engineering, regulatory and organizational rule sets.

When you choose IBM PLM, you get the full value of the IBM brand: trust, quality, experience, financial stability, global reach and a proven code of conduct. As your PLM partner, IBM offers deep industry knowledge, experience as a world-class manufacturer, strength in R&D, a broad range of solution offerings and a long-standing commitment to PLM.

With state of the art resources such as technical proof of concepts, IBM Global Business and Laboratory Services and third-party software from leading IBM Business Partners, IBM PLM can help you transform your business. With IBM PLM solutions, capturing best practices, educating and training your workforce and integrating your enterprise is not only possible – *it's real.*

## Choose IBM—the PLM leader

IBM's PLM expertise and leadership continues to be valued by our clients. Today, we are so much more than a PLM application software vendor.

We have expanded our scope to include the integration capabilities that organizations need to manage the complexities of the entire value chain. IBM is the only company that can deliver the complete PLM solution. Our unmatched combination of consulting, applications, middleware, hardware and services, coupled with a broad knowledge of industries and IT solutions, equips us to build complete PLM solutions to fit every business—large and small. This is the IBM difference.

When you choose IBM as your PLM partner, you are choosing:

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IBM leads the development of PLM. Our value proposition is built on a foundation of decades of world-class IBM technology expertise, supported by thousands of IBM engineers and developers in 40 different countries. This expertise is valued across the globe, and has enabled us to develop links with business partners that continue to evolve and improve the value we can add for our clients.

### **An unrivalled commitment**

Our unmatched annual investment in Research & Development—the key to innovation—stands at approximately \$5.5 billion. This is testament to our commitment to helping your organization succeed in a world of change. In 2006, IBM innovators contributed to 3,261 patents awarded to IBM—an average of 10 patents a day. United States Patent and Trademark Office statistics show that IBM has generated more patents than any other company for 14 consecutive years.

### **A world-class manufacturer**

IBM possesses deep industry experience and knowledge of the challenges you face. As a primary user of PLM, we understand your business processes and have the support of a global team of engineers to help tackle your real world issues—and keep you ahead of your competition.

### **Breadth of offerings**

We can impartially recommend PLM offerings to suit your organization, and employ and integrate the solution with your extended enterprise.

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