



Intelligent Plant Lifecycle Management



Plug into the power of your data

Do you need to manage and integrate data across the entire design, build, operate and maintain cycle for your new or refurbished generation facility? Are you concerned about managing your supply chain effectively? As you build a new plant or upgrade your older plants with new technology, the intelligent plant lifecycle management solution from IBM can help you leverage powerful information to optimize construction and operations. Prepare your plant to be capable of benefiting from data-intensive advanced computing and simulation.

Intelligent operations for the next-generation plant

The intelligent plant lifecycle management solution from IBM can help integrate data throughout the lifecycle of your plant. This can improve supply chain, plant construction, operations, financial reporting, training and compliance through a combination of plant lifecycle management, enterprise asset management and supply chain management - all with a consistent and open data management and integration infrastructure.

For utilities investing in new plants, our solution can help streamline the design process and facilitate the transition from construction to operation by effectively managing data and information throughout the lifecycle. Hit the ground running by pre-populating your enterprise asset management and electronic document management systems with valid, up-to-date information before plant start-up.

Existing plants can assure valid as-built information is available for their enterprise asset management, electronic document management, enterprise resource planning (ERP) and other critical business applications in power generation through our plant data management capability. Existing plants can also establish processes and reporting for re-licensing and IT upgrade requirements.

Our solution establishes a data-rich environment that can help prepare your plant to use advanced modeling and simulations to reduce risk.

Use data to light your way to success

Our solution can help enable "input once, use many times" capability for plant design data. We can provide infrastructure that supports the use of a common data model to standardize design and build data used by operations and maintenance processes.

Designed for asset intensive operations, intelligent plant lifecycle management can help:

- Support licensing and re-licensing processes for plants, especially nuclear.
- Manage the supply chain to optimize sourcing costs and schedules.
- Optimize design standards and specifications to manage risk during the bid, design and construction processes.
- Make better use of data - critical to optimal plant management.
- Bring documentation up to date and keep it updated so "as-built" and "as-is" match.
- Help ensure reporting includes the most recent and valid data to maintain compliance and relationships with regulators.
- Better maintain and operate costly equipment to get the most from your asset investments.
- Prepare data to be used in advanced simulation to help reduce the risk and downtime associated with plant operations.

Information is power

In the lifecycle of your plant operations, whether building or modifying an existing plant, information is one of your most valuable assets. Access to valid and up-to-date information and data can help reduce the initial investment for new plants and help modernize existing plants. The intelligent plant lifecycle management solution from IBM can help integrate data across your plant to improve operations, financial reporting, training and compliance.

IBM is amped up about energy and utilities

With more than 3,000 energy and utilities industry consultants and 30 years of services and solutions designed for energy and utilities, IBM's commitment to the industry is hardwired. In fact, our work within the industry has won us praise from outside experts, including:

- IBM was cited as a Leader in Labor and Asset Management for both the power generation and energy delivery industries in the 2007 Energy Insights report.
- Gartner Inc. has positioned IBM Global Business Services in the Leaders Quadrant of their 2007 CRM Service Providers report.



We continue to provide new and innovative solutions through the establishment of industry development and demonstration facilities, including:

- Energy Competency Centers in Austin, Dallas, Tokyo, Beijing and Delhi.
- The Global Center of Excellence for Nuclear Power in La Gaudé, France.

Synchronize data across your plant for more intelligent operations

During the lifecycle of a plant you must manage a variety of content including drawings, procedures, vendor-supplied information, equipment history files, design changes and more. You need an easy and effective way to manage and access data throughout your plant's lifetime, and to make sure that plant employees always have access to up-to-date, valid information. The intelligent plant lifecycle management solution from IBM helps you manage your new or existing plant smartly by leveraging your existing data.

Integrate, standardize and use design, and build data throughout the entire design, build, operate and maintain cycle to help:

- Optimize time to market and cost during plant design and construction.
 - Reduce risk by helping to ensure consistent and accurate asset information and data.
 - Avoid multiple data input and data inconsistency issues.
 - Enable efficient and cost-effective consortium collaboration across your plant lifecycle.
- In addition, by using a common data model to aggregate existing design and build data, our solution can help:
- Enable advanced computing simulations for maintenance and modifications.
 - Streamline compliance and re-licensing processes for regulatory reporting.
 - Prepare data to be leveraged through high-performance computing for advanced operator modeling and visualization.

A blueprint for efficient plant modification

In today's power generation marketplace, extending the life of existing generation assets is paramount. One U.S. nuclear customer planned, streamlined and optimized their major equipment replacement using the intelligent plant lifecycle management approach from IBM. Our intelligent plant lifecycle management solution provides several benefits in this case, including:

- Reducing and controlling costs, and maintaining predictable project performance.
- Sequencing construction and planning the outage.
- Providing a comprehensive plant data management infrastructure to apply to future plant operations.

Enable high-powered performance for your assets

The utilities industry is an asset intensive business. The cost of running, maintaining and optimizing your assets is significant. Many of these assets require a large investment to construct, are subject to market and regulatory risk, and require continuous maintenance and periodic replacement. The intelligent plant lifecycle management solution from IBM can help by providing data that allows you to maximize the performance of critical capital assets.

- Extend the use of data as an asset across your plant to improve the effectiveness of your operations.
- Better meet compliance goals by integrating both operational and financial asset data.
- Manage important aspects of each asset's lifecycle, including acquisition, work management, inventory control, purchasing, preventive maintenance and disposal.

Integrate information for better utility

Enable tight data integration - from design and construction through operations and maintenance - to enhance multi-process data use, including training, financial reporting, operations and compliance. With the intelligent plant lifecycle management solution from IBM, you can leverage the power of advanced computing and simulations for plant operation optimization through a modern, service-oriented architecture (SOA)-based data management platform. This can help assure valid up-to-date information is available throughout your plant's lifecycle.

Lighting the way for energy and utilities innovation

IBM has many years of experience applying intelligent plant lifecycle management solutions in a variety of industries, including shipbuilding and aircraft manufacturing. In the power industry, this solution has been applied to:

- Planning, scheduling and managing major equipment replacement projects.
- Plant data management integration of multi-CAD system data.
- Design collaboration, documents integration and standardization for a nuclear component company.
- Document and workflow management, and enterprise resource planning (ERP) integration for a nuclear fuels company.
- 2D-3D design data integration for a hydropower design company.

Tools to transform your data into power

The intelligent plant lifecycle management solution from IBM offers market-leading IBM hardware, software, middleware and services tailored to your specific needs. Components can include:

- Data warehouse and data marts, such as IBM DB2® Universal Database™
- Data extraction and transformation tools (ETL)
- Analytical reporting platforms (multi-dimensional and relational)
- Engineering authoring tools, such as:
 - o Reactor mechanical design
 - o Piping design 3D
 - o Electrical cableway routing
 - o Structural framing
 - o Equipment support structures
 - o Piping design
 - o Equipment arrangement
 - o EDSA electrical analysis
- IBM Global Business Services
- Process design and integration
- Systems integration and data architecture
- Change management software
- Third-party software from leading IBM Business Partners

Run a tight ship, with exceptional plant management

We have successfully implemented intelligent plant lifecycle management for a number of industries that need precise data and are ruled by tight regulation. Utility companies can benefit from our expertise gained in these industries because of the similarity between the needs of the plants.

In one scenario, a utility company needs to standardize on a toolset that would be applicable to all divisions and teammates while interoperating with legacy systems within the enterprise and allowing reuse of elements of design from one plant to another. Our solution is designed to help a company like this achieve: Near real-time management of multi-site collaboration to help improve performance.

Improved design processes and better integration between design and manufacturing to help reduce the costs of correcting errors during production caused by design problems.

Extend the life and productivity of each asset

What are the direct and indirect financial benefits of intelligent plant lifecycle management from IBM? By leveraging your equipment and plant data as an important asset class, your insights can help you find substantial cost savings and asset optimization by:

- Applying a consistent, modern IT infrastructure and common data model across the entire design, build, operate and maintain value chain to reduce rework and streamline operations.
- Establishing modern IT and software systems that allow advanced modeling to extend the benefits of your investment.
- Leveraging enterprise asset management into new operations, as well as into legacy operations to help ensure all your assets



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