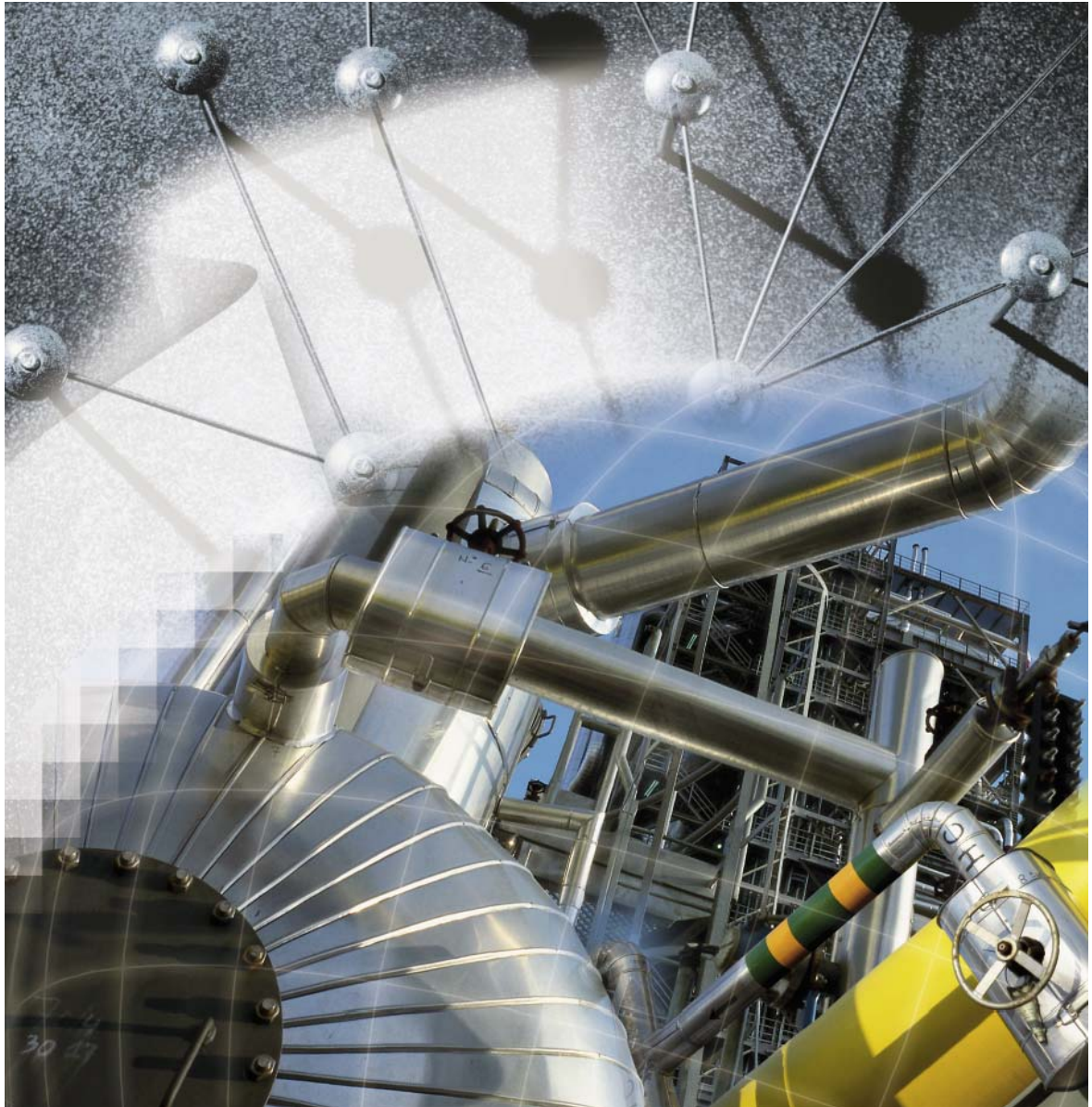


# Industrial<sup>IT</sup> Process Data Management

Advanced IT Tools for Building Information Systems  
in the Process Industry



**Industrial<sup>IT</sup>**  
enabled

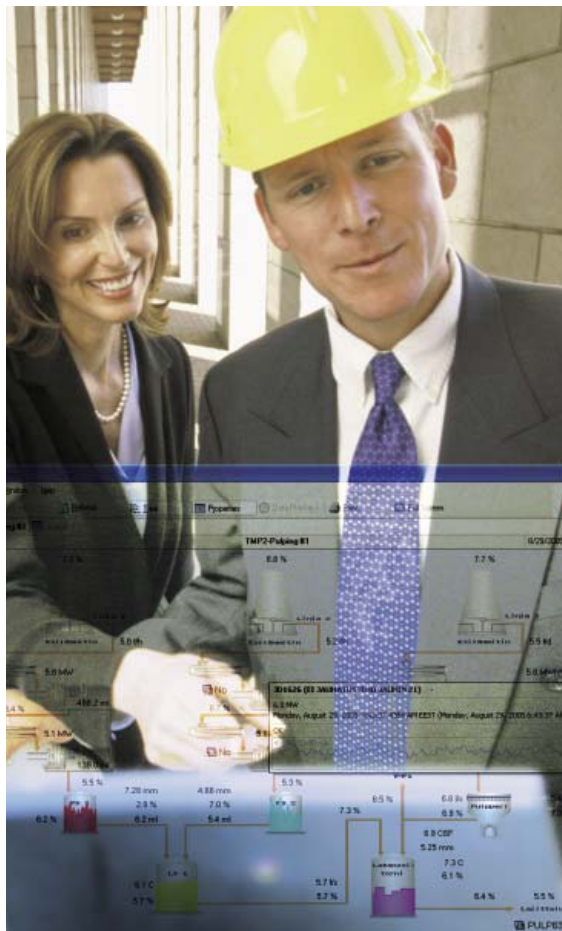
**ABB**

# Solutions Meeting Challenging Industrial Requirements

## Based on Extensive Experience

Process Data Management (PDM) is ABB's solution for industrial process information systems involving data storage, presentation and applications. It provides a comprehensive set of standard product modules and tools for building process information systems

- in the pulp and paper
- mining
- metal
- cement
- chemical
- petrochemical industries



PDM combines state of the art software technology with extensive experience gained during the last twenty years in supplying hundreds of demanding industrial process information and manufacturing execution solutions worldwide.

Process Data Management consists of the following main product modules

- **Real Time Database (RTDB).** RTDB is a relational database designed and optimized for process information management and extensive history recording. High performance and reliability, together with maintenance-free operation, provide a solid platform for mission-critical systems. RTDB combines the benefits of an easy-to-use relational desktop database with industrial reliability, performance and real-time functionality to provide an excellent platform for process information management.
- **User Interface.** User Interface is a basic concept providing high usability and integration services for all production and process information. It allows flexible navigation, and organizing and linking information between applications.
- **Applications.** Application modules are built with RTDB tools and the user interface.



## Industrial Applications and Solutions

The Process Data Management Solution offers product modules and tools for all areas of process information management, ranging from data acquisition to management level information presentation. Data acquisition, processing, recording and presentation for process monitoring, control and analysis are included as standard functionality. Easy-to-use application development tools with templates and wizards for implementing solution-specific calculations, displays and reports improve productivity. Standard, open interfaces integrate standard, customer-developed and third party components into a single solution.

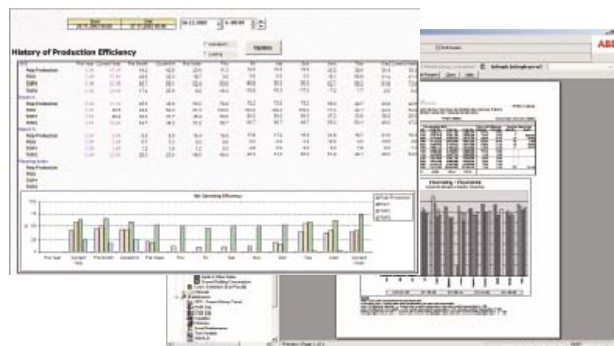
The following systems are based on the Process Data Management product:

- Process historian and reporting systems for ABB as well as other vendors' DCS systems in various industries
- Plant and corporate-wide energy management and optimizing systems
- Process database for integrated pulp and paper mill laboratory and other CPM systems
- Pulp production planning and management systems
- Process data warehouse systems
- Reporting systems for greenhouse gas emissions and management of CO<sub>2</sub> trading
- Overall equipment effectiveness reporting systems
- Historian database and reporting for SCADA systems
- Historian database for process analyzers and other measuring equipment

## Valuable Benefits

Process Data Management provides significant cost savings throughout all phases of a system's life cycle:

- System installation, interfacing and commissioning require a minimum amount of engineering work
- Application development using the standard tools and templates is efficient and leads to robust solutions
- Open standard interfaces enable easy data and function sharing with third party applications
- Unlimited scalability from simple systems to enterprise-wide high-end solutions secures investments
- High reliability and maintenance-free operation provide undisturbed operation and a longer system lifetime
- Comprehensive histories based on accurate process data combined with event-based production data provide excellent data mining possibilities for key process improvement information
- The graphic user interface, with easy-to-use generic trends, bar charts, alarm/event logs, and various list views combined with application-specific diagrams and reporting, provides superior usability resulting in higher productivity.





# Better Solution Capability with New Type of Database

## Relational Database for Industrial Use

The core of the PDM solution is ABB's Real Time Database (RTDB). RTDB is designed and optimized for industrial process information management and extensive history recording. Excellent performance and reliability together with maintenance-free operation provide a solid platform for mission critical solutions.

RTDB is a relational database capable of handling both time and event based process and production information and combining it with any application-specific relational data. Tables, data structures, indexes and relations can be created according to application needs. Built-in functionality for process information management and the related flexibility allow the application to meet industry's toughest requirements.

A high-end application may include tens of thousands of real-time measured process tags with statistical aggregate values and histories gathered over many years. Having all of this information in the same database as the application data creates a combination that elevates the solution's capabilities to an unprecedented level.

## Gateway to Other Relational Databases

RTDB includes gateway functionality to access data in an external ODBC/SQL database, just as it would be stored in RTDB. This function provides an easy way to use real-time, consistent external data, e.g. in displays, without the need to build a complicated communication link between the systems. RTDB data can also be accessed from an external ODBC/SQL database such as Oracle, with its gateway function.



# Enhancing Process Performance through Detailed Analyses

## Superior Performance

RTDB has been designed to meet the most demanding performance requirements. History data storing and retrieval is 10 to 100 times faster than in standard relational databases. When it comes to handling real-time process measurements, recording time series histories and producing statistical aggregates such as time averages, RTDB is superior. In standard configuration, RTDB can continuously receive, process and store several thousands of measured analog values per second. Processing includes user-defined conversions and checks, event triggering, history recording, compression and aggregate cumulation.

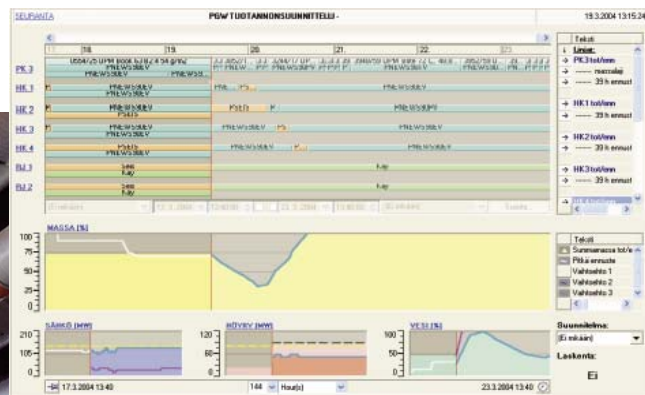
The client-server communication between the database server and graphical user interface has been optimized for presenting real time and history data in versatile chart diagrams. Over 100 concurrent client users can be connected to one server, each user having several live trend charts updated once a second.

## Scales from Personal Use to Enterprise-wide Data Warehouse

RTDB scales from small personal applications to enterprise-wide data warehouses with sizes of 1 TB or more. You can have a database with 100 tags or a plant-wide production database with 200 000 tags. In fact, for continuous process measurements there are no limits to the number of tags or the size of histories. RTDB scales to actual needs during run time, although the size of the database can be automatically controlled. Adding a new tag or changing the history's size limitations is achieved with a simple SQL statement, or a user-friendly graphical user interface.

## OPC for Data Acquisition

While RTDB provides the standard OLE for Process Control (OPC) interface to connect data acquisition systems, a variety of proprietary communication links are available to interface older DCS and other systems. The standard ODBC/SQL interface is also available for data acquisition.





# Better Information Usability

## High Usability

Process Data Management includes ABB's new User Interface for data presentation. The flexibility of the user interface, together with the power of the RTDB database, provides an excellent combination improving information usability.

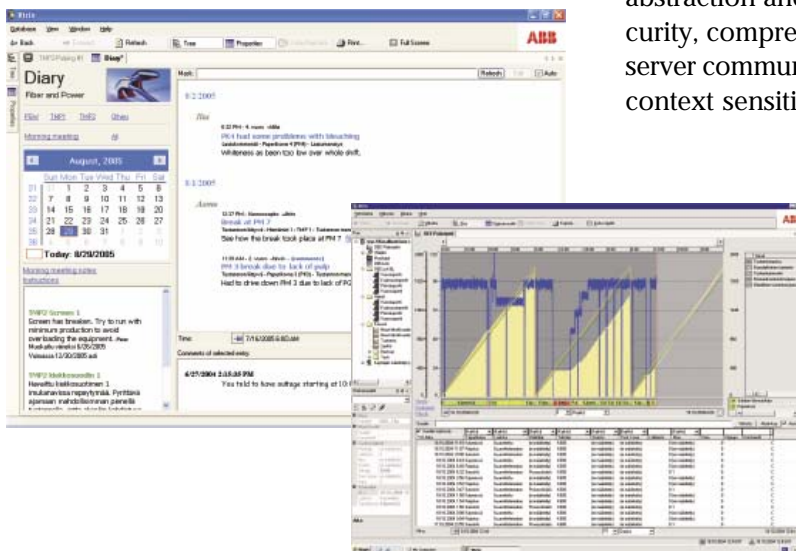
Improved usability also applies to information residing in external systems, because PDM is capable of integrating external data with the RTDB gateway function or accessing it directly from the user interface. The challenge of linking data from various IT systems and refining it into useful information can now be realized.

## Latest Presentation Technology

User Interface is a modern presentation tool based on Microsoft .NET technology, programmed with C# and applying the latest usability engineering knowledge for the visualization of process information. Industrial IT User Interface allows flexible navigation, organizing and combining information as the user wishes and integrating services between applications.

User Interface is based on

- Microsoft .NET technology - modern development tools and architecture providing the latest innovations in usability engineering.
- Service oriented software architecture that allows application independent presentation.
- Integration with the ABB platform and products, e.g. Distributed Control System and Quality Control System.
- Advanced technology concepts, i.e. navigator, GUI repository, generic controls, data access abstraction and optimization model, NLS, security, compression and encryption in client/server communication, and SOAP/XML-based context sensitive parameter exchange.





# High Productivity Engineering Tools

## Easy Application Development

Process calculations, displays and reports can be easily configured with PDM engineering tools. The PDM calculation development tool allows you to build combined real-time and history calculations with actual measured values or statistical aggregates. Functionality for history recalculations is automatically included in your application as well as the possibility to build what-if simulations using RTDB's scenario functionality.

RTDB facilitates application development by providing built-in functionality for process information management. Analog, digital and pulse inputs are processed through a number of steps selected by the user. Noise filtering, validity evaluation, automatic substitution with a user-entered value or other tag value for a bad value, event triggering with an exhaustive set of trigger types and user-defined actions are examples of the function steps available. All built-in functionality can be selected and configured individually for each tag.

Displays are configured with the User Interface itself. The user can create new displays, copy existing ones or set an existing one to layout definition mode, edit the display and store it in the display repository.

## Freedom to Select Additional Application Development Tools

RTDB can be accessed using standard interfaces. RTDB is compatible with MS-Office and other industry standard office software, reporting tools, presentation software, analyzing tools and application development tools. Standard SQL language with ODBC, OLE-DB

and JDBC interfaces offers maximum openness and freedom to select products and tools which build the best solutions. The information stored in RTDB is available to all users through the enterprise data network. It can also be easily published on the web, if desired.

RTDB increases the expression power of SQL language by introducing virtual attributes to time series tables. Time joins, condensed trends and report assistance in SQL maximize productivity in application configuration.

## Configurable Standard Application Modules Provide Cost Savings

Process Data Management contains several standard application modules in addition to basic process monitoring functions. Some examples: report templates, DCS event/alarm analyzing, process alarm management, diary, Overall Equipment Effectiveness (OEE) management and reporting, wearing components management, production planning and energy management. Standard application modules are highly configurable based on customer requirements. The customer-specific configuration is implemented with the parameters stored in the database and without any application code modifications. This provides the possibility of easy product version upgrading and significant reduction in system life cycle costs.



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