



from plant data

exaquantum

to business information

⋮
INTEGRATED

⋮
INFORMATION

⋮
MANAGEMENT

⋮
SYSTEM

Yokogawa's Enterprise Technology Solutions for Real-Time Business Management



ENTERPRISE

To view the enterprise's objectives through the customer's eyes, and provide management information and control system support to meet these objectives

TECHNOLOGY

Leading-edge Technology

SOLUTIONS

Optimum Solutions that satisfy the customer's needs and expectations

Exaquantum is one of the most comprehensive Integrated Information Management Systems available for process industries. It enables your enterprise to optimise operations and thereby maximise profits.



Operational Benefits

ENHANCED, SEAMLESS INFORMATION FLOW WITHIN AND BETWEEN PLANT SYSTEMS AND BUSINESS APPLICATIONS

AUTOMATED INSTANTANEOUS REPORTING

INTEGRATED INFORMATION FROM PLANT DATA AND BUSINESS SYSTEMS

MEASURES KEY PERFORMANCE INDICATORS (KPI)

AUTOMATIC DATABASE CONFIGURATION AND UPDATING

RAPID AND SIMPLE IMPLEMENTATION

INDUSTRY STANDARD WINDOWS OPERATION

ROLE BASED OPERATION

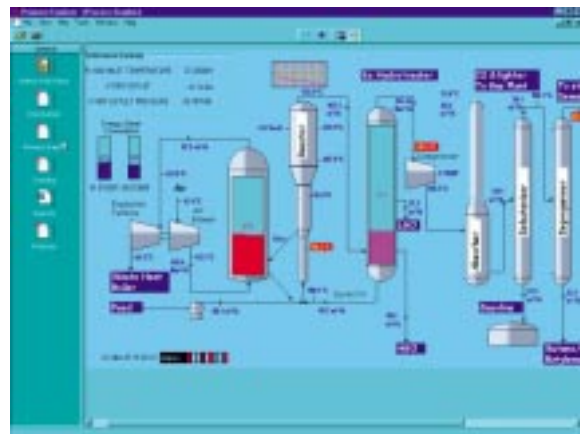
Business Benefits

INCREASED PRODUCTIVITY	Better plant utilisation, increased throughput
REDUCED DOWNTIME	Improved maintenance planning
REDUCED DECISION TIME	Direct information
BETTER PROCESS MANAGEMENT	Up to date business information
IMPROVED EFFICIENCY	Direct control
REDUCED COST	Better use of resources
IMPROVED QUALITY	Reduced quality give away / rework

O v e r

Exaquantum has a very clear business-directed focus, to provide a complete solution from the control system through to the enterprise resource planning level. It is a core technology in the Yokogawa **Enterprise Technology Solutions** (ETS) concept. **Exaquantum** provides industry with powerful integrated information management covering both the business and the process control domains. It eliminates the gap between business systems and process control by integrating information to match complex business requirements.

Exaquantum Integrated Information Management Systems form the basis of **Plant Information Management Systems** (PIMS) and **Manufacturing Execution Systems** (MES) that provide business benefits to users in the Hydrocarbons, Pulp & Paper, Power & Utilities, Chemicals, Pharmaceuticals, Food & Drink, Manufacturing and other continuous or batch processing industries. This is achieved by integrating data from all facets of the business and transforming these into usable, high-value business information as part of the enterprise's vital decision support toolset.

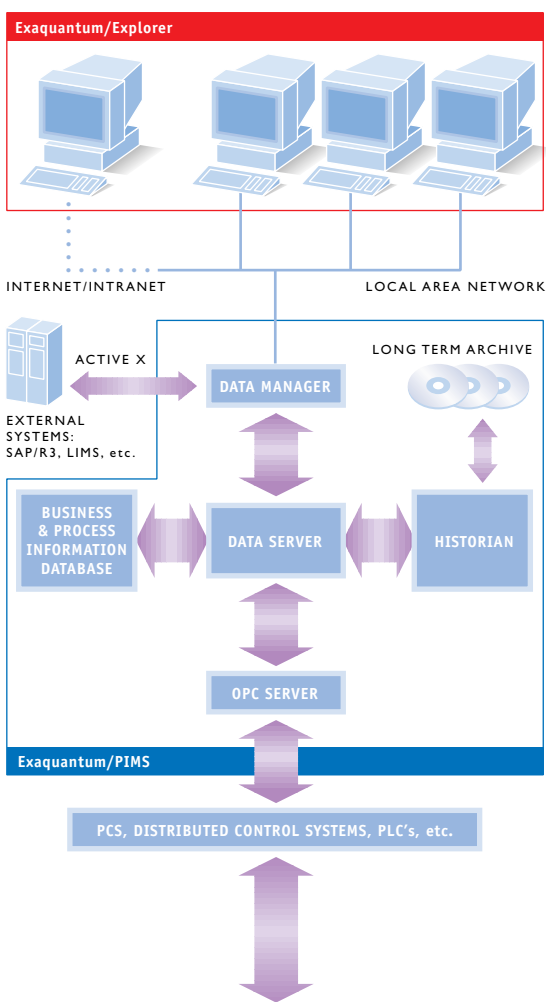


TYPICAL RUN MODE DISPLAY

Exaquantum is a new development which takes full advantage of the open standards and flexibility of the latest Windows NT technology. An advanced integrated object orientated database with desktop tools and communications software form the platform for application software packages.

Exaquantum improves manufacturers' control and management of work processes, using standardised application software packages that form part of the **Exaquantum** range of products. It provides individual solutions without the need to develop customised software.

.....



Positioning

Process Control Systems (PCS) produce large volumes of data. These data must be converted into useful information to facilitate management decisions and optimise the operation of the plant. **Exaquantum** gathers data from the PCS and other plant data systems, such as laboratory and maintenance systems. These data are processed and combined with business data, for instance product values and material costings, to deliver high-value business information to all decision makers in the enterprise, either directly or through business planning applications.

The integration of business information with plant derived data elevates **Exaquantum** above other PIMS type packages to provide a complete business orientated Integrated Information Management System.

The flow of information within **Exaquantum** is a two way process. The results of the decisions made and automated control responses are transmitted directly back to the PCS, as control demands to optimise the plant operation.



Functionality

Exaquantum delivers comprehensive and varied functionality. The following list covers the major functional groups as a high level indication of the capabilities available.

Interfacing with plant data systems using industry standard OPC

Automatic database configuration and management, based on PCS configuration

Dynamic plant data model

Comprehensive job-directed and type-specific historisation, archiving and aggregation of many data types

Extensive data management

Flexible scheduled and ad-hoc reporting, including embedded Ms Excel, Word, internet/intranet and other applications

Comprehensive trending facilities for real time and historical data

Data analysis ranging from standard calculations to complex user defined functions

User role dependent information display and security

Closing functions based on the plant's production calendar, including automatic and manual data correction

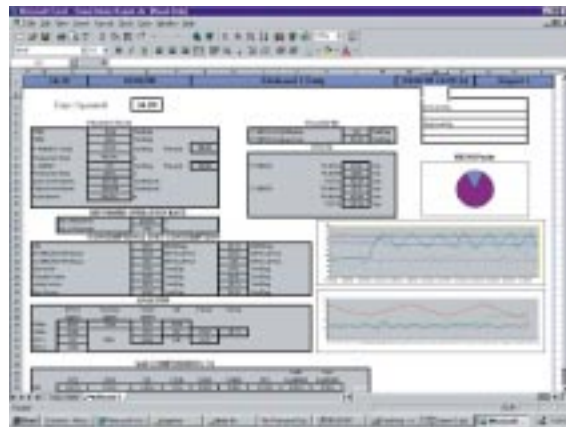
Statistical quality and process control

Planning and scheduling functions

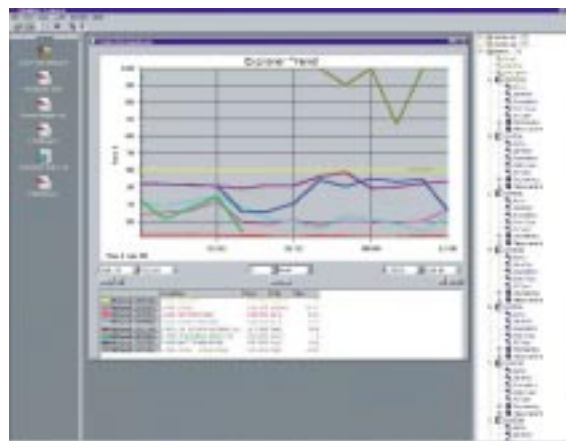
Extensive information exchange with other applications, including DCOM and ActiveX

Alarms and events handling

Automatic system administration and documentation



EXCEL ADD-IN



RUN MODE

Features

No list of features for Exaquantum could be exhaustive due to the power and the extensive and flexible nature of the product. All users will find their own level of use and individual methods of working. However, there are a number of features worthy of elaboration:

Exaquantum maximises the benefits of Windows NT technology in a way that achieves an 'openness' and 'interoperability' that has for so long eluded the computing world.

Automatic database equalisation ensures **Exaquantum** always reflects the current status of the plant.

Object orientated database and real time database seamlessly provide comprehensive information about all aspects of the plant in real time or historical form.

Business objects include not only physical plant data (eg tank with level, temperature, input rate, outflow rate) but also financial data relating to the object and its contents, maintenance information, process methods and *any* other relevant data. This information can be displayed according to the user role.

Business historian with optimised archiving and aggregation of raw and derived data, in compliance with Food & Drugs Administration (FDA) requirements, ensures minimum use of storage media without loss of information.

Closing calculations are performed according to user defined rules based on the plant production

calendar for batch and continuous processes, with authorised correction, automatic recalculation (re-closing) and signing off for automatic inclusion in reports.

Production calendar can accommodate any time period and supports daylight saving.

Exaquantum provides an extremely comprehensive and flexible analysis and reporting facility. Drag & drop techniques enable comprehensive displays and reports to be created without programming. Displays can include dynamic graphics, trends, mimics, graphs, charts, spreadsheets, text, events & alarms, tabulated data, embedded objects.

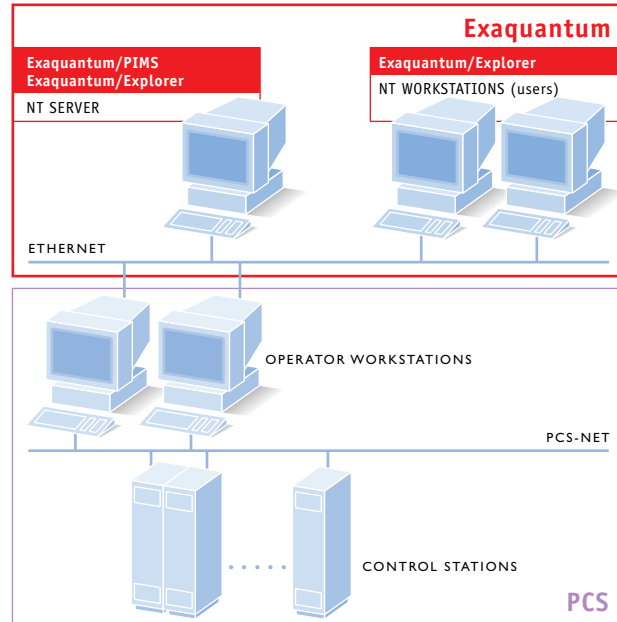
Simple scripting is available for users to create any number and complexity of calculations.

DCOM and ActiveX component technology provide extensive information exchange with other applications for inclusion in reports, distributing information, etc. (eg internet/intranet for sharing reports with remote sites, inclusion of cctv or sound in displays, obtaining up to the minute commodity values). Any ActiveX container from any supplier can be accommodated, making the possibilities endless.

Comprehensive trending facilities, providing real time and historical, single or multi-trend groups. Historical trends will seamlessly span recent and archived data.

Data quality embraces confidence and consistency ratings that are propagated throughout calculations.

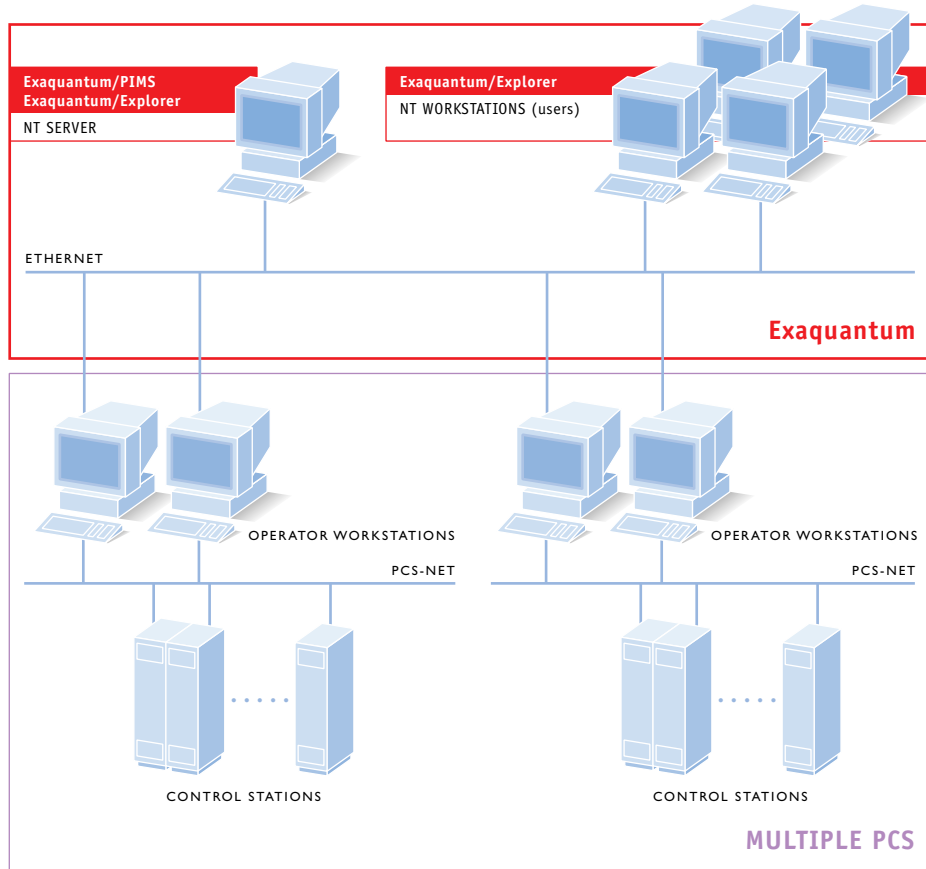
Exaquantum employs Windows NT based client server architecture with direct interfaces to plant data systems and business systems. This architecture enables applications from small single process installations to very large plant wide systems serving many diverse users to be configured from the same basic components.



Architecture

Plant data can be acquired from PCS, (DCS, PLC, etc), laboratory systems, sampling systems, maintenance systems, stock systems, ERP and any other systems. This is generally achieved through industry standard OPC interfaces.

At the business and client (user) side information is normally exchanged using ActiveX technology over a local area network, and can utilise intranet or internet.



re



Turnkey Solutions

Yokogawa Marex Technology Limited has an extensive pool of expertise in a large number of industries and in most parts of the world. This enables turnkey solutions to be delivered as part of the **Enterprise Technology Solutions** concept, whereby **Exaquantum** is applied to specific customer requirements together with all applications, configuration and hardware necessary for the complete solution.

Yokogawa Marex delivers all aspects of the solution to the client, providing a single point of contact for the whole operation, even incorporating other supplier's equipment.

Turnkey solutions include all elements necessary for the successful implementation of the project throughout its life. This encompasses initial studies, system configuration, installation, commissioning, training and full through life support.



System Integration

Yokogawa Marex provides system integration for its own and other manufacturer's systems, using the wealth of expertise available in house and at other Yokogawa sites.

Many industries are covered by Yokogawa Marex's in house expertise, including Oil & Gas, Chemicals, Pharmaceuticals, Pulp & Paper, Power & Utilities, Food & Drink, Manufacturing and other continuous or batch processing industries.



Training Support

All necessary training is provided for full installation, operation and maintenance of systems. Yokogawa Marex can provide training programmes for engineers, operators and maintainers on site at the customer's premises or in house, according to the customer's requirements.

A variety of support packages are sold with the product, including upgrades, hotline and maintenance, to fulfil the client's own requirements, so the right level of service is always available, wherever in the world it is required.

YOKOGAWA

Yokogawa Marex Technology Limited

34 Medina Road, Cowes, Isle of Wight
PO31 7DA, England
Tel +44 1983 296011
Fax +44 1983 291776
E-mail info@marex.co.uk

Yokogawa Electric Corporation

World Headquarters
9-32, Nakacho 2-chrome, Musashino-shi,
Tokyo 180, Japan
Tel +81 422 52 5586
Fax +81 422 52 9802



EUROPE

Yokogawa Europe B.V.

European Headquarters
Vanadiumweg 11, 3812 PX Amersfoort,
The Netherlands
Tel +31 33 4641611
Fax +31 33 4641610

THE AMERICAS

Yokogawa Corporation of America

American Headquarters
4 Dart Road, Newnan, Georgia 30265-1040, USA
Tel +1 770 254 0400
Fax +1 770 254 0928 (general)

ASIA PACIFIC

Yokogawa Electric Asia Pte. Ltd.

South Asia Headquarters
11 Tampines Street 92, Singapore 528872, Singapore
Tel +65 783 9537
Fax +65 786 2019
Tlx RS 26137 YASSIN



Subject to change without notice.
Copyright ©1999 Yokogawa Marex Technology Ltd.

Windows NT, Excel, and Word are registered trademarks of Microsoft Corporation.
All other product names are trademarks of the respective companies.