Connecting you to the Future

system 302

enterprise automation

smar

FIRST IN FIELDBUS

*In order to maintain the competitive edge in your industry, it's now necessary to use a standard, open digital automation system. For an open and advanced control system and simple and cost effective integration, **SYSTEM302** is the ultimate choice – the Easy Choice!*

Competitive Advantage in the Plant

SYSTEM302 is a field proven, open and digital automation system that brings outstanding results to your plant from the first day.

It is guaranteed to increase performance of your plant and has been intentionally designed to deliver the highest degree of interoperability and cost effective integration utilizing state of the art digital technologies.

SYSTEM302 fully integrates several award winning components including: FOUNDATION™ Fieldbus, HART, High-Speed Ethernet, MODBUS, discrete and analog signals, sequence logic, interlocks and distributed advanced control.

This new and intelligent field integration provides the necessary infrastructure for advanced applications such as asset management, proactive maintenance and enterprise automation.

The results include better process efficiency, reduced process variability, lower maintenance costs, increased plant availability and maximum reliability.

From Small to Big

The modular design of **SYSTEM302** allows full scalability in both size and functionality.

It's a one of a kind automation system that offers you an open architecture with the same functionality from a dozen to thousands of I/Os. Allowing you to implement applications of any type in a cost effective way.

You just choose the FOUNDATION™ Fieldbus function blocks that work best for your application and distribute them throughout the entire system.

Furthermore, with **SYSTEM302** you can easily integrate your existing automation system through MODBUS to Ethernet converters, 4-20 mA to Fieldbus converters and 3-15 psi to Fieldbus converters in order to benefit from the latest open digital technologies.

Always the First

DFI302 H1/HSE linking device and other components of **SYSTEM302** have been approved by the Fieldbus Foundation years ahead of the competition.

Being the first in the industry to develop break through technologies such as FOUNDATION™ Fieldbus H1 and FOUNDATION™ Fieldbus HSE, Smar helpped users to become leaders in their industries.

Of even greater significance is the fact that **SYSTEM302** has dramatically improved operational results. Improved operations allow **SYSTEM302** users a major advantage over their competitors.

DFI302, the centerpiece of SYSTEM302, is the first FOUNDATION™ Fieldbus approved HSE linking device. It is the he ultimate key for an open architecture

Based on standard technologies like PCs, FOUNDATION™ Fieldbus High-Speed Ethernet, FOUNDATION™ Fieldbus H1, HART, MODBUS, OPC and Windows™, **SYSTEM302** is the key for more accurate control, proactive maintenance, improved plant availability and increased safety.
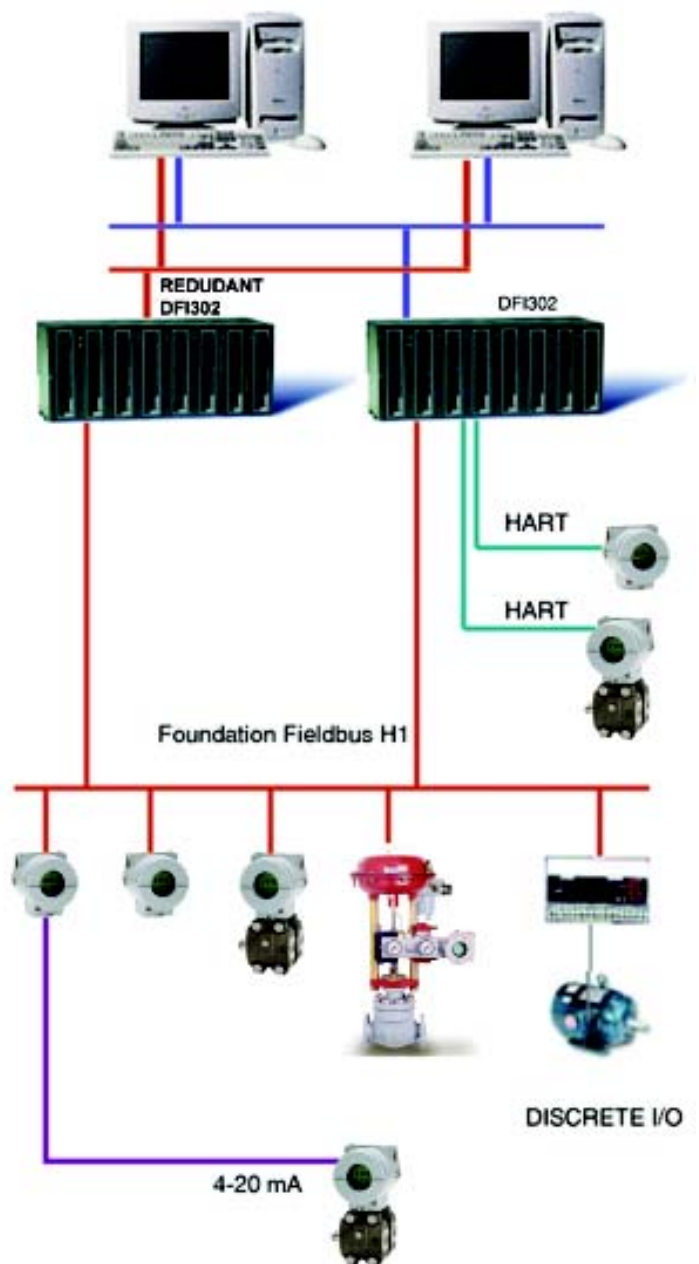
SYSTEM302 delivers critical information where and when it's required.

Unlike other systems, **SYSTEM302** was designed to allow control distribution among intelligent microprocessor based field devices and high performance controllers such as the **DFI302**. That's what makes **SYSTEM302** easy to learn, easy to use, easy to maintain, and easy to connect to other existing automation systems.

You can choose the level of redundancy your application requires, including:

- Redundant Ethernet network communications
- Redundant controllers
- Redundant power supplies
- Redundant H1 FOUNDATION™ Fieldbus interface and bus power
- Redundant MODBUS communications
- Redundant workstations

Distributed Functionality throughout an open architeture

REDUDANT DFI302

DFI302

HART

HART

Foundation Fieldbus H1

DISCRETE I/O

4-20 mA

3

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You have many choices to automate your plant. What is it that separates SYSTEM302 from other automation systems?

SYSTEM302 software application suite includes all the best-of-breed applications you need to configure and manage all aspects of your plant:

- **SYSCON -** Universal FOUNDATION™ Fieldbus configurator
- **LOGIC VIEW -** IEC 61131 compliant configurator for discrete logic
- **ASSET VIEW -** HART and FOUNDATION™ Fieldbus asset management software
- **ExperTune -** PID self tuning plug-in
- **PROCESS VIEW** - Process visualization and interaction software
- **OPC** (OLE for Process Control) built-in drivers
- **ODBC** (Open Database Connectivity) and SQL (Structured Query Language)
- Full compatibility with C language and Visual Basic applications
- **FB VIEW** - Fieldbus Network Analyzer

SYSTEM302 keeps an on-line database available to all controllers and workstations. Functionalities that are difficult or impossible to implement in other systems can be easily done in **SYSTEM302.**

SYSTEM302 was designed to retrieve, store and use all data available in fieldbus devices. Status details are relayed by these intelligent devices and broadcasted through *SYSTEM302* using digital communication.

SYSTEM302 also provides analog and digital Sequence of Events (SOE) logging that keeps you updated with your plant events in a real-time environment and provides tracebilyty to causes and consequences.
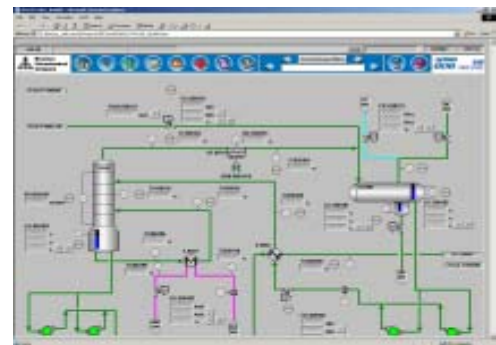
System302 software provides easy and flexible information for enterprise integration

DFI302 provides cost savings in the installation process. The compact, modular design allows you to efficiently manage your process.

Easy Installation and Reliability

DFI302 has been designed to be heavy-duty, scalable, flexible and easy to integrate. It is built to comply with EN50081 and EN50082 RFI and EMI requirements, EN61131-2 and IEC 68-2-32 environmental ratings. **DFI302** MTBF and MTTR are 167,304 hours and 0.5 hours respectively, wich allows 99.9997% availability for your system.

Hot Swap

Unlike other automation systems, **DFI302** components including controllers, I/O cards, field devices and workstations can be added and removed while the system is powered and running. You can expand and upgrade your system without the need to shut down the plant.

Intrinsic Safety

DFI302 intrinsically safe subsystem connects intrinsically safe field devices in hazardous areas, for FOUNDATION ™ Fieldbus, analog input, analog output, discrete input, and discrete output applications.

Data Acquisition

DFI302 is the first Foundation™ Fieldbus approved linking device and is an open interface for a full range of Foundation™ Fieldbus H1, HART, analog and discrete.

Redundancy

Improved reliability and increased system availability are built in throughout the **DFI302**. Redundancy options are available for:

- Control and I/O power
- Controllers
- FOUNDATION ™ Fieldbus HSE communication
- H1 FOUNDATION ™ Fieldbus interface
- H1 FOUNDATION ™ Fieldbus power
- MODBUS/RS485 and MODBUS/TCP Interfaces

Scalability

DFI302 has been designed to allow flexible distribution of control functionality without losing integration benefits. Each module has bi-directional horizontal communication and handles:

- 768 Conventional I/O Points
- 4 FOUNDATION ™ Fieldbus H1 Networks
- Up to 64 FOUNDATION ™ Fieldbus Devices
- 4 LAS (link active scheduler)
- 1 FOUNDATION ™ Fieldbus HSE Port
- 1 Modbus Gateway Network
- 100 Fieldbus FOUNDATION ™ Function Blocks
- Up to 32 Control Loops

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FCS main concept is to distribute control functionality among intelligent field devices. What does that mean?

It means you need powerful field devices

Digital Communication

Fieldbus is a digital, bi-directional, multidrop communication protocol specially designed for process automation. It is an industrial Local Area Network (LAN) for process control.

Digital communication is more reliable, robust and safer than analog signals because you have more information, faster communication and interference free signals.

Apart of being a digital protocol, FOUNDATION™ Fieldbus is also a non proprietary protocol and also establishes rules and standards for control distribution and execution from the application software to the field devices.

Instantiable Function Blocks

Smar 302 series devices allow you to choose up to 20 function blocks and download solely the ones needed into your field devices.

Advanced PID, Analog Alarm, Arithmetic, Characterization, Constant, Density, Input Selection Integrator, Lead Lag, Output Signal Selector, PID, Set Point Generator Split Range, AI, AO, DI, DO and Logic are some of the function blocks you can instantiate into Smar field devices.

Control Functionality in Field Devices

Field Control System (FCS) was designed to increase system reliability, improve plant availability and cut acquisition and operation costs. These advantages are accomplished because control functionalities are distributed throughout the plant rather than having all the control functions in a central controller.

To achieve those goals as they are meant to be, you need Foundation™ Fieldbus function blocks in field devices.

Smar 302 series FOUNDATION™ Fieldbus field devices support up to 20 function blocks. This gives you the power you need to build the functionalities you want for your applications and truly distribute it throughout your plant.

Configuration Tools

SYSTEM302 coordinates all aspects of automation engineering, including:

- Control strategies
- Process graphics
- History
- Alarms

Unlike hybrid and conventional control systems, on-line controls and data collection are automatically available as you can easily design your control strategies with **SYSTEM302.**

Syscon

If you are used to work with Microsoft's Windows™ then you already know how to work with Syscon. - Simple like that.
To improve the use of your engineering time, Syscon offers the following tools:

- Pre-defined control strategy templates
- FOUNDATION™ Fieldbus approved DD and CCF files for over 50 vendors
- Context sensitive help
- Drag-and-drop configuration
- Right mouse click for easy choice of available options
- Self-documenting control strategies.

Plug and Play

All **DFI302** modules are automatically recognized as they are plugged into the system. No special drivers need to be installed.

Intelligent field devices like FOUNDATION™ Fieldbus are automatically recognized as well because *Syscon* is prepared to work with any Foundation™ Fieldbus approved devices. Device approved there are no restrictions to vendors or interoperability test versions.

Faster engineering

SYSTEM302 engineering software allows you to be both effective and efficient in major projects and critical operations:

- On-line and Off-line configuration
- Upload existing configuration from **DFI302** and field devices.

Further, built-in IEC61131 programming languages and Foundation™ Fieldbus function blocks provide a user- friendly environment to easily design and document your control strategies. Types of control you can develop:

- Logic, sequence and interlocks
- Regulatory control
- Advanced control
- Batch control

SYSTEM302 operation software provides a user-friendly environment for process operations and information access.
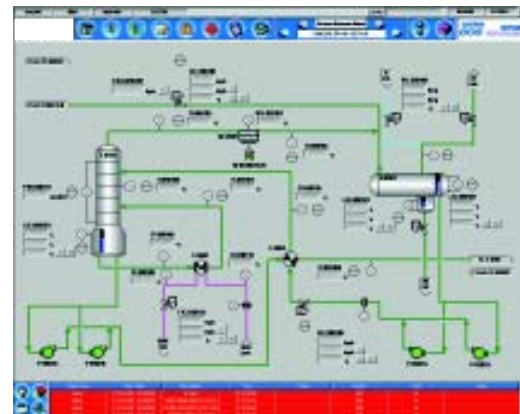
Surfing on the Plant

Graphics in the operation workstation are easy to learn and use. Navigation buttons give you access to alarms, alarm summaries, trends, process mimic graphics and instrument management.
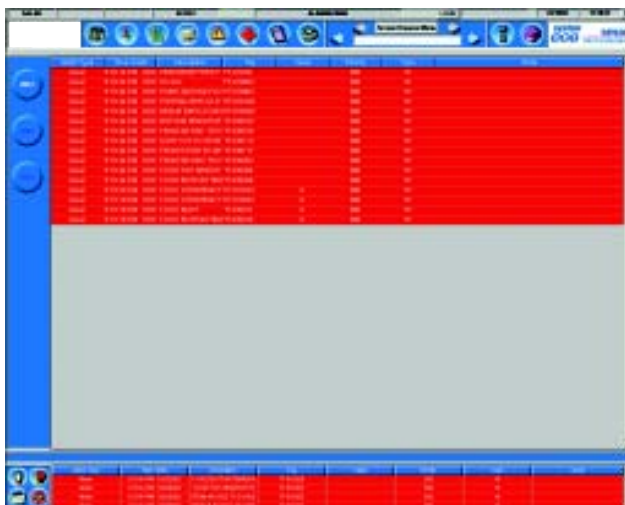
Password security restricts access to the selected workstation or operating system. This eliminates the possibilities of tampering, accidental file deletions, unauthorized changes and other activities that might put the plant efficiency at risk.

Alarm Management

SYSTEM302 receives validated data, status, and diagnostics from intelligent FOUNDATION™ Fieldbus field devices. This is the key for precision alarm management.
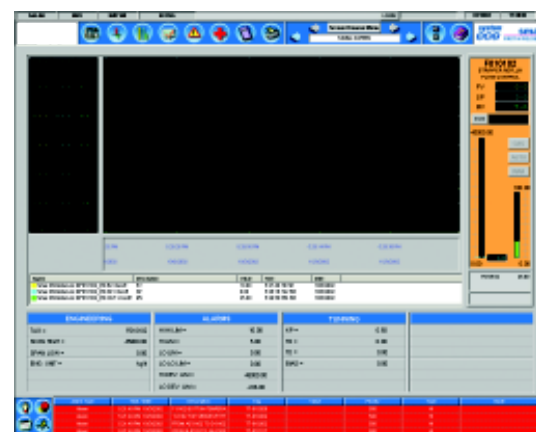

Tracking the Plant History

SYSTEM302 provides on-line trends, event views and batch views which record different types of historical information.
Real-time and historical information is integrated into a single screen, for evaluation of trends and events affecting plant operation.

SYSTEM302 shows continuous and event information in a single view. You can easily see how a tuning change affects performance.

Identify who changed what, when and why. Further, operators can use **AssetView** for tracking field device changes. With **AssetView** you have a complete history of your device maintenance records, reducing your maintenance costs over typical asset management methods.

True Asset Management comes alive with SYSTEM302

Diagnostic Maintenance

Transforming diagnostic data from field devices into detailed, useful information is one of the major benefits of digital communication.

Instead of seeking out process problems or having unexpected shutdowns, *AssetView* will launch you to the real proactive maintenance world.

AssetView provides easy access to vital device information for calibration, configuration, device audit and advanced diagnostics for proactive maintenance.

AssetView provides your maintenance department with a complete list of opportunities for process improvement. The prioritized list includes:

- Uncertain device input reported
- Loop mode not in auto
- Control limited
- Excessive loop variability

This summary of improvements can be stored for future planned actions in *AssetView*.

With *AssetView,* the operator can check diagnostic data from a control valve to determine if maintenance is required. Compared with past practices of pulling valves out of service on a preventive schedule, your maintenance costs can be reduced dramatically, and unplanned shutdowns avoided.
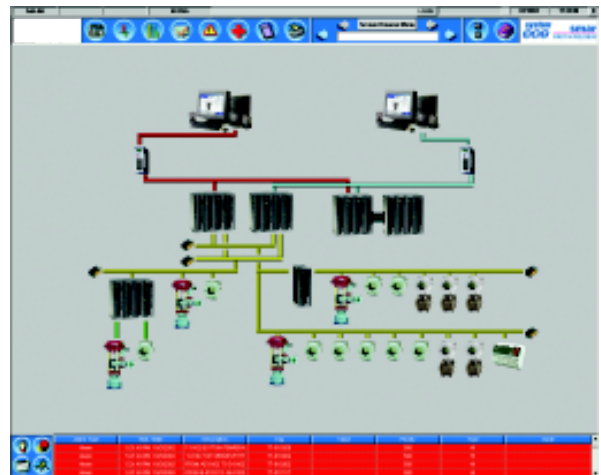
Real Time Diagnostic

Alarms generated by intelligent devices (FOUNDATION™ Fieldbus and HART) inform of problems as they occur. *AssetView* communicates with a message, i.e., "defective PT100 TAG N# TI-002" instead of the unclear "High Limit" that you receive with other systems.

Alerts like excessive valve stem travel; plugged impulse lines and sensor failure are reported to the operator, maintenance department and even to vendor e-mail accounts if the critical nature of the problem so requires
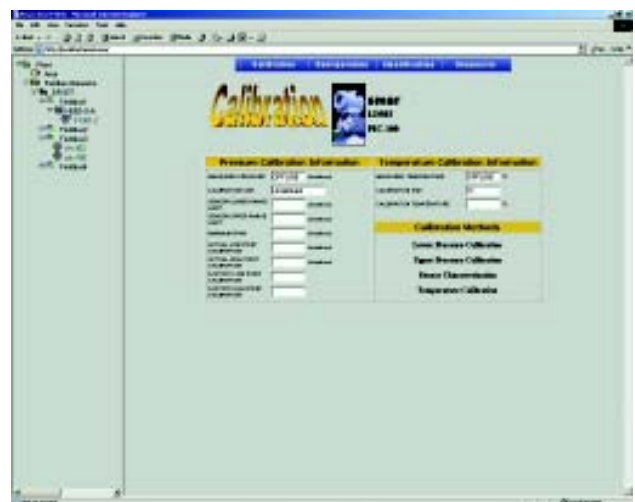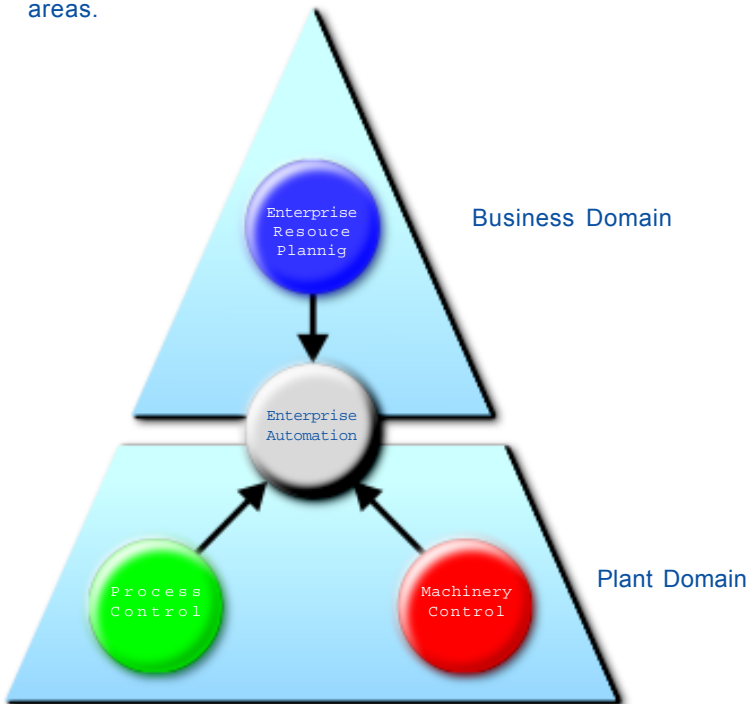
SYSTEM302 has been designed to provide the highest degree of interoperability and cost effective integration. Other systems have not.

Enterprise-wide Integration

Because **SYSTEM302** was built to connect with the SAP R/3 ERP - Enterprise Resouce Planing - system, your sales department may now know what delivery they can promise for a new order, and see the progress of existing orders - attending the customers better.

Your accounts department can directly find out how much has been delivered to the customer in order to invoice correctly in a timely manner.

Benefits like efficient plants, optimized supply chains, lower direct labor costs and reduced inventory and delivery time, are now possible with **SYSTEM302**

For many years, legacy automation systems, poor communication standards and costly resources for development of this connectivity were major challenges for effective Enterprise Automation.

SYSTEM302 open architecture is the key element to eliminate lack of standards, costly sustainable connectivity and integration problems because **SYSTEM302** has been designed on top of digital standardized communication protocols.


Merging of automation areas.
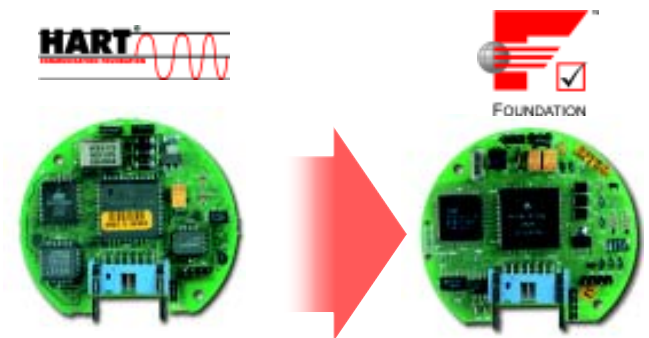
Smar FF HSE technology has been supplied to major automation system and instrumentation vendors, and Smar software is based on universally accepted technologies such as Windows™ and OPC.

Smar conventional analog instruments can be easily converted into fieldbus by replacing a circuit board.While other automation system vendors are indicating that HTTP and HTML technologies will be present in process automation in the future, Smar already has field proven software with INTERNET capabilities.

If you want a long term solution for your automation needs, invest in **SYSTEM302** — recommended in the industry.

Smar has Fieldbus experience in pratically all industry segments in all continents.
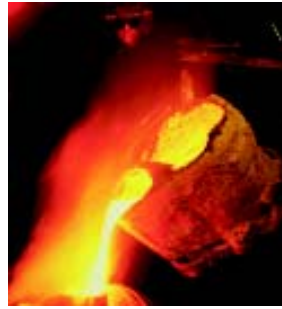
Application Gallery
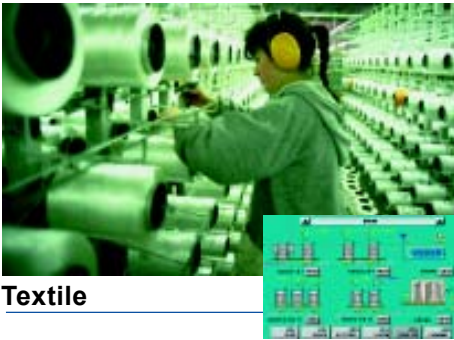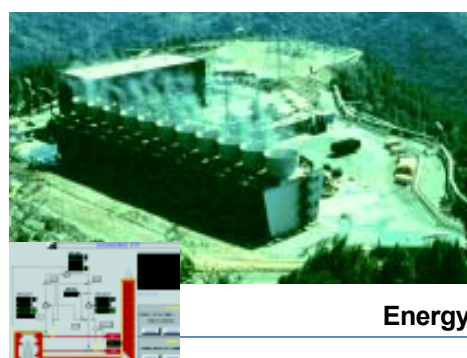
Textile

Glass

Food and Beverage

Pulp & Paper

Mining

Oil and Gas

Navy

Energy

Water and Wastewater

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