

azbil



KnowledgePower™

**A plant operation support system that automates operating procedures,
making intelligent use of on-site knowledge**

Knowledge Management for Plant Operation

With the push for today's plants to achieve ever higher levels of automation and stabilization, there is increasing concern over inefficiency or error during infrequently performed transition phase operations like startup, shutdown, and recipe changes, or during the response to an abnormal situation.

Knowledge Power helps you maintain your existing operating capabilities while supporting safer and more efficient plant operation.



What Knowledge Power can do for you — right now !

Based on the idea of kaizen — continuous incremental improvement of manufacturing site activities — the Knowledge Power plant operation support system helps to establish more stable transition phase operations and to capture the experienced operator's ability to sense abnormalities.

The following factors may cause a decline in your operating capabilities in the future :

- Retirement of skilled, experienced operators who have been with you since the construction of the plant
- Lack of deep knowledge, due to the ever-expanding responsibilities of each operator
- Inadequate on-the-job training, because current operations are handled by a small and skilled workforce
- Little experience in responding to abnormal situations, as a result of achieving a good level of stability
- Little experience with startup and shutdown operations, due to a lengthening interval between periodic repairs



What Knowledge Power can do for you — right now !

Knowledge Power can help you to standardize and to automate operations which are being done manually.

Equipment startup/shutdown and recipe changes tend to be done manually (although with standard operating procedures). As a result, such operations are heavily reliant on operator skills. By automating the procedures for these irregular operations, Knowledge Power more effectively standardizes them. The result is improved safety during transition phase operations and less time to production.

The screenshot displays the Knowledge Power software interface. On the left is a 'Hierarchy Explorer' window showing a tree view of process steps, with a red box highlighting the 'Manual operation for' section. The main window shows a process flow diagram with various control elements like pumps, valves, and sensors. At the bottom, a 'Manual List Icon' window is open, displaying a table of manual operation lists.

No.	Check	Manual Operation Lists
1	<input type="checkbox"/>	PLEASE SET MINIMUM FOR FURNACE DUMPER.
2	<input type="checkbox"/>	PLEASE CHECK AND CONFIRM THAT THERE IS NO LEAK OF FUEL GAS.
3	<input type="checkbox"/>	PLEASE SET OIL BUNER AT FURNACE.
4	<input type="checkbox"/>	PLEASE WARM UP STEAM.

In the Explorer window, you can hierarchically organize an entire process and monitor it from a bird's-eye view. If anything abnormal occurs in the process, the symbol for the process changes color. From the symbol, the operator can directly call up the process in which the abnormality occurred.

Knowledge Power allows you to automate the monitoring skills and methods of experienced operators

Whether an operator can detect a problem at an early stage or can judge whether an operation is proceeding optimally depends largely on the skill level of the individual operator. The monitoring skills and methods employed by experienced operators are probably not recorded in any manual, but Knowledge Power provides you with the ability to systemize and standardize them. This enables all operators to perform their jobs with the monitoring skills of experienced operators, so that risks can be better avoided, and safer operation can be achieved.

Features of Knowledge Power

1. Application development that requires no programming knowledge

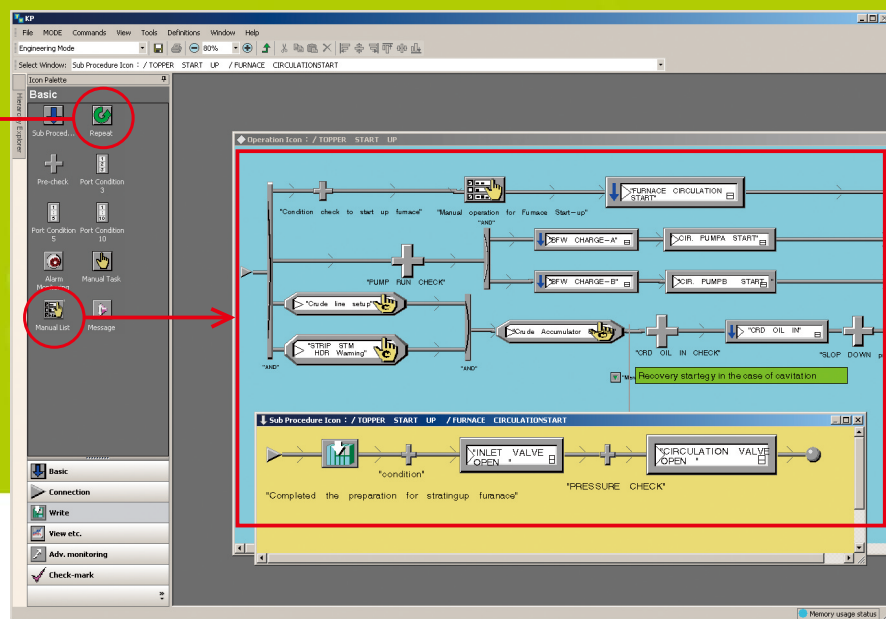
Knowledge Power treats the basic units of operator actions (such as monitoring a transitional process, doing a DCS operation, or sending a message to other operators), as software elements represented by icons. KP provides a rich variety of such icons. You can design and develop applications by combining the icons and displaying the resulting procedure in a chart like the one shown below.

2. Application design is easy to understand, even for non-developers

Since each application is represented by icons in a chart, even operators who are not familiar with computers can easily understand what the application does.

Group of icons which express the basic actions required for an operation.

You can design and develop applications by arranging icons flow in a chart to define your operating procedure.



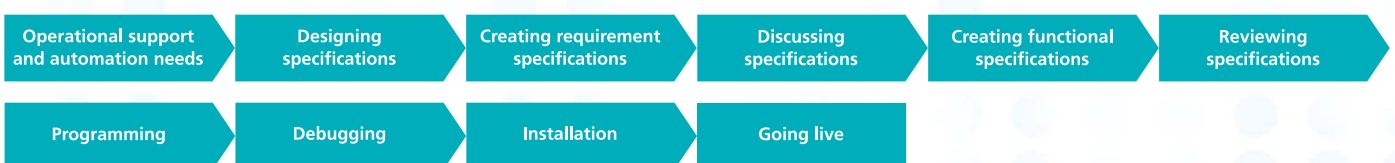
3. Shorter development time is achieved by design and development which are initiated at the manufacturing site

Since the manufacturing site operators can do the development themselves, applications can be developed in a shorter time. Moreover, Knowledge Power facilitates continuous development and improvement (kaizen) activities at the manufacturing site.

With Knowledge Power



When programming an automatic sequence



About Knowledge Power icons

A variety of function icons

Knowledge Power represents the basic components of operator actions as icons, and provides icons with a rich variety of functions.

Port-Condition

Selects a process to be executed, based on the condition that was input.

Sub-Procedure

Modularizes an operating procedure in the desired units.

Manual Task

Outputs a message to an operator requesting a manual operation.

Algorithm

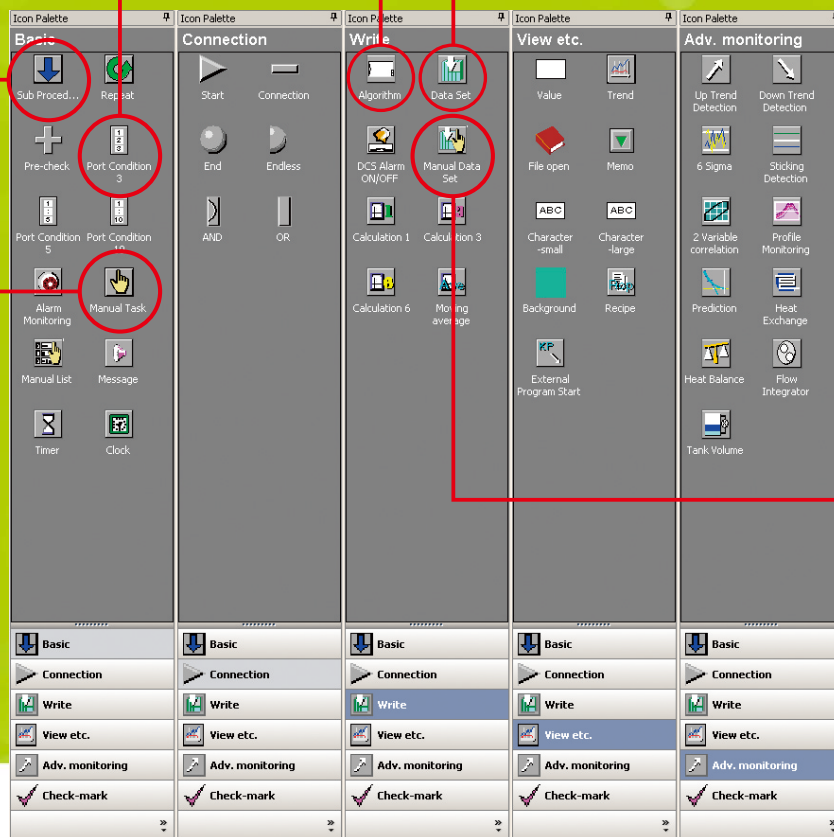
Used in automation of such operations as the automatic ramp for DCS set points and the degree of opening settings for valves.

Data Set

Automatically configures settings for DCS or Knowledge Power parameters.

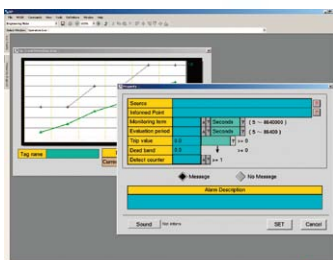
Manual Data Set

Used when the operator sets data manually.



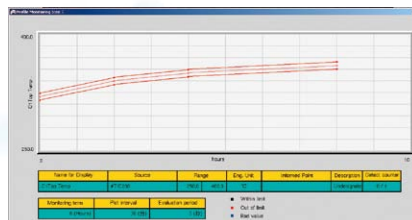
Advanced monitoring icons

Knowledge Power has 11 advanced monitoring icons to imitate the monitoring skills of an experienced operator, with the functions necessary to detect abnormalities which a DCS cannot detect at an early stage.



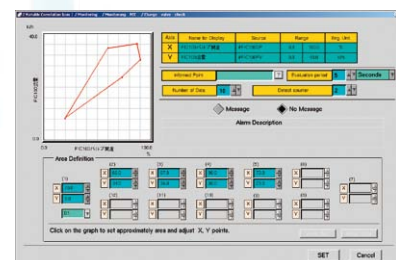
Trend Detection

Detects a rising or falling trend. An alarm message is output when up trends or down trends are successively detected more than the predetermined number of times.



Profile Monitoring

When a condition changes or the temperature for a batch operation is being controlled by programs, this icon is used to monitor whether the process value is moving on the assumed track.

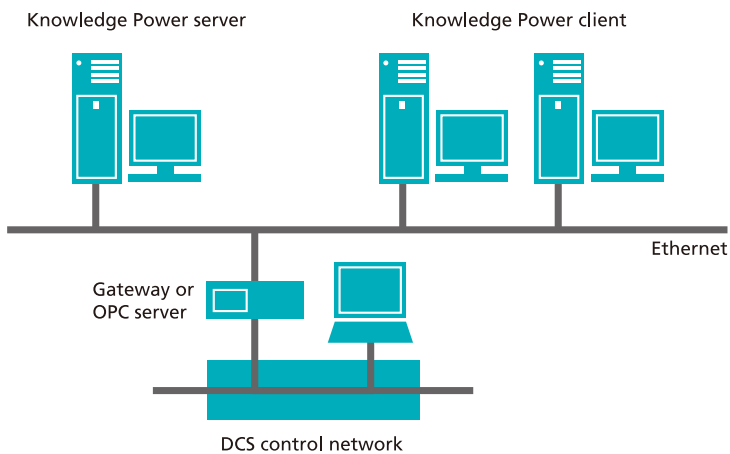


2-Variable Correlation

Monitors correlations between data from two inputs and signals that there is an abnormality if the data diverge by more than a specified amount.



System Configuration



Vendor	DCS Model	Gateway or OPC Server
Azbil Corporation	Advanced-PS™	IOAS™
	Harmonas-DEO™	DOGS™
Yokogawa Electric Corporation	CENTUM CS	ACG
		Exaopc
	CENTUM XL	ECGW3
		Exaopc
Honeywell International Inc	TDC 3000/TPS	APP node

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<http://www.azbil.com/products/bi/order.html>

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Azbil Corporation Advanced Automation Company

Yamatake Corporation changed its name to Azbil Corporation on April 1, 2012.

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