

# ABB SUPERVIEW

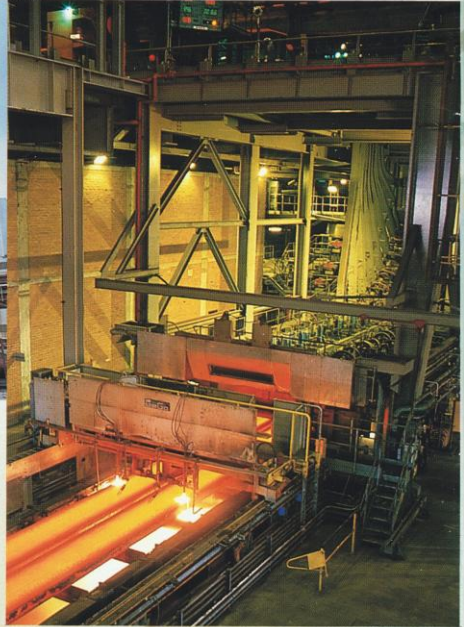
*The information system for industrial automation*

**ABB**  
ASEA BROWN BOVERI

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## Rapid information for rapid decisions



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To manage a processing plant these days is tough going. The demands are great. Mainly for knowledge. Knowledge for maintenance of a high product quality. Knowledge for development of the production process itself. Ever higher demands are placed on production reporting and environmental protection. While the competitors scramble to get onto your turf. In this complex world, you are required to make the right decisions on the spot. To do so, you need information. Comprehensive and reliable information which is one step ahead. You know better than anyone the amount of money at stake.

No question about it, you need a process information system to give you that knowledge base. But the problem is, when you put the system in, you do not really know what the requirements are going to look like in the future. Your plant may have to be re-built. Or extended. You may discover a more efficient – but more complex – way to run your process. No question about it, the system you put in today, must be a flexible one to handle the uncertainties of tomorrow.

### **ABB SuperView is the answer**

SuperView gives you instant, live information on the current situation throughout your plant. In colour-graphics. On process diagram displays, reports, trends, alarm lists and event lists.

SuperView offers a process information toolbox which enables you to adapt large chunks of functionality by just specifying a few parameters.

SuperView is an open system where it is easy to develop and install additional software.

SuperView is a state-of-the-art process information system, yet well proven in many, different applications.

SuperView is a part of the ABB Master process control system.

SuperView fits all plants, from the smallest to the largest.

SuperView keeps the process information flowing, day and night, year in, year out.

SuperView gives you rapid information for rapid decisions.

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## *A full toolbox*

SuperView offers you a basic set of information management functions. Plus tools for development of your own. And an industry-standard interface for specialized software from third parties. Here is how:

**The basics** are catered for by the SuperView Toolbox. It contains functions such as: Process and diagram displays · Trend curve displays · Reporting · Calculations · Operator communication · Long term data storage · Process data acquisition · A logically structured process database · Alarm and event handling · Internal, high-speed, ABB Master communication.

Specify a limited number of parameters and you get all this to work for you the way you want it to. Faster than you would get the introduction to your own, equivalent design specification together.

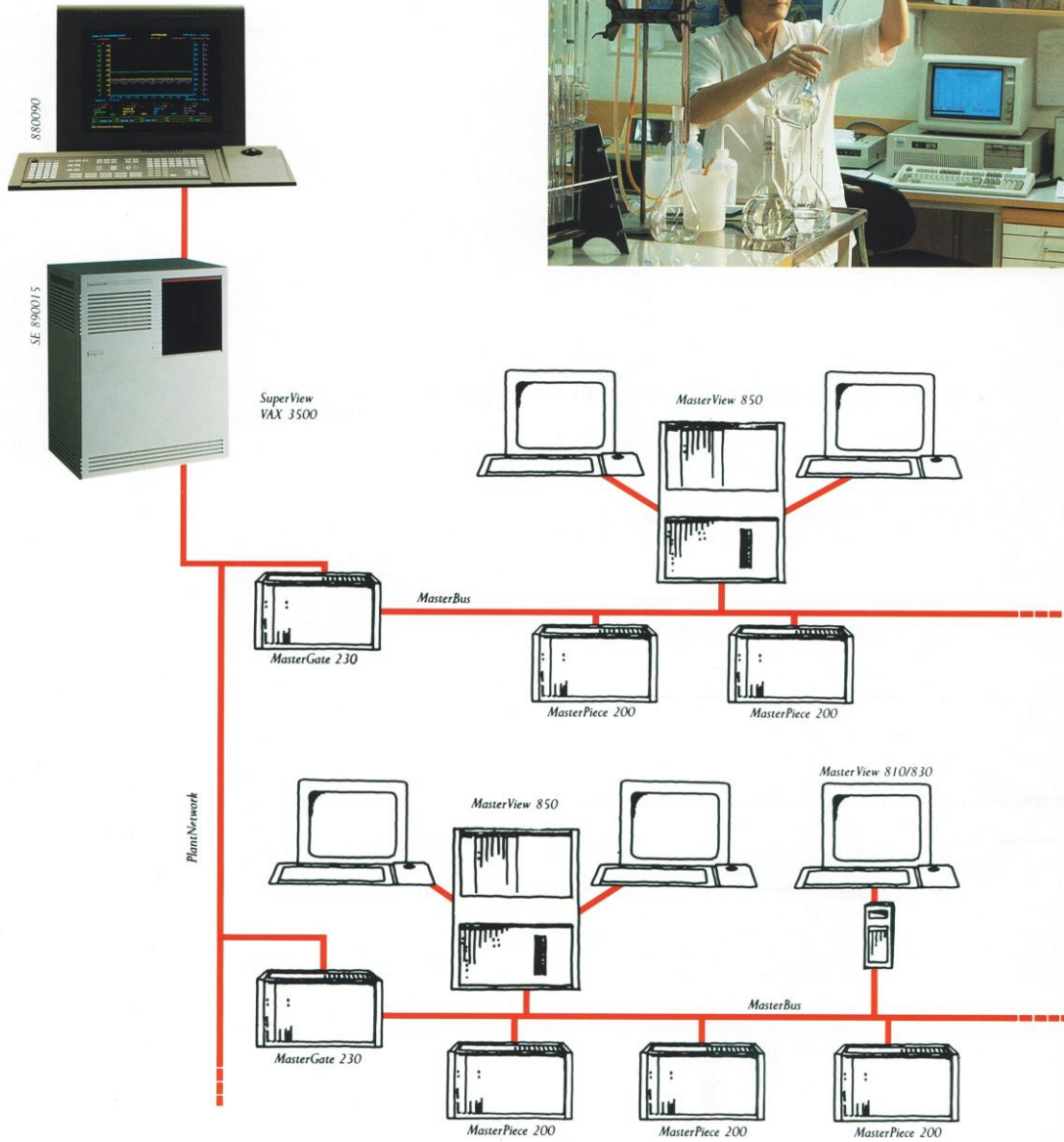
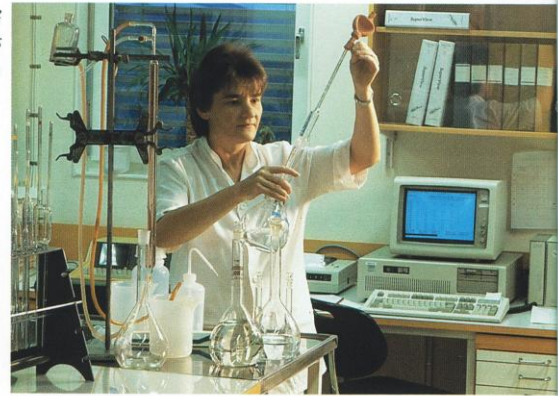
**Proprietary software development** is the next step if your requirements on production reporting, process analysis or process optimization are specialized. For this purpose, SuperView offers you wide access to all kinds of data; process, historical and user. All structured and accessed in the same logical way.

**Third party software** may be an alternative to the do-it-yourself approach. SuperView is based on the VAX/VMS\* range of computers, the industry-standard, from Digital Equipment Corporation. Therefore, that software you are interested in, is more likely to fit SuperView than any other process information system you could think of.

**All the way.** The SuperView software package runs in all models of the VAX/VMS family of computers, from the smallest to the largest. Therefore, it does not matter if you want to start small, stay small or grow big. SuperView can stay with you all the way.

\* Trade mark used by Digital Equipment Corporation, USA

SuperView terminals can be distributed to several departments of your plant e.g. the laboratory.



Large configuration: SuperView in a plant network of several control networks

## Taking on the future

Flexibility is important for all users of process information systems. The system must be adaptable to future changes, the nature of which is unknown at present.

One measure of flexibility is how open or closed the system is for software development by second or third parties. Experience tells us that open systems become vehicles for technological development. To an infinitely larger degree than closed.

Another measure of flexibility runs along the system size and scope continuum. The system should suit you equally well when you are small as when you are big. The opposite implies a lot of additional costs which do not show up in the supplier's offer. Most of them consequential, as you battle to retrain staff and regain output after a change of system.

A third measure is how easy or difficult it is to implement everyday, functional changes. If it is not, you are not going to get that leading edge you bargained for when you installed the system in the first place. All those small improvements,

which together spell the difference between leadership and mediocrity, simply will not get done.

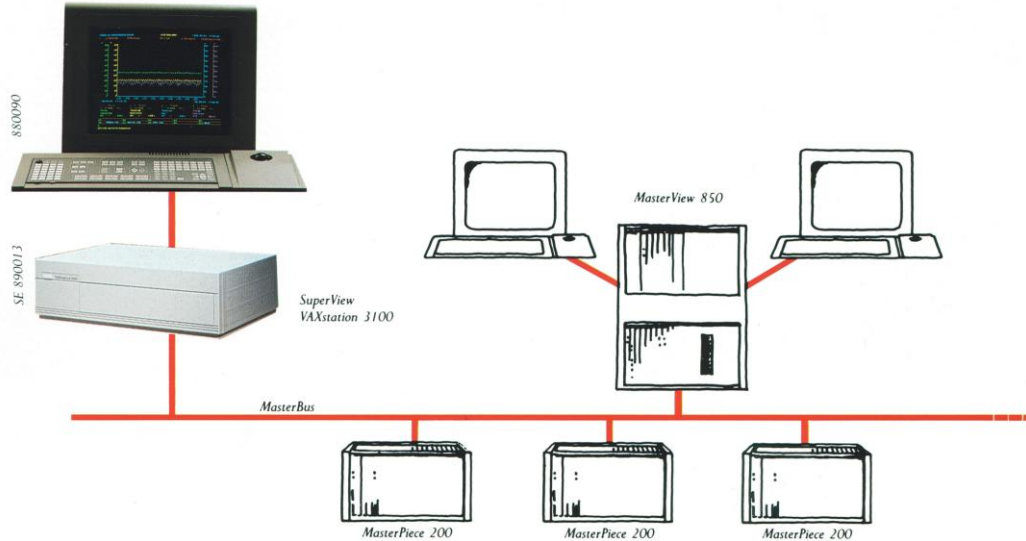
SuperView has got attractive answers to all three:

**Firstly**, SuperView is based on the industry-standard, multitasking operating system VMS. For that reason, it is easy to combine SuperView with additional application software. To meet new demands, now and in the future.

**Secondly**, VMS is standard in a wide ranging family of VAX computers, from small to large. For that reason, SuperView, and whatever supplementary software you are using, can stay with you as your plant grows.

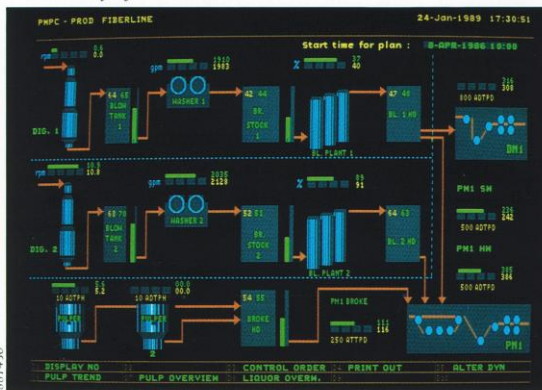
**Thirdly**, the configuration software has been written as independent tasks. So you can configure and re-configure your functions on line. Interactively. Conversationally.

With SuperView, you are ready to take on the future.

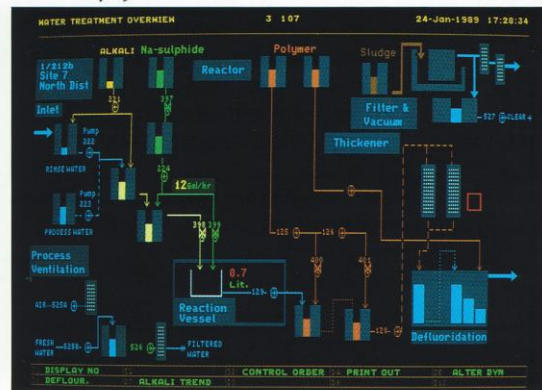


Small configuration: SuperView in a control network

Process display



Process display



PRODUCTION REPORT 4 87 25-Jan-1989 08:27:15

PRODUCTION REPORT FOR TODAY 25-JAN-1989 13:00

PRODUCTION TIME (HOURS)		RUNTIME MEASUREMENTS (HOURS)	
PROCESS WATER	12.10	0310001	11.23
FRESH WATER	12.10	0320001	11.18
OLIVEN IN	4.07	0330001	9.68
OLIVEN OUT	12.10	0330002	9.68
SECTION 3	6.05	0330003	9.68
SECTION 4	11.00	0330001	9.17
SECTION 5	12.10	0330002	9.30
SECTION 6	13.12	0330003	9.30
SECTION 7	15.07	0340001	11.12
		0340002	9.00
		0340003	9.00

PRODUCTION (TONS)		POWER CONSUMPTION (kWh)	
OLIVEN IN	102.4	0310001	2532.0
OLIVEN TO BU	245.7	0320001	982.3
INPUT TO SEC. 3	934.8	0330001	1567.7
INPUT TO SEC. 4	1279.0	0330002	2670.0
INPUT TO SEC. 5	1032.7	0330003	3529.1
INPUT TO SEC. 6	3086.3		
INPUT TO SEC. 7	3237.5		

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Report display

PRODUCTION REPORT 4 87 03-Jan-1989 18:14:32

DAILY PRODUCTION REPORT 1988-12-13

SECTION	MEAN VALUE (TONNES/HOUR)	TOTAL VALUE (TONNES)	FACTOR	TOTAL VALUE (1000 TONNES)	PRESENT STOCK (TONNES)	TOTAL RUN TIME (HOURS)	POWER (kW)
<b>QUARRY</b>							
LIMESTONE PRODUCTION	286.3	6871.2			10530		
EXPONENT SHALE	0.0	0.0			12250	4320	
IMPURER LIM ONE	12.4	297.6			1070	3690	
<b>RAW MILL</b>							
LIMESTONE TO MILL	119.1	2824.0	1.11	2576.7		24.0	45700
SHALE TO MILL	0.95	22.8	1.10	19.3			
IRON ONE TO MILL	4.28	104.6	1.10	88.7			
MILL FEED	123.3	2961.0		2584.7			
RAW MILL SLOD STOCK					6200		
<b>KILN</b>							
RAW MEAL FEED TO KILN	115.3	2767.2	1.05			24.0	6380
OLIMER PRODUCTION	109.8	2635.4			26400		
COAL FEED TO KILN	19.3	247.2					
OLIMER SLOD STOCK							
<b>COAL PLANT</b>							
COAL TO STOCKPILE	108.3	2592.2	1.3	1999.4		24.0	
COAL TO STOCKPILE	10.2	734.4			9000	11000	
<b>FUEL OIL</b>							
(LITRES/HOUR)	(LITRES)	(LITRES)					
TO PLANT	0	0					
TO AUXILIARY HEATER	0	0					
TO KILN	0	0					
IN STOCK		14200					

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Report display



## Like the real thing

SuperView provides the means for display creation, display presentation, command and data entry as well as process object selection and control.

You build your displays on line, without disturbing any other function. And connect them to the process database, your own database or software application for exchange of live data. Consistently and effortlessly.

All displays you build, automatically end up on the cursory display menu. It helps to keep your picture library in order. And enables you to select the display you want for presentation. But for frequently used displays, you are likely to use the direct selection keys instead.

For each display, you can define up to ten dynamic function keys. You can use them for selection of other displays, activation of additional software, start-up of your own calculations and more. Fields of data on the process display may be used as parameters for such calculation routines.

If an important alarm is raised, somewhere in the plant, a message to that effect can be made to appear at the top of the screen, regardless of the display presented. Further details may be obtained from an appropriate process display. There, colour and flashing are used to indicate alarm and other states.

The report function of SuperView makes it possible to get reports calculated and printed at predetermined times. For every report, you are able to select if alarms should be indicated, which printer to output it to, the printout and interval times. Reports are built like process displays.

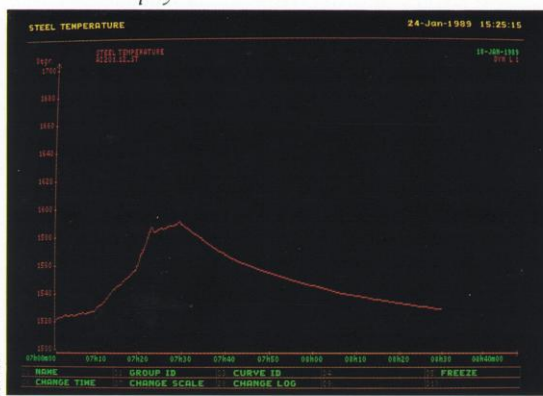
All displays are built on the basis of ABB's well respected ABB Tesselator technology, the hallmarks of which are high resolution where it counts, wide choice of colours, paint and draw capabilities, fast display exchange and flicker-free display. All this contributes to excellent display legibility and good operator ergonomics in general.

Watching the process through SuperView is almost like watching the real thing. Only more comfortable.



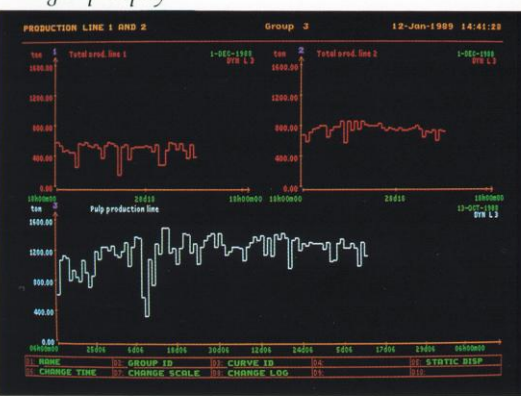
Keyboard: Different keyboards and layouts can be used

Trend curve display



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Trend group display



Numerical trend 19-Jan-1989 17:01:07

Mode: Inspection mode

Log name: LOG\_T129 Log id: 438

Status: On Log descr: Temperature

Log level: 1 Unit: Deg. C Start time: 17-JAN-1989 09:02:00

Time	Mean	Max	Min	Nov
12:55	100.4	100.0	100.0	5
13:00	101.7	102.0	101.5	5
13:05	100.8	100.9	100.4	5
13:10	99.7	99.9	99.2	5
13:15	99.5	99.6	99.3	5
13:20	98.6	99.4	98.2	5
13:25	98.7	98.9	98.4	4
13:30	97.9	98.7	97.6	5
13:35	98.1	98.2	97.8	4
13:40	96.2	99.2	95.0	5
13:45	94.0	96.0	94.5	5
13:50	94.2	95.1	93.7	5

Buttons: ADD TIME, SUB TIME, RES TIME, LOG NAME, LOG ID, UPDATE MODE, INSPECT MODE, RECALCULATE

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Trend data display

alarm list 0 3 5 9 (9) 18-Jan-1989 14:09:30

\* \* Low temperature limit reached 18 14:07:33

NAME	DESCRIPTION	REASON	VALUE	UNIT	TIME
* * LNF End Time Changed					18 01:04:01
* * LINK TO LEVEL 3 IS DOWN					17 22:54:02
* * Energy Setpoint reached					17 22:30:26
* * RI21_09.ST	Steel temperature	Al low 1	1480	Deg.C	17 21:07:33
* * RI07_12.SP		Al low 2	4.5	%	17 20:46:09
* * Alloy Material No 5 is missing					17 20:31:09
* * Injection Treatment not Required					17 19:24:30
* * Vacuum Treatment Interrupted					17 19:16:12
* * RI21_09.ST	Argon Flow Rate	Al high 2.	300	Lit.	17 14:07:33

Buttons: PRINTER, PAGE NUMBER, CREATE FILE, ALL ALARMS, ACKN BEFORE, CRT DISPLAY, ALTER DYN

On the alarm list, process and application software alarms can co-exist

## Using the past to predict the future

Getting the most out of your process is essentially a matter of being able to predict the immediate, future behaviour of it on the basis of its past and current performance. And acting on that prediction ahead of time. But to get there, you must first build up your process knowledge by studying a multitude of cause-effect relationships throughout your plant. To do this, you need a lot of process data. Historical data. In this regard, SuperView has a lot to offer:

**The historical logs** in SuperView are able to store very large amounts of data. This data can be measured, counted and calculated variables. Usually, a logged value is calculated from a series of sampled values. In this way, up to seven types of values, such as mean, max, min, and standard deviation, can be obtained. If you need, you can log all seven for every variable. You can view the same variable over a longer time span by treating the data at log level 1 as sampled values for level 2. And repeat this nesting four times deep.

Data for these logs may come from the process, the operator or from additional, application software.

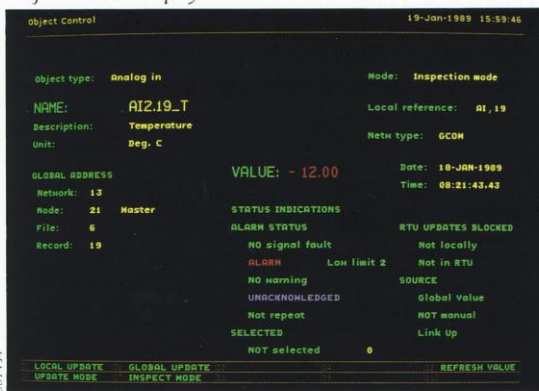
All logged values may be shown on trend data displays, process displays, reports and trend curve displays. On trend curve displays against four different time scales. In seven different layout combinations.

**The event and alarm handling** in SuperView tells you at a glance, what is happening where and when. An alarm list shows you all the current alarms in SuperView. Acknowledgement by the operator ensures that no important alarms can be forgotten or ignored. Calculated alarms from additional, application software can be serviced in the same way. Events, alarms and operator actions can be logged on a printer.

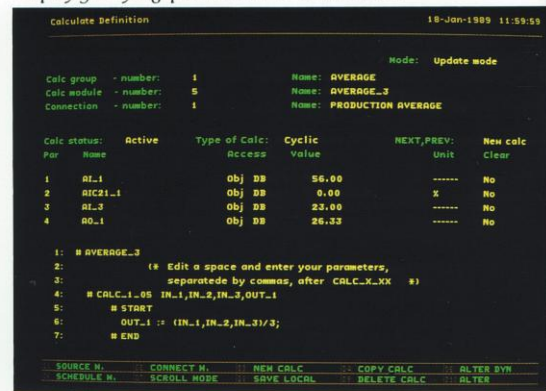
**Process sectioning** helps you manage a complex, wide-spread process by dividing it into sections and allocating operator workplaces to them. Operator authority is distributed accordingly. The same applies to the listing of events and alarms. So you won't get drowned by irrelevant messages.

In these ways, SuperView helps you analyse – and predict – the behaviour of your process.

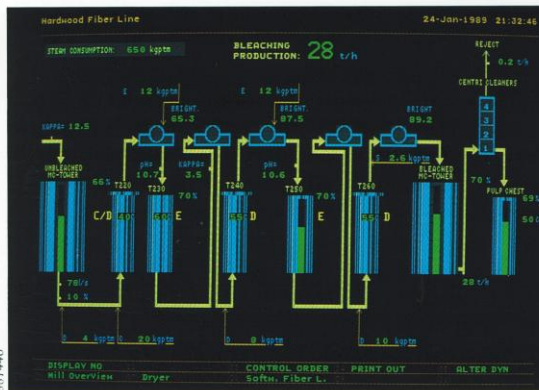
Object control display



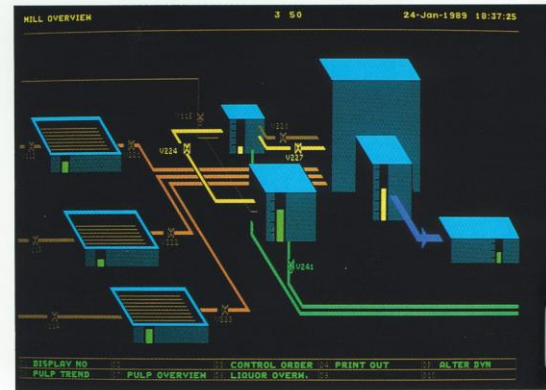
Display for tying parameters to calculations



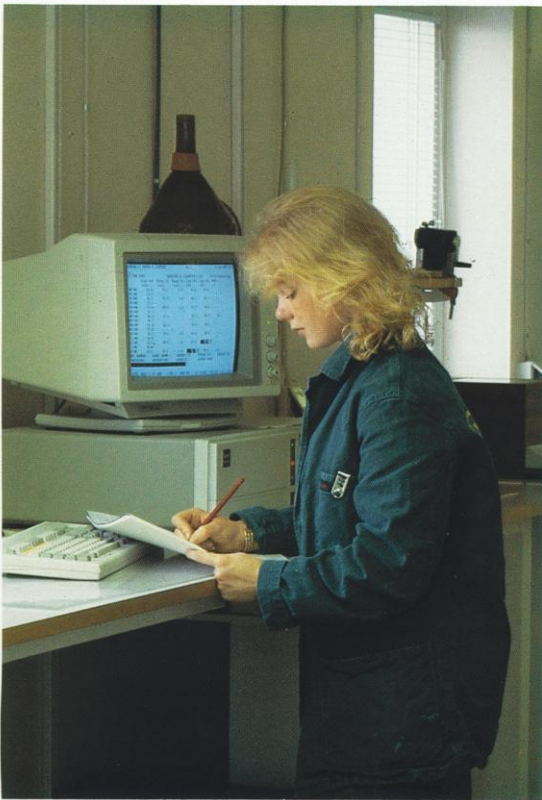
Process display



Process display



## *Process data at your fingertips*



The process object database is the heart of SuperView. It offers a well defined, clean-cut interface to all, surrounding software. And offers utilities for access to data in it. This gives you a consistent way of accessing data, regardless of software application. Add a logical data structure and symbolic addressing to this and you should begin to understand why users so easily take to SuperView.

The database is tied to the process through the ABB Master control system, again by symbolic addressing. Each instance is coupled to the desired process signal or object by simply entering its name, node address and the type of data subscription required.

This standard interface between the process data and the software applications effectively contains the consequences of software changes in a predictable manner.

Several information processing functions can be tied to the object database, such as historical logging, trend curve display and calculations.

Using the built-in calculation package, you can develop your own calculations. As inputs you can use constants, historical data, process object data or data from user-databases. These calculations can be carried out cyclically, at specified times, event triggered or on operator request. No previous programming experience is required.

This is process data at your fingertips.

Form display for definition of a historical log

Log Definition 19-Jan-1989 13:21:20

MODE: Inspection mode

Log name: LOG\_PSWF Log id: 1

Status: On Start time: 16-JAN-1989 15:59:00

Type: Cyclic Sample time: 1 gives 1 min  
Non created value: Interrupt

Data access: Obj BB

Object Name: AIS.L\_PSWF Descr: Prod. Sep. water flow

Local ref: AI S01 Unit: m<sup>3</sup>/h

Property: Value

Level	Properties	Period	Access
1	Mean	10 gives 10 min	System
2	Mean Max Min	6 gives 1 hour	System
3	Mean	8 gives 8 hours	System
4	Mean	3 gives 1 day	System

ALTER ALTER DB ALTER STATUS ALTER NON CRE NEW  
UPDATE MODE INSPECT MODE SAVE DELETE COPY

Form display for definition of a trend curve

Trend Curve Definition 10-Jan-1989 13:28:28

MODE: Inspection mode

Curve name: CURVE\_PSWF Curve Descr.: Average Prod. Sep. Water Flow

Curve Id: 1

Type: Vector Max value: 100.00

Thickness: 100 Min value: 0.00

Color: red No of values: 600

Log name: LOG\_PSWF Log level: 1

Log id: 1

Property: Mean Description: Prod. Sep. water flow

Unit: m<sup>3</sup>/h

ALTER TYPE ALTER COLOR ALTER PROP NEW  
UPDATE MODE INSPECT MODE SAVE DELETE COPY

Object Database Definition 19-Jan-1989 13:22:23

Mode: Inspection

Object type: Analog In

NAME: AIS.L\_PSWF Local reference: AI S01

Description: Prod. Sep. water flow

Unit: m<sup>3</sup>/h Netw type: GCOM

GLOBAL ADDRESS	ACTIVE FUNCTIONS	POSSIBLE FUNCTIONS
Network: 13	1 -	1 Activate Program 1
Node: 21 Master	2 -	2 Activate Program 2
File: 6	3 Limit Check	3 Limit Check
Record: 1	4 -	4 Log Operator Actions
	5 -	5 Define Control Order
	6 Alarm Treatment	6 Alarm Treatment
	7 -	7 Presentation Ranges
	8 -	8 -
	9 -	9 -

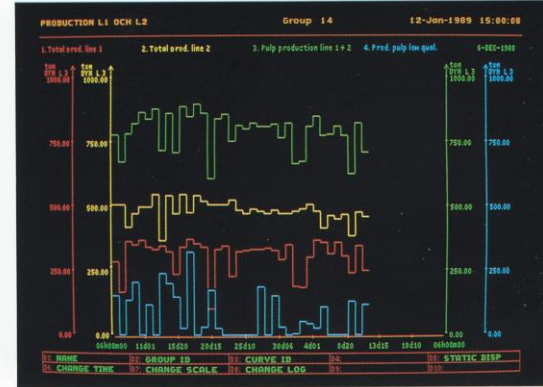
CONFIGURATION

Status: Configured

Name: AIS.L\_PSWF

Update type: 3 Cyclic 3

FUNCTION CONFIGURATION ALTER NEW OBJECT  
UPDATE MODE INSPECT MODE SAVE OBJECT DELETE OBJECT COPY OBJECT

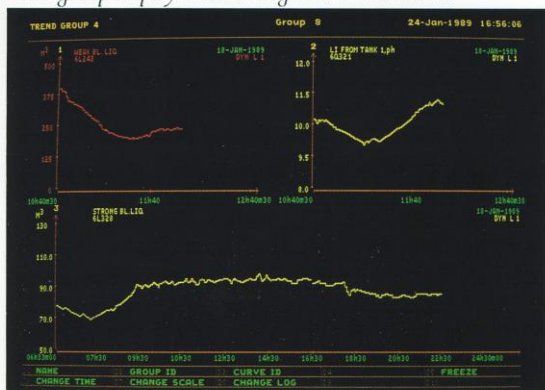


Detailed information on every process object is available from the object definition form display

Trend group display with 1 diagram and 4 curves

## Configuring is like talking to a friend

Trend group display with 3 diagrams and 3 curves



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Some want total flexibility and displays that fit the application at hand exactly. Others want a library of large building blocks for operator communication, to limit the time spent on configuring. In SuperView, you get the best of both worlds:

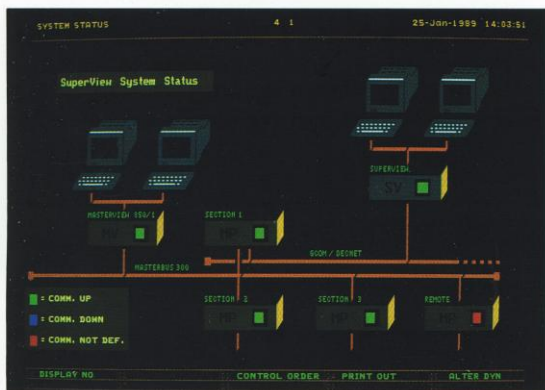
To start with, there is a range of standard displays, such as menus, event and alarm lists plus data-base, trend, process and calculation displays. Some of these have standard contents. Others automatically include your process information. The rest requires a minimum of parameters to be specified.

To finish, there is a set of application displays, such as graphic process, trend curve, tabular and report displays. All these are essentially defined like this: Select the desired display type from the definition menu · Fill in the definition forms · Save them.

On the form displays, you define what to show, its appearance and the range of commands to be available from the display you are creating.

All system and display configuration can be done on line, without disturbing the normal operation of SuperView.

SuperView's friendliness rarely passes unreturned.



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Content and layout of system status displays may be defined by the user



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## *Making the complex simple*

Computers are complex machines, operating near the horizon of human comprehension. So, making them easy to use is a real challenge. In SuperView, we take this challenge seriously and use some of the abundant computer power available to make the machine come across with a friendly face. To make maintenance and development a pleasure.

**For maintenance,** SuperView offers: Entry, editing and inspection of parameters and database contents · Searching and listing of the process database in terms of instance status, wholly, partially or by search keys · Configuration and re-configuration of display screens and keyboards · Keyboard layouts may be individually defined · Cross reference listings of the various databases. For instance, it is easy to find out on which displays a particular object appears.

**For error reporting,** SuperView offers a central routine which stores system error messages, containing descriptions, error codes and time tags, for printout on request. This service is useful during application software development and enables remote, diagnostic service by ABB.

**For software development,** SuperView offers a number of utilities aimed at simplification, standardization and speeding up of the development of proprietary application software. Such as a comprehensive and well documented subroutine package for easy and efficient database access. And whole function packages for display, dialog, access control and data security.

True, the basic functions alone go a long way towards providing a powerful information system, but SuperView keeps the door to the future open.

# Technical shortcut to SuperView

## Hardware requirements

Runs in all types of VAX computers from Digital Equipment Corporation.  
 A primary memory of at least 6 MBytes and a mass memory, equivalent to RD54 with 159 MBytes, are recommended.  
 The SuperView software is delivered on TK50 cassettes or 1600/6250 bpi tape reels.  
 See the dimensioning example.

## Operating system, programming languages

Operating system: VMS, version 4.5 or later.  
 Programming languages: SuperView is written in Pascal, but supplementary application software can be written in other languages, e.g. FORTRAN.

## Peripheral devices

All types of ABB Tesselator colour terminals, DEC VT monochrome terminals or compatibles can be connected.  
 To Tesselator, up to two keyboards per workplace can be used.  
 The operator's keyboard can be individually configured.  
 One hard copy printer per display screen may be connected.  
 For printout of alarms, events, reports and lists, DEC printers or compatibles may be used.

## Communication

Interfaces to an ABB MasterNet communications network in two ways:

- A: Through ABB MasterGate 230:
  - Alternative 1: Communication to IEEE 802.3 at 10 Mbits/s.
  - Alternative 2: Communication to V 24 / RS 232C at 9.6 kbits/s.
- B: Directly to an ABB MasterPiece 200/1 process station: Communication to IEEE 802.3 at 10 Mbits/s.

Updating of the process database can be done in two ways:

- A: By subscription:
  - Alternative 1: Cyclic updating of analog inputs only, at cycle times of 1, 3 or 9 seconds. Plus another 3 cycle times selectable from the range 20 seconds to 1 hour, subject to certain rules. Max 3 out of 6 cycle times can be used.
  - Alternative 2: Event driven updating. Applies to all object types.
- B: By Data Sets:
  - Acceptable transmission cycle times are 10 s, 20 s, 60 s and 2 min.

Interfaces to Tesselator through asynchronous links.

## Options

General example: Central backup of MasterPiece and ABB MasterView application software (ABB MasterAid 710).

Process-specific example: PMPC (Pulp Mill Production Control).

Other options are available.

Capacity	
No. of process database instances:	Max. 32000 (1)
No. of user displays:	Max. 1280 (1)
No. of display screens:	Max. 64 (1)
No. of reports:	Max. 1280 (1)
No. of trend displays:	Max. 32000 (1)
No. of trend group displays:	Max. 32000 (1)
Trend display resolution:	5 – 600 points
No. of calculations:	Max. 9 groups of 99 calculations each. Each calculation can be used 127 times
No. of historical logs:	Max. 32000
No. of value types per historical log:	Max. 7 different types per log level.
No. of time levels:	Max. 4 different, selectable time levels per log.
Time range, historical logs:	Max 1000 000 values per log (1)
Logging time interval:	≥ 1 s (1). Normally 60 s
Operator authority:	4 levels; None, Insp., Insp + Cont Inspect + Control + Define
No. of alarms:	Max. 32000 (1)
No of process sections:	Max. 16. Max. 16 display screens and 12 printers per section
(1) = The practical limit is lower, usually reduced by the amount of mass memory available. The limits are determined at the time of ordering. See also the adjacent dimensioning example.	

Dimensioning example	
For this example, SuperView, including VAX/VMS 5.0, requires approx. 115 MBytes of disk memory and 9 MBytes of primary memory.	
Total no. of process database instances:	4000
Spare space for another:	2000
No. of log levels:	4
No. of types of values logged each time:	1
No. of logs at level 1:	500
No. of logs at level 2:	200
No. of logs at level 3:	200
No. of logs at level 4:	200
Basic cycle time:	60 s
No. of values/log, level 1:	2880 (time range = 1 min)
No. of values/log, level 2:	168 (time range = 1 h)
No. of values/log, level 3:	42 (time range = 8 h)
No. of values/log, level 4:	365 (time range = 1 day)
No. of trend curves and trend groups:	1000
No. of displays:	510
No. of reports:	250
No. of alarms and events:	1200
TESSELATOR communication:	Asynchronous
No. of TESSELATOR subsystems:	2

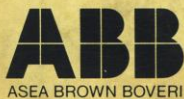
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ABB Tesselator, MicroVAX 3500, MicroVAX II and VAXstation 3100

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SE 890013



Asea Brown Boveri is a world leader in electrical engineering, comprizing 180 000 employees, turning over some 15 billion US dollars a year. The group consists of some 700 companies operating in 140 countries. The main business segments are power plants, power transmission, power distribution and industrial equipment. Access to modern control and supervision systems like ABB Master is of strategic importance to the group in deliveries to customers in these segments.

Business area Process Automation, which belongs to the industrial equipment segment, designs, manufactures and markets ABB Master as well as systems for industrial force measurement and complete electrical equipment for industrial plants.

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