

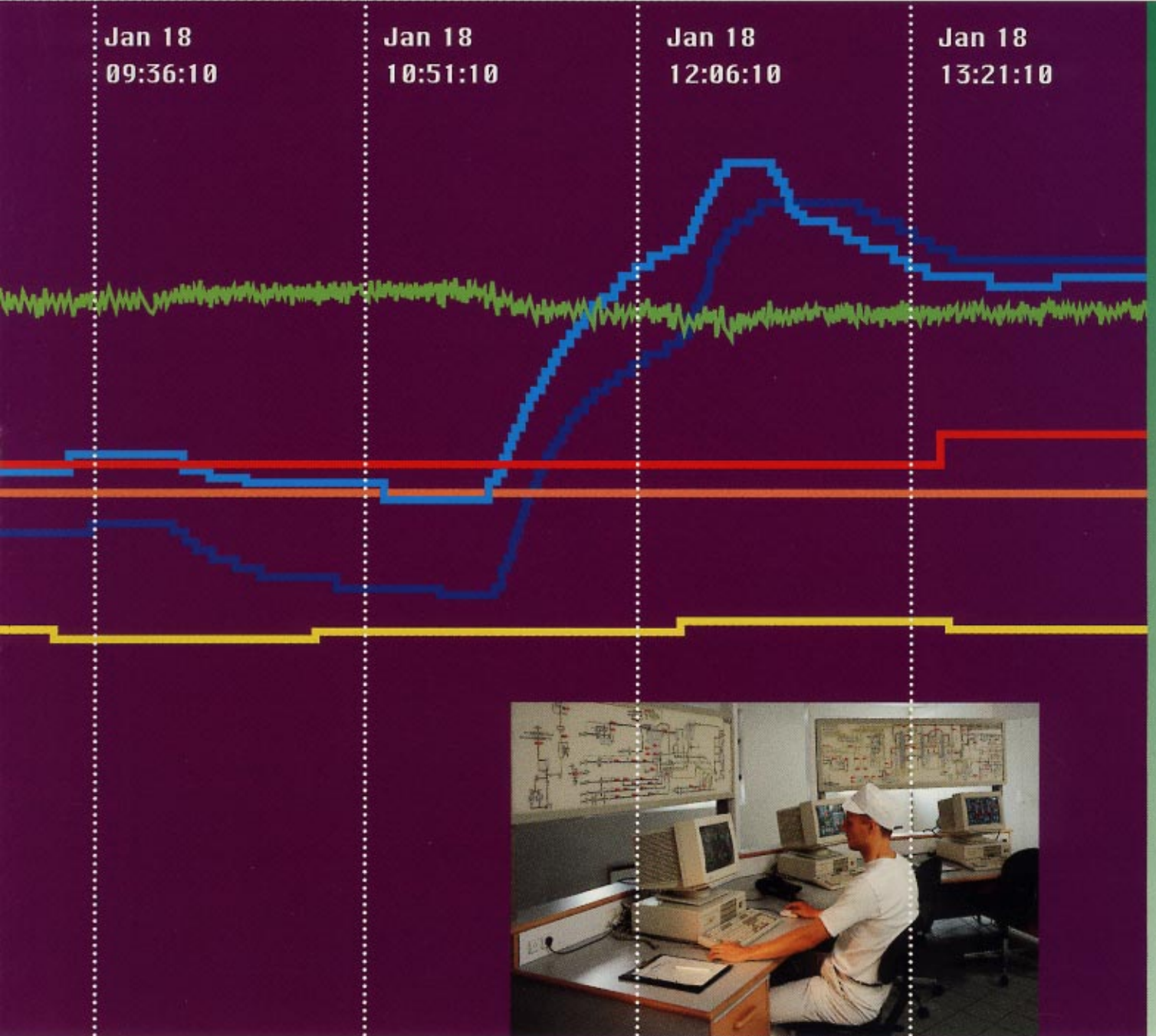
Process Control and Instrumentation

Jan 18
09:36:10

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Process Control and Instrumentation

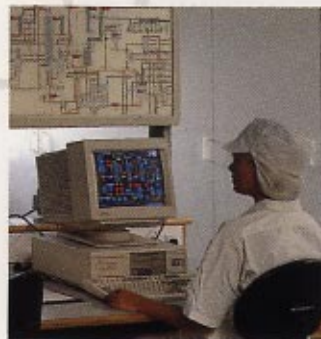
+S1
EVAPORATOR A

+S2
EVAPORATOR B

+S3
POWDER HANDLING

+S4
SPRAY DRYER 1 + CO

For more than 60 years, the Niro Group of Companies has been supplying plants to a wide range of industries where drying, evaporation, feed pre-treatment and powder handling is included in a process producing liquid concentrates, powders, agglomerated, and granular solids. Control of such processing has always been a vital part of the operation. As a result of such experience, Niro has developed well proven control systems based upon a control philosophy which meets the requirements for safe, informative, and flexible operations.



Reporting

The report system provides facilities to generate reports using any logged data, i.e. the same data being used for historical trending. The reports can be printed directly or saved in a file to be further processed in a spreadsheet program (Excel or Lotus). The operator defines which data are to be included in the report, the start time/date, the time span and the interval between values. 10 lines of free text are available for comments.

Requirements such as:

- automatic plant start up, shut down and CIP cleaning procedures
- individual control level for each activator, e.g. motor, valve
- recipe system with access control
- realtime trending
- historical trending with hard copy print-out
- reporting on printer or to file for spreadsheet use
- event/alarm logging
- dynamic on-screen sequence description in plain text
- standard hardware components

Event / alarm log

Alarms are shown on a special alarm line showing the most recent alarm, but a list of all present alarms is also provided. For trouble shooting a summary of logged alarms is provided (time span depending upon hard disk capacity). The summary indicates when an alarm occurs, when it is acknowledged by the operator, and when it disappears. Together with the alarms, special events i.e. start-up and switch-to-production times are logged. Furthermore, CIP cleaning procedure timings are logged thus providing a record for later evaluation.

+A3
I/O-
PANEL



+A17
AB-PLC

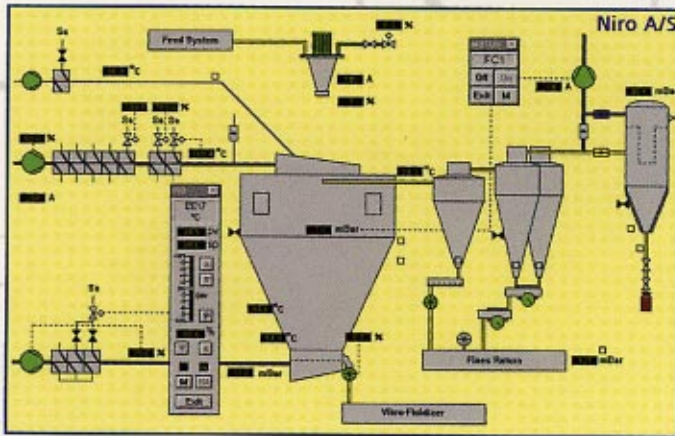
+A1
I/O-
PANEL



COMMON CONTROL VOLTAGE

←95
SPRAY DRYER 11

←96
SPRAY DRYER 111



Supervision

In the Nirol system, there is simplicity of control. The plant operator, for example can select from the graphics that show the status of each plant item, an actuating element (e.g. valve), and by a click of the mouse, a small control window is seen allowing the manual control of the element. Access to a controller window is conducted in the same manner, including tuning.

Special windows allow the operator to give commands to the automatic sequencing or view the status of each sequence, including the dynamic on-screen description of each step with indication of running timers.

The operator has the possibility to alter timers, switch-points, etc. used in the sequences on special set-up windows, e.g. timers used in CIP sequences.

SAV 1.000 1

RECIPE NO. 1
SKIM MILK

Nirol A/S

Plant Setup		Chamber System		Vibro-Fluidizer		Vibro-Fluidizer Heater	
Recipe / Safety Alarm (Con. Alarm)	E01 Speed FC1	90.0 %	G214 VF1 Air Flow	80.0 %	G202 VF1 Heater G211	On	
Recipe Type	E08 Chamber Pressure	1.0 mbar	G215 VF2 Air Flow	85.0 %	G208 VF1 Heater G212	On	
CV1 0 / 0.00	E11 SFR Air Flow	75.0 %	G216 VF3 Air Flow	80.0 %	G209 VF2 Heater G201	On	
CV2 0 / 0.00	E20 Position DV1	100.0 %	G217 VF4 Air Flow	80.0 %	G210 VF2 Heater G202	On	
CV3 0 / 0.00	E21 Position DV2	100.0 %	G212 VF Pressure	1.0 mbar	G212 VF2 Cooler G210	Off	
Flow in	E02 Inlet Temperature	100.0 °C	G21 VF1 Temp.	100.0 °C	G215 VF4 Cooler G216	Off	
Flow in	E013 SFR Inlet Temp.	100.0 °C	G03 VF2 Temp.	100.0 °C			
Flow in	E008 Heater DV	On	G02 VF3 Temp.	100.0 °C			
HL1 in	E217 Drier Temperature	80.0 °C	G07 VF4 Temp.	100.0 °C			
HL1 in	E218 SFR Level	0.0 %	G05 Position DV1/2	100.0 %			
HL2 in			G25 Aul Valve1	G210			
HL2 in			G27 Aul Valve2	G217			
HL2 in			G218 VF Flap	0.0 %			
	E06 Hammer, Interval	3 sec.					
	E06 Hammer, Pulse	30 sec.					
	E07 Position Air Temp.	100.0 °C					
	E02 Fan Rotation Pressure	0.0 mbar					
	F06 Hammer, Pulse	30 sec.					

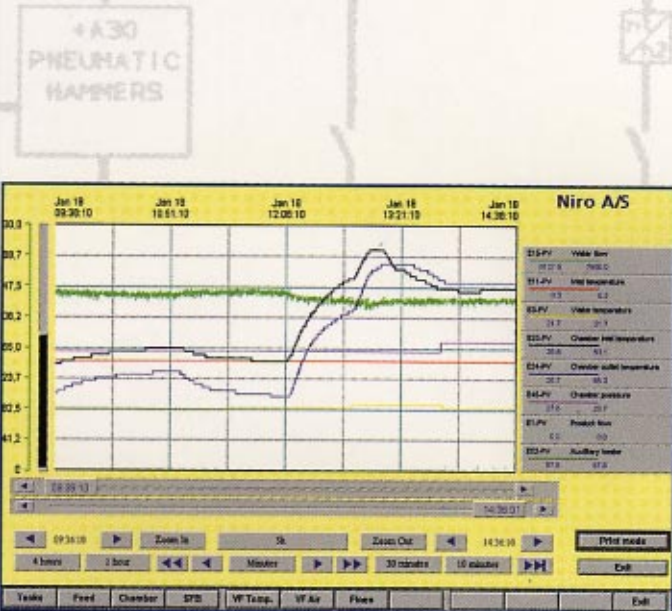
Print - Ctrl P

Recipes

Depending upon the type of plant, a number of product recipes are available. These recipes hold parameters for control of set-points, plant set-up, etc.

The automatic sequences will use the parameters from the recipes during start-up and switch to production making sure the production procedures are repeated thus ensuring consistent product quality.

The recipe system can be protected by pass-words thereby allowing only supervisors to make changes.



Trending

Two types of trends are provided: realtime and historical. The realtime trends show curves for up to 4 parameters at a time. These trends are updated constantly, the time span depending upon the process.

The historical trends hold up to 8 parameters on one screen. The operator can view logged data with an on-screen definable start date/time and time span. The time span is only limited by the capacity of the hard disk. A hard copy can be printed on a colour printer.

Furthermore, the operator can select any parameter among the logged data to be shown on a graph.

