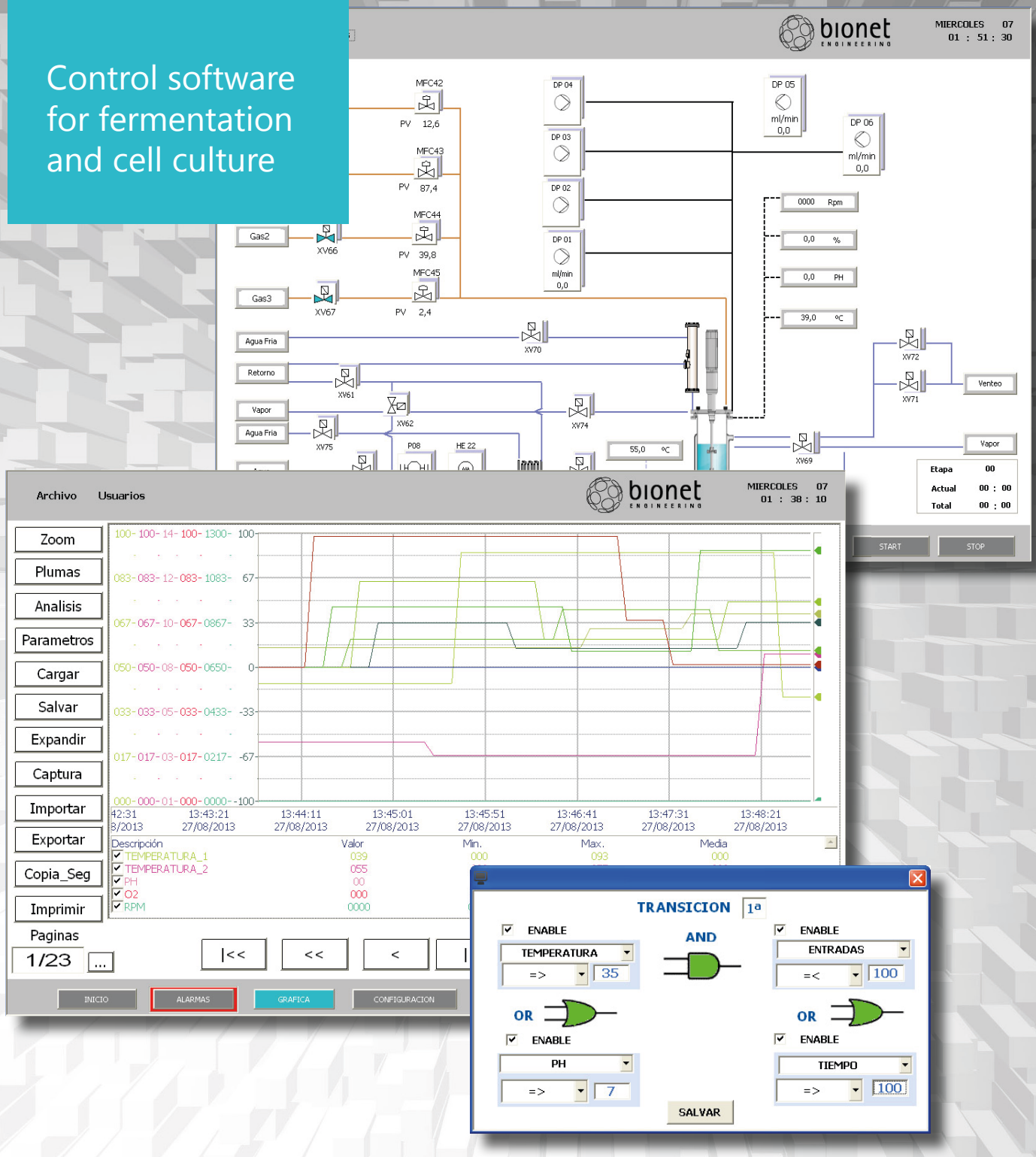
bionet
ENGINEERING

Lab to
Market
Engineering

ROSA+

Control software
for fermentation
and cell culture



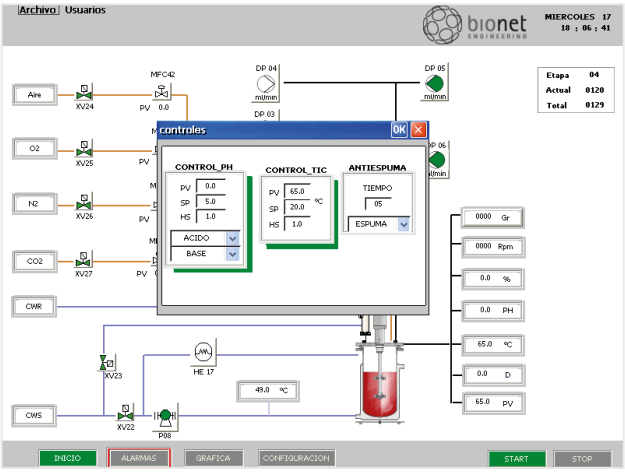
ROSA+:
Total control at one click

BIONET, backed by twelve years of experience in the construction of equipments for pharmaceutical, agricultural and biotechnological industries, has developed a complete range of laboratory and pilot scale equipments for the industrialization of bioprocesses.

This category includes the F series of pilot Bioreactors, designed for fermentation and cell culture, R&D development and industrialization of bioprocesses and high added value productions.

To control fermentation and cell culture in the F Series, BIONET has developed the advanced control software **ROSA+ (Research Oriented Software Application)**. It is a powerful tool that incorporates all the functions necessary for integrated process control and posterior data analysis and management.

ROSA+ is installed as standard in each BIONET FCU (Fermentor Control Unit). The FCU is the unit where all the operations (utility supply, process and automation control) are centralized and has been designed to be compatible with each particular model of the F series.



High connectivity meeting safety standards

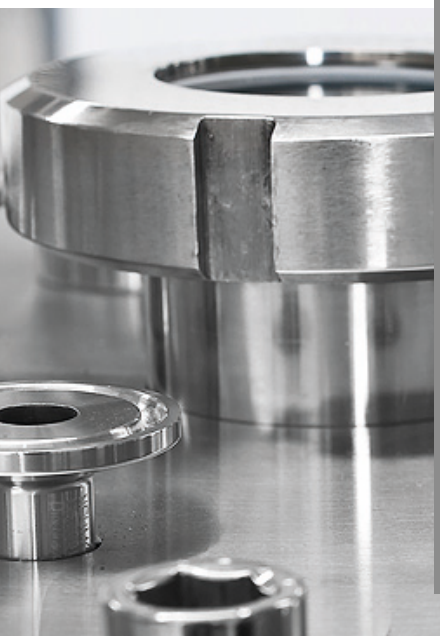
Virtual private net (VPN) connection allows remote equipment activation and control, predictive and preventive maintenance performance and the solution of incidents via remote assistance. This permits costs optimization and reduces times of non availability assuring at the same time safety and confidentiality of your working data.

Data logging

There are three different categories of data logging: Event management regarding the registering of alerts and messages, process data logging and audit trail regarding the status change of process related variables.

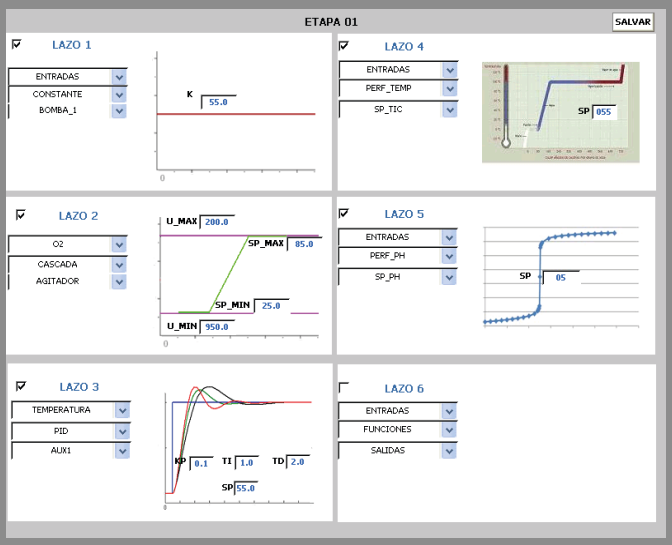
Parameters control and calibration

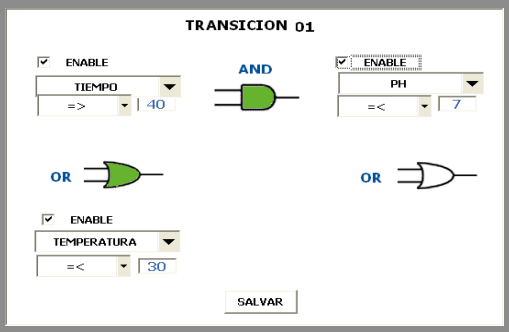
The software permits the integration of instruments and external actuators into the system, providing the necessary interfaces for their configuration and calibration. ROSA+ includes particular screens for the calibration of the pH and dissolved O2 sensors which do not require the use of additional devices and/ or software programmes. Likewise ROSA+ allows the calibration of the dosing pumps, necessary for working with different types of flexible tubing and fluids. Optionally additional external devices / instrumentation can be connected and will be recognized by the system, allowing the activation of the applicable control loops.



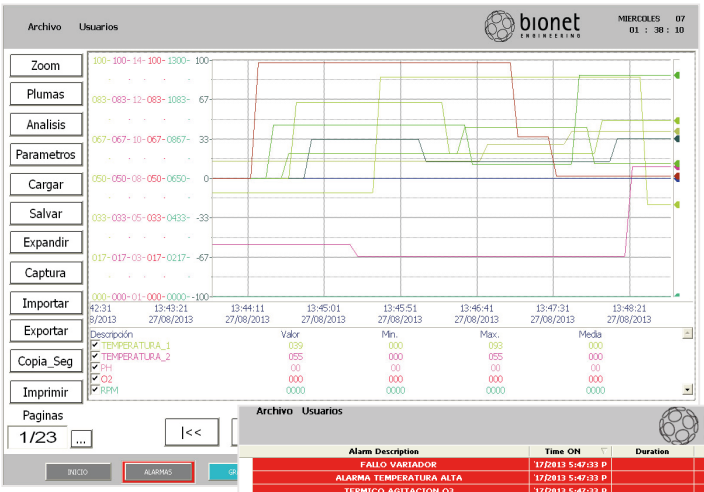
R.O.S.A.+ is the tool of your choice regarding a simple and intuitive way of programming recipes for complex fermentation or cell culture processes. With just a few clicks you can configure your fermentation processes as an ordered assembly of steps and transitions. For each step you can program the needed control loops. The transition from one step to the following one is defined by transition conditions easily to be programmed.

The control modes of each step can be established from simple linear controls until sophisticated control profiles such as PIDs or cascade type controls. For control loop configuration the control variables are selected between the relevant process parameters.

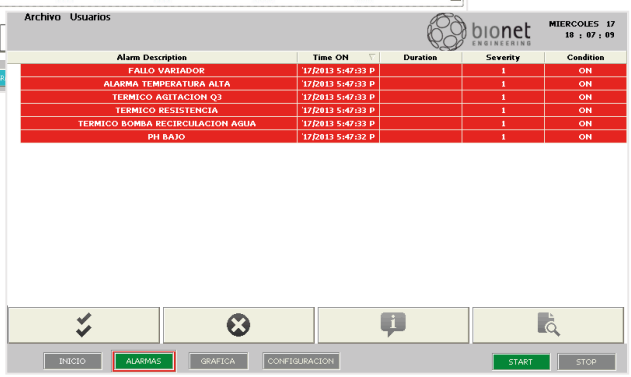




Subsequently the type of control mode (linear, simple or double hysteresis, cascade and PID) and the respective parameters are selected and finally the elements of response are defined. A simple graphical interface allows the definition of the transition conditions between the individual process steps, which can be as complex or elaborated as requested by the process. Without any knowledge of programming tools a logical sequence of transitions between single steps can be established from process parameters, comparisons and logical operations AND / OR.

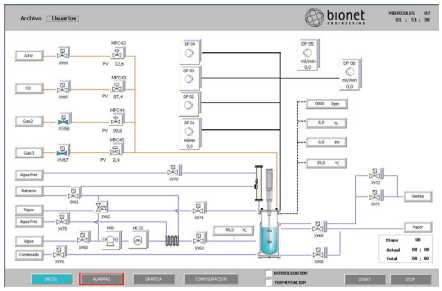


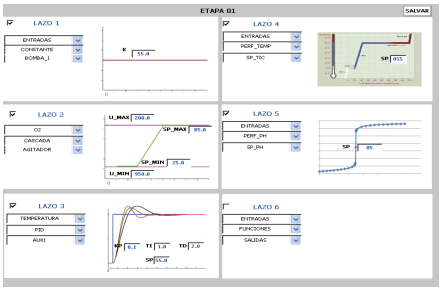
ROSA + incorporates a potent graphical interface for the representation of tendency curves of the process parameters and thus is facilitating process analysis. The interface provides many options regarding the personalization of the graphical representations, visibility and scaling of each single parameter. The visualised process data can be exported in a standard format permitting their importation into a calculation sheet or other software applications. Likewise offline data can be imported for graphical representation and analysis.

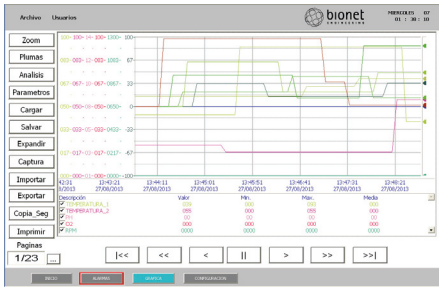


In the alarm screen the relevant information for each alarm, its status (active, acknowledged, deactivated), time of being active and level of priority is indicated in an intuitive way. This allows the historical follow up of each alarm.

ROSA+	
Level of access	Allows the configuration of different levels of user access such as "Administrator" and "Operator" with privileges regarding operation and configuration.
Screens	Synoptics: contains a representation of the plant including principal equipment and instruments, indicating the present value (instruments) or the current status (open, closed, off, on, etc.) of each element. Alarm screen: Visualizes the alarm status of the equipment Graphics screen: Visualizes and permits the analysis of tendency curves (process parameters) Screen for the configuration of process steps: Allows the definition and activation of recipes.. Calibration screen: Used for calibration of the pH and dissolved O2 sensors. Control screen: allows parameter configuration of the control loops for pH, temperature and antifoam regulation. Report screen: allows the configuration, visualization and print out of the process data report (batch report) and the alarm log.
Calibration	Allows calibration of the pH / dissolved O2 sensors and the dosing pump as a function of the type of flexible tubing / fluid to be transferred
Data recovery	Three different types of data logging: (1) Event management regarding the logging of alarms and messages. (2) Logging of process data (3) Audit trail regarding the status change of process variables.
Connectivity	Virtual private net (VPN) connection via Ethernet port.
Programming	Possibility to program recipes via the definition of individual process steps and establishing of transition conditions between the particular process steps.
Communication protocols	MODBUS between instrumentation, pumps and PLC. Ethernet between PLC and HMI (SCADA).







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