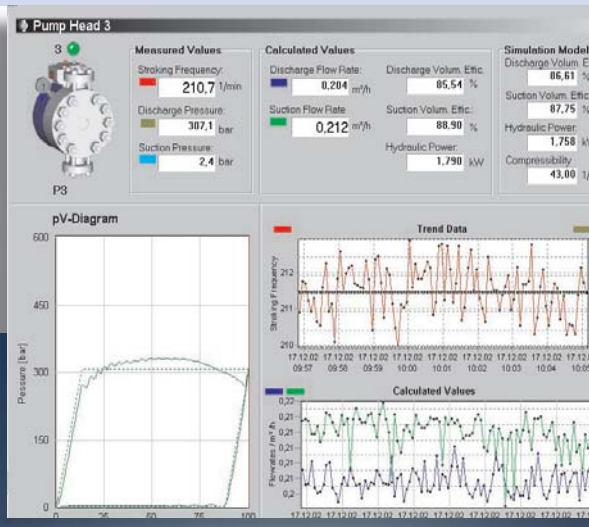
BRAN+LUEBBE
An SPX Process Equipment Operation

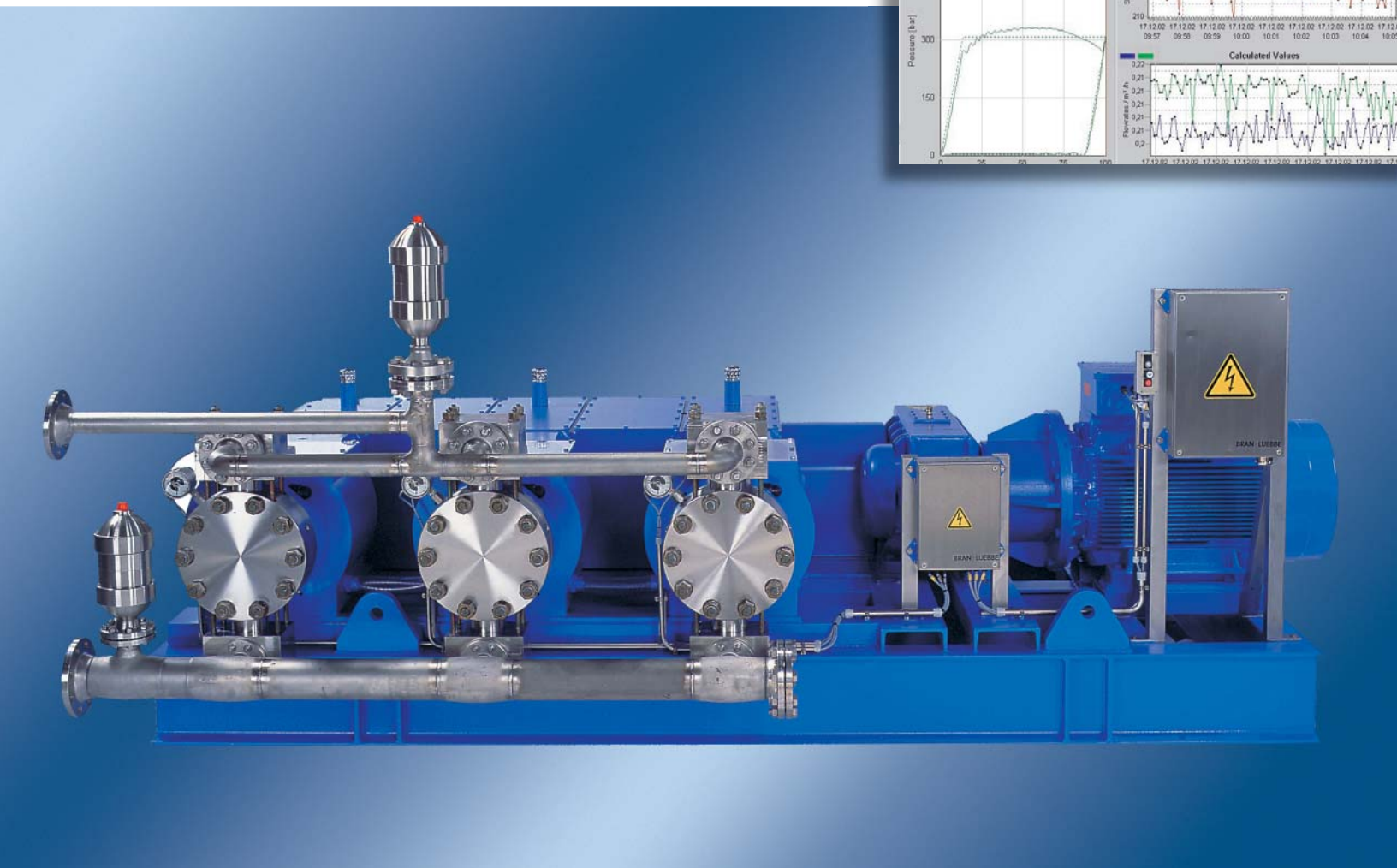
SPX Process Equipment

NOVALINK-CSM **is an online diagnostics system which continuously monitors the performance of a metering pump**

NOVALINK-CSM

Continuous Status Monitoring





NOVALINK-CSM - for online diagnostics

The basis of the system is the pV-diagram which is generated during one complete revolution of the pump crank shaft from the pressure within the hydraulic chamber of the pump and the plunger position in a pump head (Figure 1).

Key performance parameters can be assessed from this diagram, for example:

- Defects in the suction or discharge valve
- Defects in the replenishing valve or venting valve
- Activation of the internal relief valve
- Excessive pressure pulsation in the suction or discharge pipeline
- Air in the hydraulic chamber or product chamber
- Cavitation, etc.

In addition, volumetric efficiencies or the hydraulic power of the pump head can be determined.

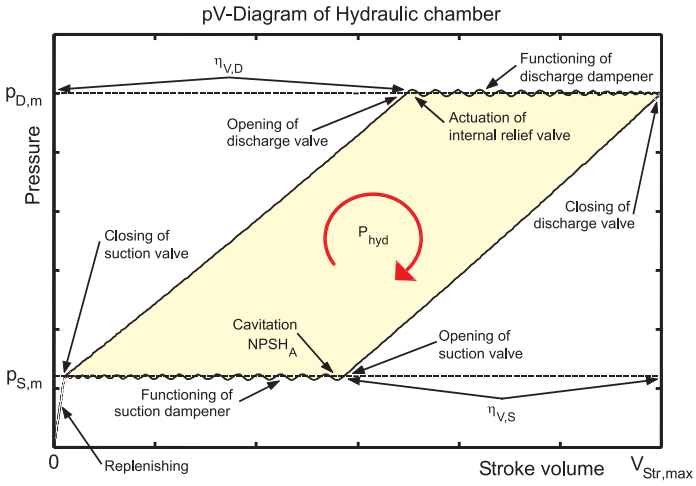


Figure 1: Theoretical pV diagram

NOVALINK-CSM - Advantages

- ***Continuous monitoring*** of pump performance, even over a long distance
- ***Permanent documentation*** of pump status
- ***Rapid localization of failures*** in the pump head, so minimizing the time needed for repairs
- ***Improved predictability of pump failures,*** enabling optimized maintenance work
- ***Increased availability*** for the pump, so avoiding downtime and savings in standby pumps
- ***Rapid and skilled service*** by Bran+Luebbe, via phone or email

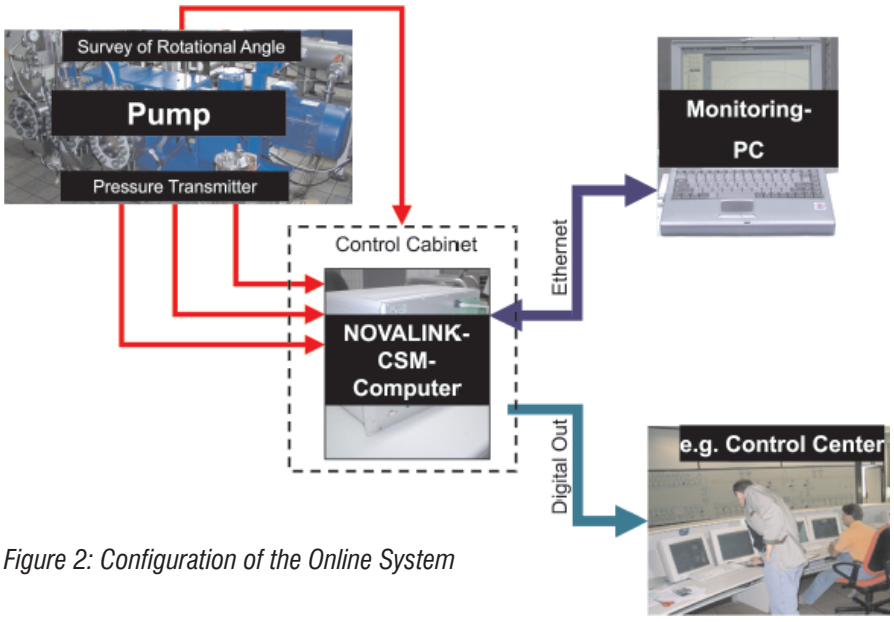


Figure 2: Configuration of the Online System

Configuration (Figure 2)

The ***NOVALINK-CSM*** comprises of a pressure transmitter in each pump head which measures the pressure in the hydraulic chamber, a device to survey the rotation angle in the pump drive, the ***NOVALINK-CSM*** computer and a monitoring PC which runs the evaluation software. The pump status can also be transmitted to a process control system or control room in the form of a “traffic signal”, as described in the following section.

Operation

For each rotation of the pump crankshaft, ***NOVALINK-CSM*** generates in real-time the pV-diagrams for the pump heads and calculates performance parameters such as actual efficiencies and average pressures.

Simultaneously, these parameters which are related to the true operating conditions are used to simulate "ideal pV-diagrams and performance parameters". These serve as references for the measured data. The system then checks whether the measured data lie within predefined tolerances and generates an instant status overview - Green for "OK", Amber for "Warning", and Red for "Serious Problem" - which are indicated in the form of a "traffic signal".

Monitoring Software

The data generated by the ***NOVALINK-CSM*** computer is transmitted by Ethernet to the monitoring PC. The evaluation software displays the following information:

- Pump status and the status of each pump head, as "traffic signals" (Figure 3).
- The pV-diagrams of all pump heads for comparison with each other (Figure 4).
- The pV-diagram and performance parameters of a specific pump head with the option to switch on the online simulated pV-diagram and performance parameters to give an instant optical comparison with the measured data (Figure 5).

Additional functions:

- Automatic archiving of pV-diagrams and performance parameters as a data set.
- Superimposing of current and archived pV-diagrams and performance parameters. Long-term changes can be identified and assessed e.g. when comparing with pump condition at commissioning.

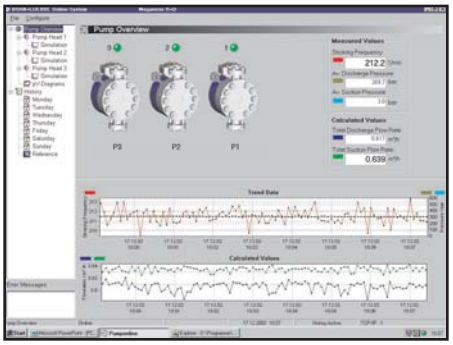


Figure 3: Pump status and status of each pump head, as "traffic signals"

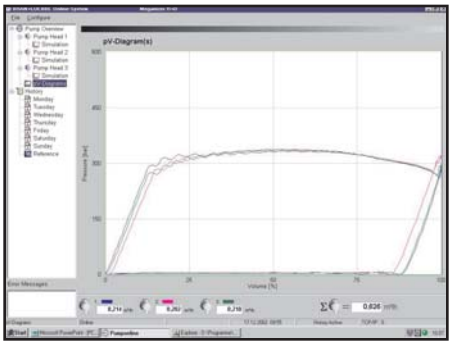


Figure 4: pV-diagrams of all pump heads

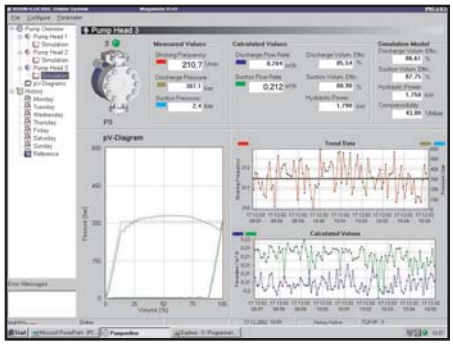


Figure 5: pV-diagram and performance parameters of one pump head

Technical Data

Pump Interface

- Survey of rotation angle: inductive proximity switch (NAMUR)
- Pump head number: 1 to 4
- Pressure transmitted signals: (0) 4 ..... 20 mA
- Reading frequency: up to 2 kHz
- Ex-proof configuration: with standard isolation and transmitter power supply (EEx i)
- The pressure transmitters can be exchanged during pump operation (with quick-disconnect coupling fitted)

Monitoring PC Interface

- Data transmission via Ethernet (Token Ring network on request)
- Data set: max. 8 Kbytes/Pump head
- Transfer rate/sec.: approx.: 1 to 5 data sets/sec

Controller Interface

- 4 potential-free contacts ("pump status traffic signal" and monitoring on/off)

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For more information about our worldwide locations, approvals, certifications, and local representatives, please visit our web site.
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