GRUNDFOS **INDUSTRY**

GRUNDFOS **CR MONITOR**

Intelligent warning

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GRUNDFOS

Look into the future with the CR monitor

Tired of having to overhaul your pumps on a regular basis – only to find that they are operating flawlessly? With the CR monitor the days of frequent inspection and unnecessary periodic maintenance are over. Through monitoring and supervision of critical parameters in your process, the intelligent monitor is able to predict pump failures long before they occur.

The early warning allows you to rectify any inefficiency before it becomes a problem and reduce unexpected, costly downtime to an absolute minimum. In turn this results in a much more profitable production; not least because the CR monitor enables ongoing optimization of the pump in terms of efficiency and power consumption.

The self-configuring monitor has three simple status icons: “OK”, “Warning” and “Alarm” and will notify you only when your attention is required. On top of that, you are served conclusions instead of complicated, unprocessed data if a warning is issued, making the error detection process redundant. So why worry about potential pump failures when you can leave the 24/7 supervision in the reliable hands of the CR monitor?

- Reliable prediction of pump failure
- Downtime reduced to a minimum
- Alert only when attention is required
- Conclusions instead of raw data
- Developed for the CR pump

Dedicated know-how from one expert to another

The CR monitor is not just any system or pump monitor. It is specifically designed and preconfigured for the CR pump – by devoted Grundfos CR specialists.

Thanks to more than 50 years of dedicated CR pump development and manufacturing, the unique CR monitor is entirely based on in-house expertise, including:

- **Pump technology know-how**
- **Motor technology know-how**
- **Electronics technology know-how**
- **Sensor technology know-how**

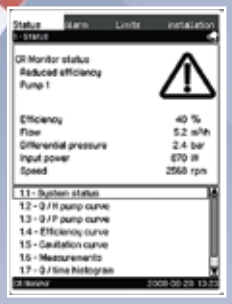
Thoroughly tested, the CR monitor offers easy installation as well as smooth operations from the word "go". This is your Grundfos guarantee that the supervision of your pump is in very safe hands indeed.

Simple pump status based on advanced calculations

A significant advantage of the CR monitor is its three simple status modes, offering reliable and plain information regarding the status of the system.

> OK

As long as the “OK” icon is on display, you can rest assure that the pump is running smoothly.

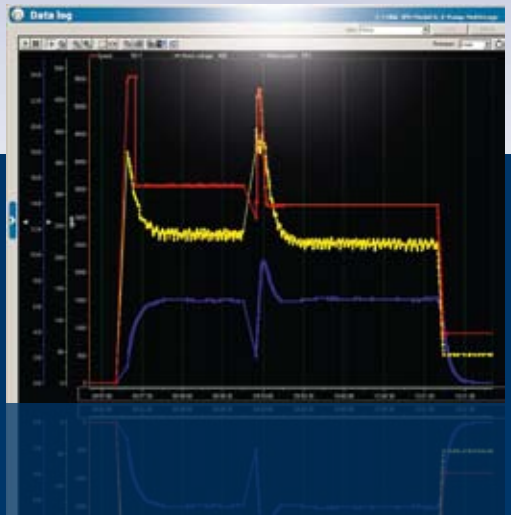


> Warning

If the “Warning” icon comes on, the monitor has detected a deviation from the normal and your attention is required. Warnings are given ahead of time to your phone, computer or SCADA system.

> Alarm

Not all breakdowns can be predicted by the CR monitor, e.g. a sudden burst of a pipe. Errors like this will cause the alarm to sound and possibly shut off the system.



Advanced log functionality

In case of a breakdown, the monitor features an advanced log functionality that will freeze relevant parameters both before and after the error occurs, facilitating later error analysis.

80 m³/h
4.2 bar

Leave the configuration to the monitor

94 m³/h
1.4 bar

A highly innovative aspect of the CR monitor is its self-configuring ability. After installation, the monitor undergoes a learning process in which it measures all critical parameters in the pump system and determines the operational pattern. The recordings are saved and used for later reference for normal pump operation. This enables the CR monitor to measure and compare the status to the model and assess whether the system is working as intended.

Should the measuring deviate from the reference – or should parameters exceed the set limits – the monitor will issue a warning. Warnings are sent to your phone, your computer or wherever it best suits you. Well ahead of potential breakdowns.

During the learning process the CR monitor will compensate for any tolerance of the CR pump performance. Should you wish to set your own limit values for the parameters, this is easily done.

5 m³/h
9.8 bar

37 m³/h
4.6 bar

61 m³/h
1.3 bar

5

Processed feed-back

A significant advantage of the CR monitor is that it offers conclusions rather than complicated piles of raw data. This means that you do not have to process figures and graphs yourself but are given clear information about what is wrong with the system and why. Naturally, the raw data on which the conclusions are based are available as well if needed.

GRUNDFOS INDUSTRIAL SOLUTIONS™

Upgrade your monitor to “peace of mind”

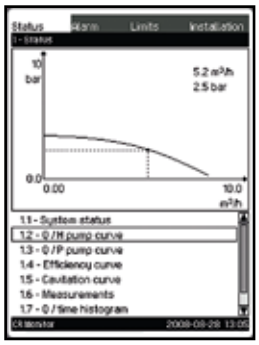
The CR monitor determines the pump status by measuring a number of preset parameters:

- **Inlet pressure**
- **Outlet pressure**
- **Flow**
- **Electrical performance (current, voltage and efficiency)**
- **Liquid temperature**
- **Ambient temperature**

By processing the information and comparing it to the learned mathematical model, the intelligent monitor is able to display an accurate and reliable real-time status around the clock.

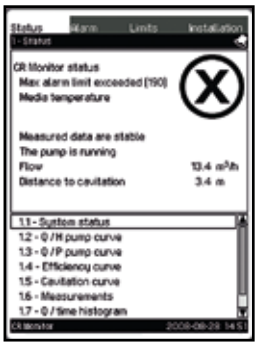
Apart from preventing downtime by predicting pump and system failure, the CR monitor is able to help you fine-tune and optimise your system in general. Informative values, e.g. number of operating hours, number of starts/stops and kWh consumed can be gathered to keep track of the power consumption and pump efficiency – and allow you to intervene if the figures move out of the ordinary.

The CR monitor is prepared for bus communication, e.g. to a SCADA system.



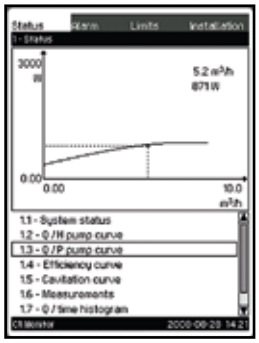
Flow/pressure

If the flow or the pressure drops it is an indication that something is wrong. The deviation in the process can however be caused simply by a legal incident, like the opening of a valve in the system. By measuring the flow and the pressure, the CR monitor easily distinguishes between legal and illegal incidents and determines whether the process is out of range.



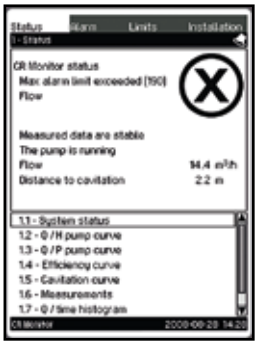
Temperature

It is crucial that neither the liquid nor the motor temperature is too high. If the ambient temperature rises too high overheating may cause the motor to trip or burn off, while a too high liquid temperature can damage the media or process or ruin the shaft seal. The CR monitor watches over both parameters carefully, checking that the temperatures do not deviate from the permitted values.



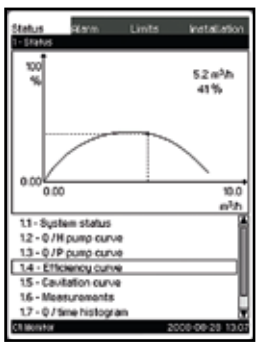
Power

The CR monitor checks the power supply continuously and prevents disturbance and overheating of the motor. It can also keep track of the power consumption, allowing intervention if it is out of range.



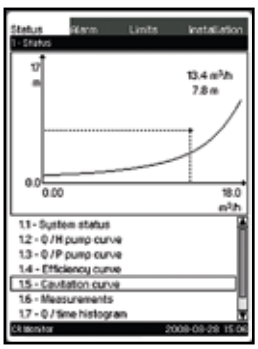
Dry running

The one most common pump killer is dry running. Using the patented Grundfos LiqTec technology, the CR monitor ensures that the pump will not operate with a dry shaft seal and can be turned off before the shaft seal is damaged.



Efficiency

Decreases in pump efficiency are usually caused by clogging of the pump, by wear of hydraulics or by catching of rotating parts. Monitoring efficiency is the most reliable indicator of when the pump needs an overhaul.



Cavitation

The CR monitor continuously assesses how close you are to cavitation by calculating available NPSH. The safety margin can be followed on-line at all times, and the system can be set up to avoid cavitation.

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Being responsible is our foundation
Thinking ahead makes it possible
Innovation is the essence

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