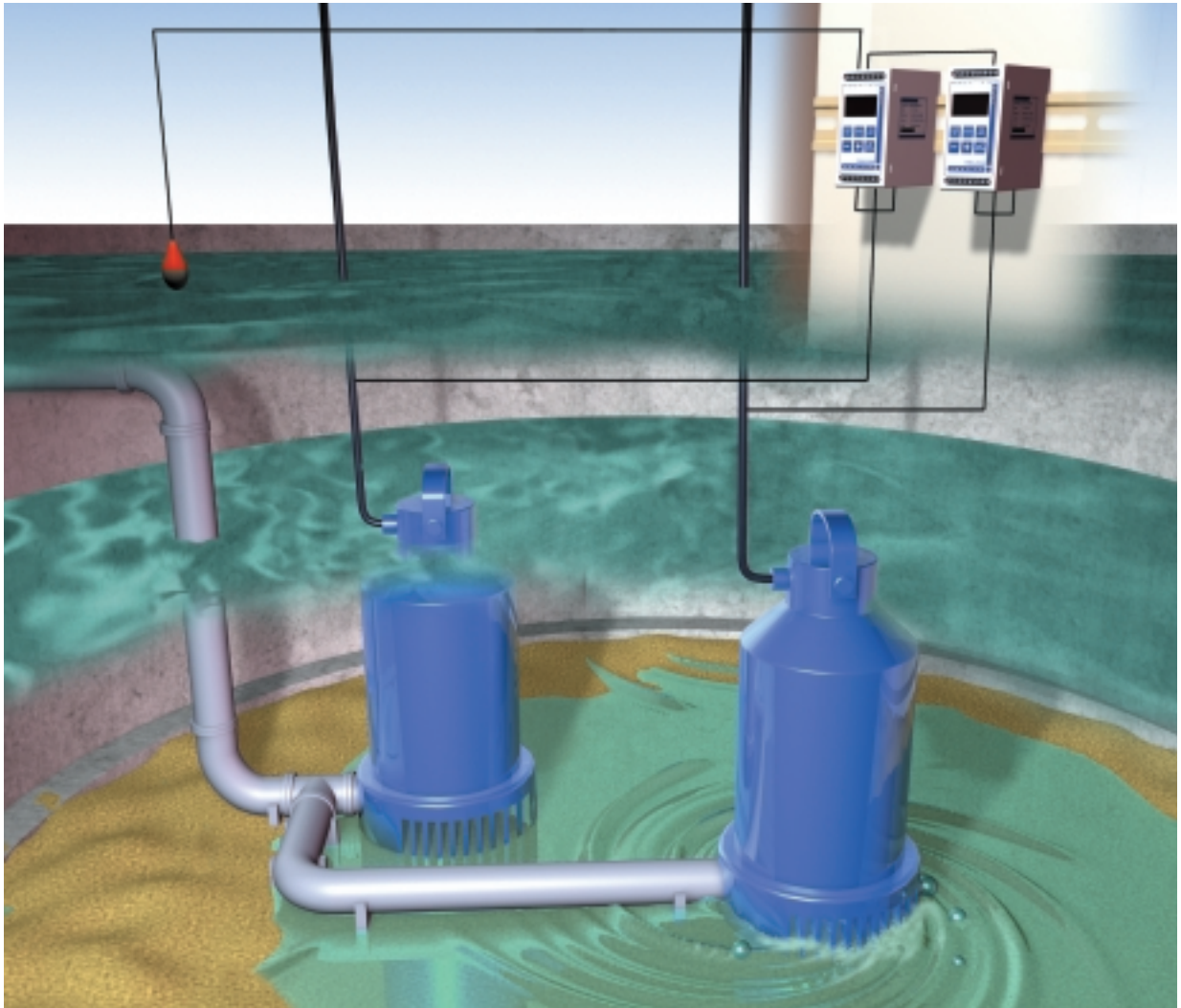


EL-FI DRAINAGE CONTROL MONITOR



GREATER LIFECYCLE ECONOMY FOR 1 OR 2 SUBMERSIBLE PUMPS

The EL-FI Drainage Control Monitor (DCM) cuts running costs and extends the lifetime of submersible pumps by preventing dry running.

Eliminates most water-level detectors

Water-level detectors often fail by being blocked by sludge. The EL-FI DCM overcomes this problem by using the pump motor as its own load sensor. EL-FI DCM uses an algorithm to automatically calculate appropriate pump run and pause periods to continuously adjust pump operation to suit the pit filling rate.

Minimal energy consumption

Changing the pumping cycle automatically to suit the rate of water flowing into the pit cuts energy consumption dramatically. Moreover, this operational mode works well even if the pump is immersed in sludge or water/mud mixtures of varying viscosity.

Prolonged pump life

As shorter running and longer pauses result from optimizing pumping cycles, there is less wear and tear on pump components. In turn this means less pump maintenance and fewer spare parts.

No DCM maintenance costs

Unlike water-level detectors, which often demand constant attention, EL-FI DCM units are highly reliable electronic devices that are maintenance-free and protected in a cabinet.

Outstanding features are standard with Emotron – the leading innovator in load monitor technology.



ENHANCED CONTROL FOR SECURE PUMP OPERATION

Submersible (evacuation) pumps require a dedicated monitoring solution because they run intermittently to drain areas such as construction sites, quarries, mines, etc. The main advantage of using completely automatic EL-FI DCM units to control 1 or 2 submersible pumps is that the monitors allow them to operate only as long as there is water in the pit. The pump induction motor is used as its own load sensor by an EL-FI DCM to start or stop the pump as appropriate. Thus external water-level detectors are no longer needed except, e.g. a high-level detector used with a 2-pump system to

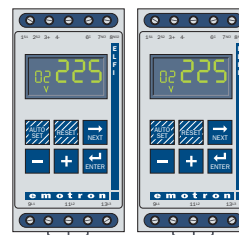
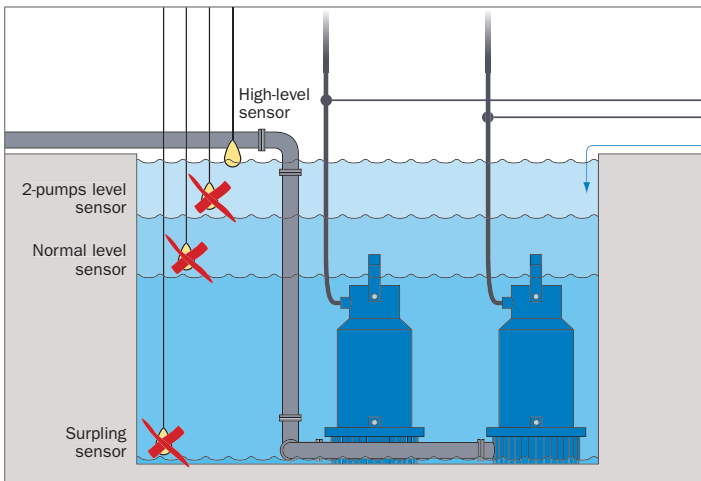
prevent overflow of a waterworks tank.

For 2-pump applications, 2 EL-FI DCM units are used to control, monitor and protect 2 submersible pumps that run alternately in, e.g. sewage treatment plants and water cleaning stations.

Automatic pump control

When the submersible pump begins to draw air because of a lack of water in the pit, the EL-FI DCM detects the resulting lower motor load. When the preset under-load limit is exceeded, the monitor stops the pump.

More convenient and secure

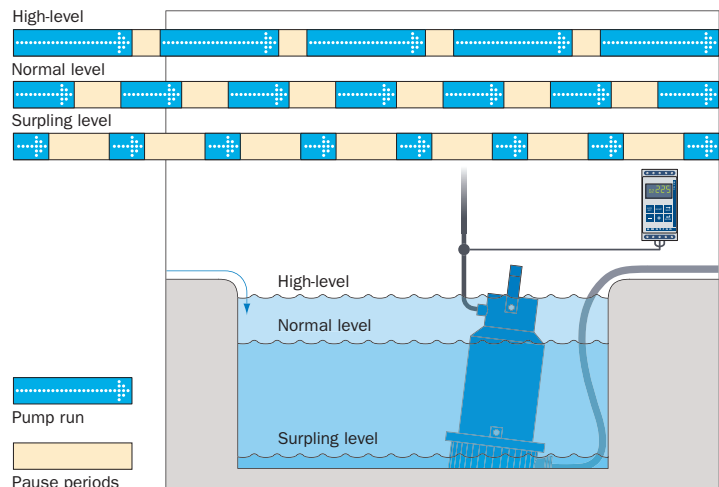


Less energy and wear and tear

Different water levels for starting the pump can be entered via the operator panel. The EL-FI DCM unit then automatically calculates the appropriate pump run and pause periods by means of an algorithm. As pump operation varies automatically according to the pit filling rate, both energy consumption and component wear and tear are reduced considerably.

The EL-FI DCM eliminates the need for at least 3 water-level detectors: low-level, high-level for one pump and high-level for two pumps. Thus significant cost-savings result from dramatically reduced purchasing and cleaning of detectors.

The EL-FI DCM system is also more secure because it uses the pump motor as its own load sensor, whereas detectors often fail because of the effects of sludge.





As the unit continuously monitors the pump running time, the period just elapsed is used to determine the time of the following pause period. The longer the run period, the shorter the pause period. Thus pump operation varies automatically according to the pit filling rate.

The input power is calculated by measuring voltage and current, which gives reliable motor load measurements over the total load range.

Easy installation, no maintenance

An EL-FI load monitor is simply integrated with the asynchronous motor circuit, either directly or via a current transformer.

After installation and the pump starts pumping, the stop level is simply and quickly set by pressing the unique Auto Set function key. The appropriate stop level is then set automatically just 3 seconds later. The operator panel allows Auto Set to be used when the

pump is either immersed in water or standing in a dry pit or tank.

As EL-FI DCM units are so small, they can be mounted on a standard DIN rail within a protective cabinet, often close to the motor contact.

Tailoring operation

The monitor circuitry makes it possible to perform a Reset or Auto Set function externally, and to connect a pump temperature sensor. Alarms can be triggered when preset underload, phase pattern and phase asymmetry values are exceeded. Selectable digital input for High Level, external Reset or external Auto Set functions is also provided.

Keeping you well informed

The EL-FI DCM presents a variety of data on its display panel, including various times and measurements, and can check a number of parameters.

PROTECTING AND ENHANCING PRODUCTION

In addition to the El-FI Drainage Control Monitor, other types of El-FI motor load monitors are available to protect:

- pumps and associated processes from dry running, cavitation and pipe and valve blockage.
- fans from broken belts, blocked air filters and poor air flow.
- machines against overload/underload situations, and to act as electronic shear-pins.

El-FI load monitors can also be used for continuous measurements by acting as feedback sensors, metering devices and as a replacement for external sensors.

Other Emotron products that protect and enhance production by using the motor as its own sensor include frequency inverters, soft starters, and drive systems designed and built for specific applications. Drive systems include innovative switched reluctance and high-speed motors.

If you are interested in one or more of these product types, contact your local Emotron representative or Emotron's head office directly at the address below. Further information about us as a company, our product selection and our services is presented on our website.

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Typical applications



Sewage treatment plants

For plants with a single pump, or 2 pumps that function alternately.

Lifting pump station or booster station

For stations with a single pump, or 2 pumps that function alternately.

General drainage tasks

Building sites, quarries and mines.

*Lars-Olof Olofsson,
Product Manager at Emotron.*



We at Emotron are pleased that EL-FI DCMs can be used both to save costs and to increase operational security. Thanks to our own development efforts, we now have a control technique that stops a pump when it begins drawing air, as well as automatically calculates appropriate run and pause periods for pumping cycles. This results in significantly lower energy consumption and running costs.

*Lars Bengtsson,
Operations Engineer at the Halmstad
Sewage Treatment Plant.*



EL-FI DCMs are installed in a number of pumping stations at the Halmstad Sewage Treatment Plant. The pumps are used to raise wastewater up to the required height of fall needed to deliver it further to the treatment plant.

Since the EL-FI DCMs were installed, service and maintenance have fallen to a minimum through the unique automatic pump control method of using the pump motor as its own load sensor. In addition, this reduces the number of external water-level sensors and keeps the pump sump clean.

Technical data

Dimensions (W×H×D)	45×90×115 mm
Supply voltage (VAC)	3×100 to 240, 3×380 to 500, 3×525 to 600, 3×600 to 690* (±10 %)
Current input	EL-FI current transformers CTM010, 025, 050 or 100 (When rated current > 100 A, CTM10 + extra transformer)
Start delay time	1-170 s
Stop delay time	0.1-90 s
Relay output	5 A, 240VAC resistive 1.5 A, 240VAC pilot duty/AC 12
Repeatability power measurement	±1 unit 24 h; +20 °C
Operating temperature range	-20 °C to +50 °C
Protection class	IP20
Approved for:	CE, cUL (UL+CSA) and GOST R

* CE-marked only.



*Original manufacturers
of motor load monitors
since 1972.*

*For more information on
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out website:
www.emotron.com*