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Sensorpress Booster Systems with new controller SM30

GS Series

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GS Series

The GS range of fixed speed booster sets includes models with 2 to 3 electric service pumps, and an additional jockey pump able to adapt to specific requirements within different applications. The start and stop of the pumps is based on the pressure values set on a pressure transducer, in order to deliver the water required. One pressure transducer is connected on the delivery side of the set. A second one is connected but only as a reserve device. With the cyclic changeover function, duty assignment is rotated to ensure both pumps remain active and with even running hours, so wear is uniform and the use factor is reduced for longer pump life. This system also ensures continuity of operation, in case one of the pumps needs maintenance. The electric pumps used in the GSD range are FHE and SHE series and SV series vertical multistage pumps.
Pumps are controlled by an electric control panel with a new electronic card with display on the front door. The electronic card and panel can also be used for waste water applications with up to 3 pumps installed.

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Benefits

- Water supply and waste water applications
- Multilanguage menu with 8 languages
- Start and stop of the pumps on level or pressure value (contact or analogical signal)
- Pumps rotation on running time or pump start
- Modbus serial interface
- Digital inputs and outputs
- Analogical inputs and outputs
- Autotest by timer

Specifications

Booster sets with SV series vertical multistage pumps with the following performances:	Max flow: up to 300 m³/h Head: up to 160 m
Booster sets with FH and SH series end suction pump with the following performance:	Max flow: up to 540 m³/h Head: up to 160 m
Maximum operating pressure:	16 bar
Configuration of the electronic card and its functionality can happen in the following ways:	by panel with function key by RS 485 setting modbus registers

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Input/output specification:

Dielectric strength control board is applied on three sides:

- power supply
- digital input/output
- analogical input/output, CPU, RS485

Digital input

- N° 6 digital inputs come from float switches or pressure switches
- N° 3 digital inputs come from motor protections or PTC
- Input for probes detection circuit (common, minimum, maximum) with adjustable sensibility or float switch or minimum pressure switch.

Digital output

- N°3 digital outputs relays, for pumps control
- N°1 output relay for alarm signalling activation
- N°1 output 12 V for alarm siren

Analogical input

N°2 analogical inputs with the following characteristics:

- Input type 0-20 m A, 4-20 m A, 0 -10 V selected by software

Analogical output

- Output type 0-20 m A, 4-20 m A, 0 -10 V selectable by software

The following Input/Output (I/O) are also specified:
N°3 micro switches on the electronic card to manage its by-pass and to directly control the pumps in case of a fault in the electronic card.
Micro switches have three positions (on, auto, off) and they will skip the output relay signal for contactors' direct control.
N° 1 RJ45 connector for output on electronic card. Lowara RILS6 (free contacts electronic card) is configurable by electronic card SM30.

Modbus serial interface

The electronic card has a serial interface RS485. It will be managed by microprocessor with Modbus protocol.

Applications

These kinds of booster sets are used for water supply applications, in the following facilities

- Commercial building
- Schools
- Offices
- Hotels
- Public and private healthcare systems
- Industrial premises
- Public buildings
- Theatres
- Camping

Booster sets components and material

Booster sets are manufactured in a compact solution with all components assembled in the factory.
Booster sets have the following components:

- Base in iron painted "Ω" shape
- Vertical multistage pumps or horizontal pumps SV and FH, SH series
- Control panel with electronic card SM30
- Isolating valve nickel-brass or cast iron material
- Check valve in suction side or delivery side according to customer requirements
- Pressure transducers in AISI 304 one in run and one in stand-by
- Pressure gauge
- Delivery manifold in AISI 304
- Suction manifold in AISI 304

All the sets are tested in the factory and they are manufactured according to:

- Machinery Directive: 2006/42/CE
- Low Voltage Directive: 2006/95/CE
- Electromagnetic Compatibility Directive: 2004/108/CE

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Autotest

It is possible to set the following parameters before the start up of the systems:

- Total number of pumps in the set (max 3 pumps, jockey pump included)
- Jockey pump (yes or no)
- Control by pressure switches or pressure transducer
- Activation of pump rotation, according to On/Off of the pumps, or by running time with a clock counter
- Enable pump stop delay for each pump or all pumps
- Enable reduced times for fast variations (dynamic delay)
- Autotest yes or no, and control by internal timer or external device (AUX1)
- Friction losses compensation and threshold increase

Alarms

The following alarms can be set in the main menu:

- Thermal overload
- Dry running protection
- Pressure transducer in fault
- Autotest in fault
- High pressure
- Low pressure
- Outside of operating range

Latest alarms are recorded in the electronic card memory, and they are visible in the alarms historic menu. In case of alarm due to the diaphragm pressure switch (not during autotest, but during the normal function) the electronic card is set with a time delay to enable all the pumps for re-establish the pressure value. When the alarm stops, all the pumps will be turned off and the alarm will be recorded.
Two different situations:

- Diaphragm pressure switch in action outside of operating range alarm in run; in this case there could be an error in the electric connection with the pressure transducer, or in the value set.
- Outside of operating range alarm in run (with pumps in run according to pressure transducer); in this case one or more pumps may not be working efficiently.

Periodic Autotest

In systems subjected to long periods of inactivity, it is possible to use an electronic internal clock or an external device to enable aperiodic autotest (the time period recommended is bi-weekly). The test phase lasts one minute. If during this phase the diaphragm pressure switch is in run, an alarm will be on. The other pumps are started in order to re-establish the pressure.

Night and Day function

The booster set provides night and day pressure sets, giving it two different methods of use for different applications in the same system. The value set can be set directly by electronic card or by an external input (EXT3).

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Reliability and efficiency

The ITT Lowara GS booster systems are equipped with SV series vertical multistage pumps. These high efficiency pumps with EFF1 motors offer higher efficiency and energy savings.
Thanks to the reliability and efficiency of the SV range of multistage centrifugal pumps, combined with the new controller SM30, we can provide the best solution for our booster systems.

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SM30 controller

If the brain of Sensorpress booster systems is the SM30 controller, then SV vertical multistage pumps are the heart of the booster sets.

High-tech pumps and high efficiency motors give Sensorpress booster systems the highest level of quality.

The SV pumps used in the Sensorpress booster systems are easy to install and to replace. Thanks to their simple maintenance, the mechanical seal can be replaced quickly without removing the electric motor.
High level of performance, high efficiency, stainless steel technology and a wide range of models enable many booster system combinations for any application.

Multi-pump control ensures a balanced system, with drive rotation for each pump. With the high quality level of ITT Lowara motors fitted on SV pumps, the Sensorpress booster system ensures low noise and the best comfort for all users.

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Smart system and guaranteed performances

The new SM30 controller was born from the experience of ITT Lowara in pump technology and knowledge of automatic pump control. Development of the SM30 controller involved all our know how to be sure that it satisfies all users' requirements. Through the SM30 we will improve the performances of our booster systems and its user-friendliness. The menu navigation is very simple and step-by-step operation ensures users can set the main parameters and obtain best performance from the booster system.

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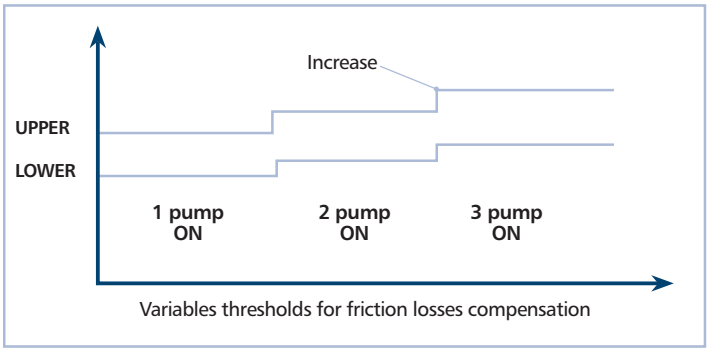
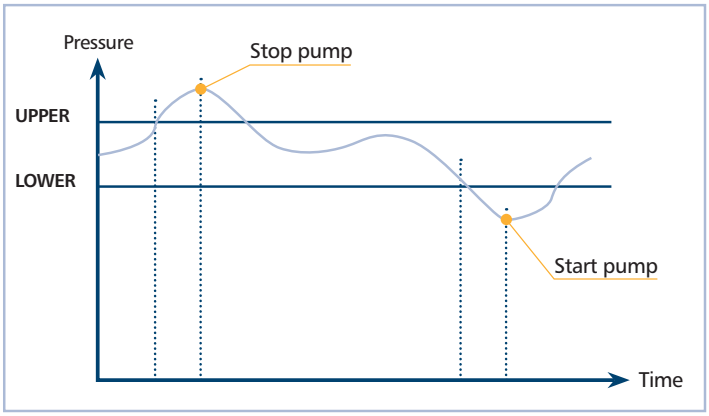
Friction losses compensation



Variables thresholds for friction losses compensation

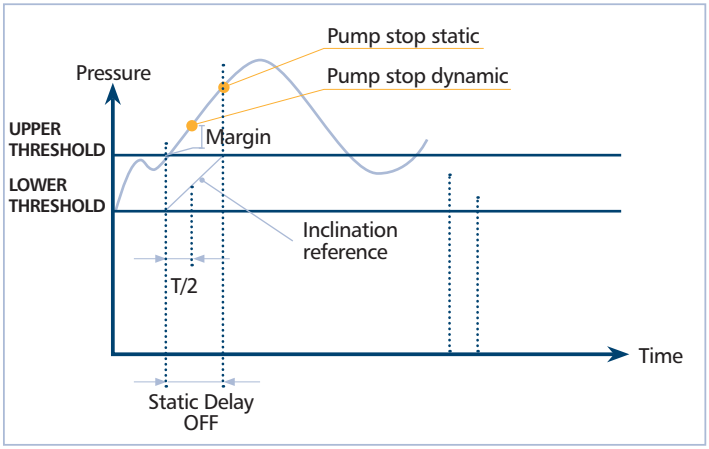
In water systems it is normal to have a decrease of pressure due to the pressure drop with increasing flow rate value. In order to compensate friction losses, it is possible to enable a control that gives a pressure proportional value to the load of the system.
Direct measurement of the flow is not detected. We believe that it is proportional to the number of pumps running. Pressure value set (upper and lower threshold) is incremented by a value set in the parameters.
The jockey pump is not considered.

System with pressure transducer



The value of pressure detected, below the minimum threshold, enables the first pump available.
The value of pressure detected, above the minimum threshold, disables the last pump running.
Delay times at startup, and stop, allow sufficient hysteresis.
The delay time of the starting up of the first pump (with all other pumps stopped) may be different from other pumps, so as to limit the pressure drop (very short delay time).

Dynamic times



Water consumption causes a pressure change in the system. To maintain the value of pressure, the pumps start and stop within the limits set.
Delay times are needed to allow the pumps to get maximum speed, and avoid oscillations (continuous starts and stops).
The best adjustment of delay time must be made according to the type of pump and starter type (D.O.L, star delta, soft start…).
To obtain the best performance from the system, with both slow and fast changes, you must change the delay time in a dynamic way.

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ITT Lowara part of ITT Corporation and headquarters of "Residential and Commercial Water - EMEA".
World leading in offering high reliable fluid handling solutions for Building Services, Irrigation and Industrial applications. We provide a complete range of high quality pumps, packaged systems and controls and are specialized in engineering and manufacturing stainless steel products.
ITT Lowara is headquartered in Vicenza, Italy and operates in more than 80 countries across the world with own plants in Italy, Austria, Poland and Hungary. The company has 1.300 employees and generated 2008 sales exceeding $440 million. ITT Lowara is wholly owned by the ITT Corporation of White Plains, New York, and is the EMEA headquarter of ITT's Residential and Commercial Water division. ITT Corporation is a high-technology engineering and manufacturing company operating on all seven continents in three vital markets: water and fluids management, global defense and security, motion and flow control. ITT Corporation generated 2008 sales of $11.7 billion

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