



# Soft starts – smart stops



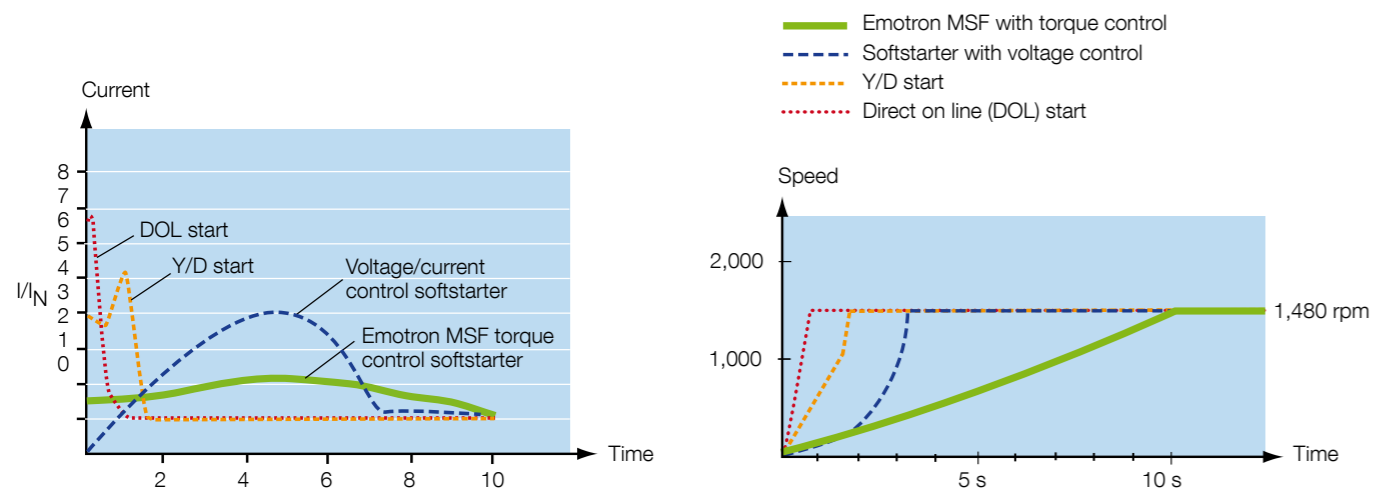
Emotron MSF 2.0 Softstarter





## More than just a soft start

Starting an electrical motor involves a number of challenges, such as high start currents and mechanical stress on equipment. This results in high energy, installation and maintenance costs. Emotron MSF handles this and a lot more. Start and stop sequences are optimized. Advanced braking techniques increase productivity. Built-in monitor functionality protects your process. Easy installation and set-up save time and money. A soft-starter beyond the ordinary!



With an Emotron MSF the start current is up to 30% lower than with a conventional softstarter.

Emotron MSF offers efficient torque control that enables you to start more smoothly with constant acceleration.

## Ultra-smooth starts reduce your costs

Conventional softstarters use a pre-defined voltage ramp to control the start. With Emotron MSF, the actual motor torque is continuously calculated and controlled according to the application requirements. This so called torque control ensures an ultra-smooth start with constant acceleration. The torque control means the start current is reduced even further by up to 30%. You can use smaller fuses and less expensive cables, and will thus benefit from lower installation and energy costs. The smooth starts also lead to less mechanical stress, improved process control and reduced maintenance costs.

## Controlled starts for efficiency and safety

Torque boost can be used to overcome initial torque peaks when starting, for example, a loaded crusher or mill. This will reduce mechanical stress as well as enhance efficiency in your process. Starting a fan which is rotating in the wrong direction due to a draught, will lead to high current peaks and mechanical stress and can result in blown fuses and breakdown. Emotron MSF gradually slows the motor to a complete stop before starting it in the right direction. Damage is prevented and mechanical vibrations are eliminated. The starting direction can be fully controlled, for example of a tunnel fan if there is a fire when controlling the direction of the air flow is critical for safety reasons. Emotron MSF offers full control without the need for an external PLC, thanks to two inputs for start left/right and built-in control of forward/reverse contactors. You will benefit from simplified installation and reduced investment costs.

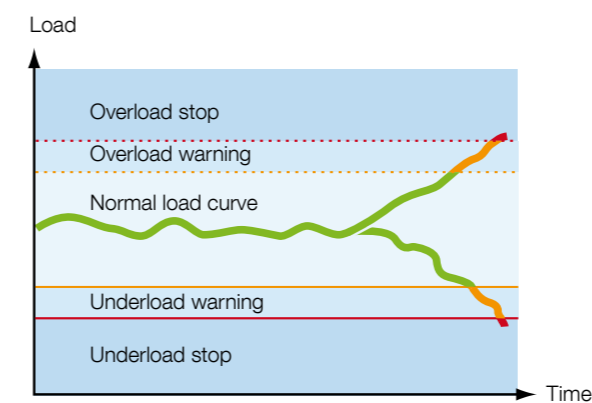
## Protect your process and maximize efficiency

The Emotron MSF softstarter has a built-in load monitor that protects your machine and process against costly downtime,

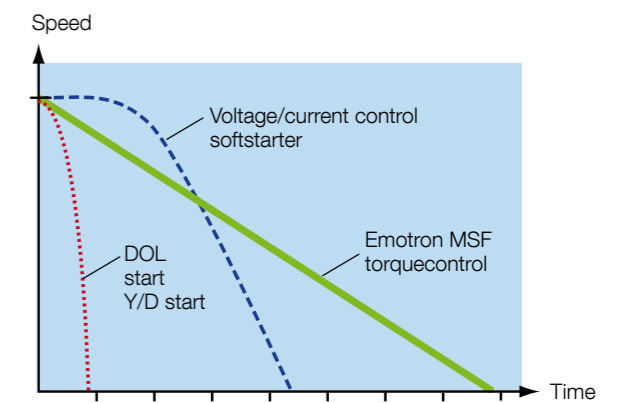
equipment damage and break-down. It reacts immediately if a crusher is jammed, a pump is running dry, a compressor is idling, or a fan is operating inefficiently due to a blocked filter. This is achieved by constant viewing of the motor shaft power. Any deviation from your selected load levels will result in a warning or a quick but smooth stop. The actual load can be displayed via, for example, Profibus. The monitor can also be used to determine when a process is ready, for example, when the viscosity is right in a mixing process. You can rely on an efficient and reliable operation protected from damage and interruptions.

## Smart stops with built-in braking functionality

The definition of a smart stop depends on your application. For a pump, the aim is to slowly decrease the flow to prevent mechanical stress on pipes and valves, while a saw often requires a quick stop for security or productivity reasons. The advanced braking techniques of Emotron MSF softstarters meets both challenges just as efficiently. When stopping a pump you can benefit from the same smart principle as when starting it – a linear stop using the torque control. You no longer risk water hammer and there is no need for costly equipment such as motor-controlled valves. When a quick stop is needed, the brake functionality of Emotron MSF eliminates the need for expensive and space-consuming external brakes and saves you both investment and maintenance costs. The built-in vector brake is used for handling low braking torque loads. The built-in reverse current brake efficiently handles high inertia loads in, for example, crusher or mill operation. It's also the solution for band saws and saw applications where extremely short braking times are required.



A built-in load monitor protects your process against damage and inefficiency by sending a warning or stopping the process at your chosen load levels.



The torque control ensures a linear stop that protects your pump from water hammer. No motor-controlled valves are required.





## Easy to install and easy to use

Installation is quick and cost-efficient, since no additional equipment is required. Everything you need is included in the Emotron MSF unit. A number of options let you customize the Emotron MSF functionality and fully utilize the softstarter according to your needs.

### Quick and cost-efficient installation

Installing an Emotron MSF unit is quick and cost-efficient. There is no need for any of the additional equipment usually required to complement soft starter functions – DC brakes, motor protection relays, mains failure relays, load monitors, meters, displays or switches. Everything you need is included in the Emotron MSF unit. Programming the settings according to your needs is also quick and easy.

### Programmable inputs increase flexibility

Emotron MSF has four programmable inputs that offer great flexibility and extended functionality. For example, you can control the rotation direction of a fan by programming two inputs for start left and start right respectively. An external alarm signal can be connected to stop the motor if a problem occurs. An analogue sensor can be connected directly to the Emotron MSF to control start and stop levels of a pump. Installation is simplified and investment costs are reduced since no external PLC is required. Up to four different parameter sets can be selected via the programmable inputs.

### Versatile communication options

In many applications, the softstarter is one of several control devices. To enable communication between these devices and with e.g. a control room, Emotron MSF provides versatile communication options:

- Fieldbus communication (Profibus, DeviceNet)
- Serial communication (RS232, RS485, Modbus)
- Analogue and digital outputs

Ethernet and other communication buses are available via a gateway unit.

Several process values and system parameters are available via the communication interfaces. These can be used in your control system to achieve optimal performance at minimal cost.

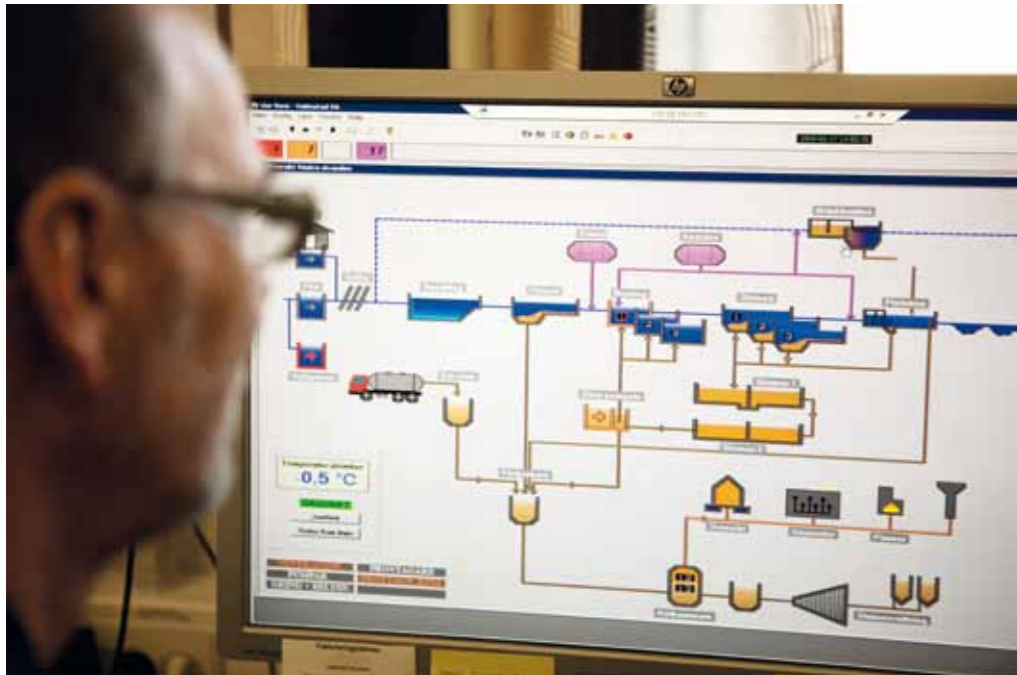
- Current
- Voltage
- Shaft power
- Energy consumption
- Power factor
- Shaft torque
- Operating time
- Motor thermal capacity

### External control panel

An external control panel is available as an option. It can be mounted on the front of a panel door or a control cabinet for remote control of the softstarter. Maximum distance between softstarter and external control panel is three metres.

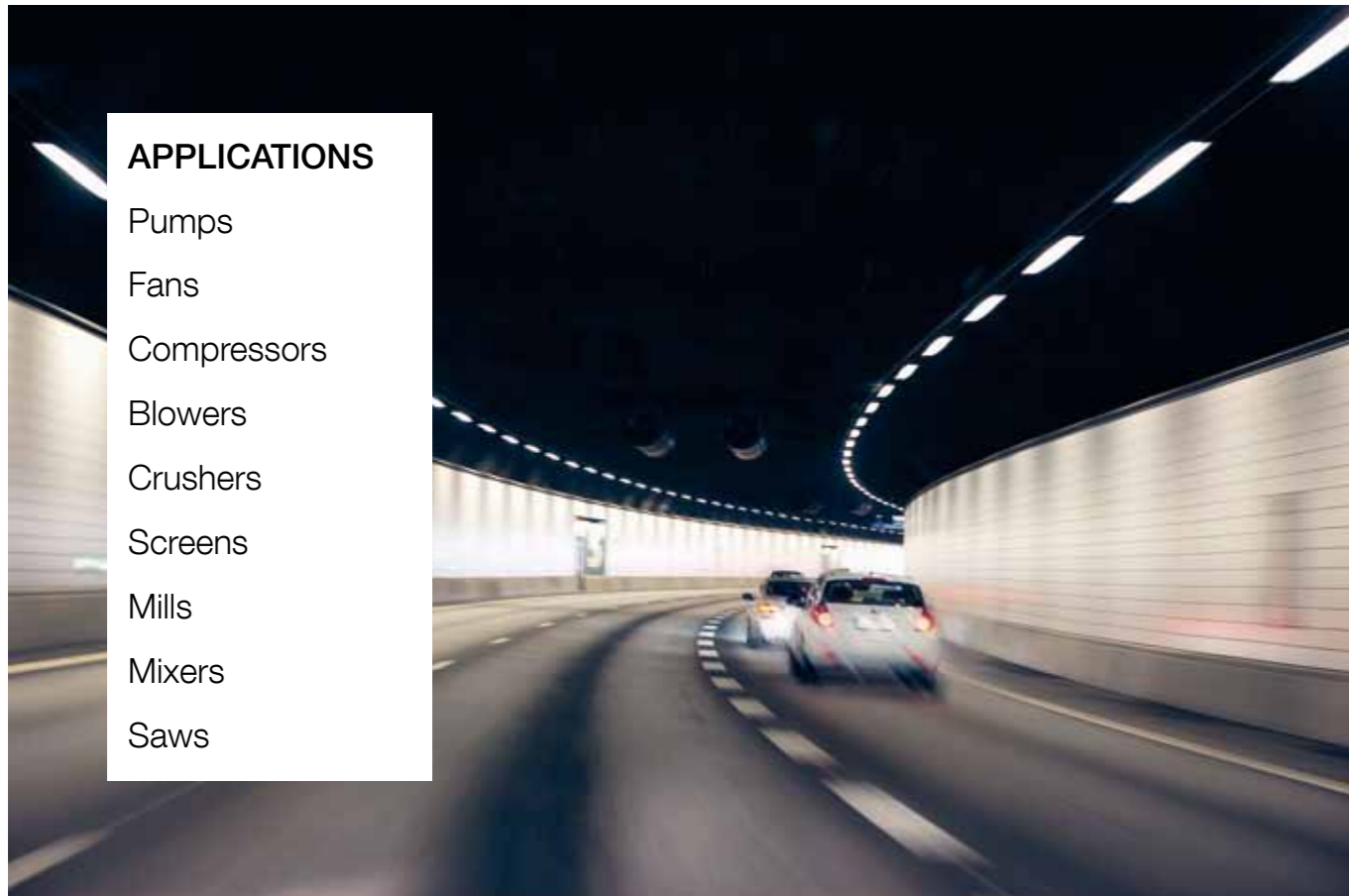
### Cable kit and cable entry box

An optional cable kit can be used together with the bypass function to facilitate connection of external current transformers. A cable entry box makes it possible to mount an Emotron MSF 017-085 using cable glands to attach the cables. Protection class is IP20.



*Emotron MSF offers versatile communication options with, for example, a control room. Analogue, digital, serial and fieldbus communication are supported.*





### APPLICATIONS

- Pumps
- Fans
- Compressors
- Blowers
- Crushers
- Screens
- Mills
- Mixers
- Saws

A wide range to suit your needs



### TECHNICAL DATA

Emotron MSF 2.0 softstarters are available in the following range:

Supply voltage	200 – 690 V, 3-phase
Rated current	17 – 1,650 A
Rated power	7.5 – 1,600 kW
Protection class	IP20, NEMA 1 (up to 960 A) IP00, NEMA 0 (up to 1,650 A)
Approvals	CE, UL, GOST R

For further technical information, please see the Emotron MSF 2.0 data sheet.

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