

White Paper

Efficiency, Cost Savings, and Value for High-Performance Pumping Operations

Pump cleaning, an innovative new functionality in soft starters, lowers maintenance time and costs

In today's industrial operations, pumping environments can sometimes be harsh. In applications such as wastewater treatment, or other environments where fluids may contain sediment, high particulate levels, or other matter that can obstruct smooth and clean pumping operations, smart automation and control technology saves maintenance time and extends the life of pumping infrastructure.

Operators and facilities managers are distracted when pumps and piping become clogged or obstructed by sediment and particulate within the pumped fluid. This may lead to undue corrective maintenance, which can be costly and time consuming, and slow or halt operations

to unclog and clear any sediment buildup or obstructions.

As a result, the value of control devices integrated in the pumping operation, to automatically monitor and correct such scenarios, helps save time and money. Pump cleaning functionality provided by the SIRIUS 3RW55 soft starter technology was designed to add value to such harsh pumping environments.

In addition to pump cleaning, it also offers the benefit of soft starting and soft stopping – all beneficial features in critical pumping systems.

Soft Starting

Soft starting is used in conjunction with AC electrical motors to reduce initial current and torque on the powertrain upon start. A soft starter reduces the available effective current, reduces the

starting torque, and “softens” the start. It also reduces electric current surge to the motor during start-up, which reduces mechanical stress on the motor and shaft, as well as the cabling and electrical distribution network that supports it. This all helps extend the lifecycle of the system.

Pump Stopping

The pump stopping functionality is particularly useful for high-velocity and high-volume pumping operations. In such operations, any abrupt halt to pumping could cause a “fluid hammer.” This hammering may damage parts, pipe supports, and fittings associated with the pumping. The pump stopping functionality automatically eases the torque upon stopping to provide a gentle stop versus an abrupt one and eliminates the hammering.



It detects such flow disturbances by a unique monitoring of changes in current or power consumption. The disturbances are automatically corrected by actuating reversal of flow and ridding the components of the obstruction. In addition, the detected obstructions may also send alerts to operators should further manual intervention be required. Performing this function automatically, frees up time for maintenance personnel, while alleviating any required intervention by the operator to correct the obstruction of flow.

Unique Parameterization to Optimize Operation

Parameterization refers to fine tuning parameters such as the rated operational current, current or power limits, starting and stopping modes, all essential to the proper operation of the motor-driven pump.

This is a useful utility for designers, facility managers, operations and production managers, and many others responsible for outfitting control and automation systems for fluid pumping.

Value in Action: Using the SIRIUS 3RW55 soft starter in a Wastewater Treatment Plant

Wastewater treatment plants are often harsh environments for pumping. The wastewater fluids pumped are full of solids and impurities that can physically interfere with sustained, continuous pumping operations. The SIRIUS 3RW55 soft starter is ideal for this application.

To best illustrate its versatility, note two integrated functions, pump stopping and pump cleaning, which can be utilized in the pumping operations of a wastewater treatment plant.

A pump cleaning cycle is automated, depending upon the motor current or amperage draw of the pump and its power consumption. Set levels of current or power limits actuate the cleaning cycle. The cleaning cycle process reverses the rotational direction of the pump impeller, * causing the sediment to discharge and move back into flow, and the impeller remains cleaned.

Pump Cleaning

While other products may be available with soft starting and stopping, a unique, innovative function is now available with the cleaning function of the SIRIUS 3RW55 soft starter that complements its soft starting and stopping features.

The SIRIUS 3RW55 soft starter is an innovative solution for the automation and control of motor-driven applications. For high-performance pumping operations, it provides improved efficiency, frees up time for maintenance personnel, and adds overall value to the owners and operators of plant equipment.

This is important as pump impeller functionality may become impeded by waste products and sediment from the effluent that deposit on the impeller and other pumping surfaces causing obstruction and blockage. Blockages of this kind can be a costly aspect of wastewater handling. Ordinarily, time-consuming and costly cleaning of pumps on a regular basis is necessary due to these deposits and blockages.



Specifically, the SIRIUS 3RW55 soft starter senses anomalies of a steady-state, steady-flow of fluid pressure and its volumetric flow rate. Such anomalies may be due to obstruction, sediment buildup, bio-growth, calcification, erosion, or other disturbances to pump flow.

Uniquely, the SIRIUS 3RW55 soft starter, using an integrated measuring technology, detects soiling early and triggers automatic cleaning of the pump.



These are performed automatically and boost overall system availability.

Without this automated pump cleaning functionality, the system would need to be shut down, and its equipment manually disassembled and cleaned. This procedure would increase downtime, incur labor and maintenance costs, and detract from the overall efficiency of the plant's operation.

The result of pump stopping and pump cleaning for the wastewater treatment plant: high productivity, maximum availability, and lowered maintenance costs.

The Efficiency, Cost Savings and Value of Continuous Pumping

Whether it's used at a wastewater treatment plant or in other industrial applications, the SIRIUS 3RW55 soft starter enables a smooth and continuous pumping that provides numerous benefits to plant and equipment owners and operators:

- Reduced maintenance:** The automated cleaning functionality, combined with the soft start and pump stopping features, means facilities maintenance will be reduced. More specifically, automated cleaning sustains flow and operation. Pumps and equipment used in the harsh environment of wastewater treatment, and other fluid pumping, is maintenance prone. Ordinarily this requires shut-down and manual cleaning, and sometimes parts replacement. The self-cleaning functionality that the SIRIUS 3RW55 soft starter provides, avoids such intervention. In addition, the soft start and pump stopping functions avoid stresses imposed on piping, fittings, and other system components, improving their lifecycle and reducing the need for parts changeout.

- Increased uptime and reduced downtime:** If manual maintenance is reduced, and parts replacement in a fluid system is reduced, the system may operate more continuously. Thus, the operational uptime is preserved, downtime is reduced.
- Parts and material last longer:** When a pumping system is not over-worked, and wear is reduced, the lifecycle of piping, fittings, and pump parts last longer. Thus, they do not need as frequent service and change-out. This saves time, cost, and consumption of spares inventory, affording greater efficiency and cost savings for owners and operators.

Unlike other soft starters available, the SIRIUS 3RW55 soft starter offers numerous benefits, providing operators a big advantage: it incorporates automated pump cleaning, accommodates load fluctuations with auto parameterization, reduces total maintenance resources, and lowers overall operational costs. Plus, it is easily commissioned and may be integrated with ready-to-install panel designs.

Summarily, using the SIRIUS 3RW55 soft starter leads to added production time available for pumping operations, reduced maintenance, improved lifecycle of material and equipment, and conclusively, greater efficiency, cost savings and value.

*** Important consideration for using pumps in reversing operation:**

The pump cleaning functions (light and intense) use the reverse operation of the pump. Before using the pump cleaning function of the SIRIUS 3RW55 soft starter, check the technical documentation of the pump or with your pump's manufacturer whether a reversing operation is permitted. If your pump is not rated for reversing operation or you are not sure if the pump supports a reverse operation, then please refrain from using any pump cleaning function.

Siemens AG

Smart Infrastructure
Electrical Products
Siemensstrasse 10
93055 Regensburg
Germany

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