

SIRIUS Application 008

Pump for Water Supply



Sector: Water supply
Application: Pump

Application

River surface water is processed into drinking water. The water flows into water abstraction systems via branch canals. The pumps pump the water into the drinking water treatment system.

Customer requirements

- Constant volume flow
- Identical water volume with identical pressure, 24/7, 365 days a year



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System layout

Operation on FC

Pumps:

3*110 kW IE1 motor

1*75 kW IE1 motor

Analysis

The FC (= frequency converter) is unnecessary for the application. The system's efficiency is further decreased by the FC.

Energy balance improvement through the application of IE2 or IE3 motors on soft starters.

Water hammers can be prevented by means of soft starters.

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Power loss of electrical components

Drinking water delivery Drive data	Motor P _N kW	Power loss Motor W	Power loss feeder Soft starter W	Power loss feeder FC+filter W	Power loss Total W	Energy saving potential 4000h kWh	Energy saving potential 0.08 €/kWh €/a	CO ₂ - saving potential 563g/kWh t/a
Motor IE1	110	7,899		2,750	10,649			
Motor IE1	110	7,899	90		7,989			
Motor IE3 to IE1 + FC	110	5,546	90		5,636	20,052	1,604.17	11.29
Motor IE3 to IE1 + soft starter	110	5,546	90		5,636	9,412	752.97	5.30

The energy-saving solution:
 IE3 motor 110 kW and SIRIUS
 soft starter



System components

- SIRIUS soft starter 3RW4
- SIMOTICS low-voltage motor 1LE1 IE3

Customer benefits

Reduced energy costs with one motor by 750 €/a and 5.3 t/a CO₂

FC: Frequency converter

CO₂: 563 g/kWh

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Pumping, venting, compressing

Machine



The extraction pump is operated on a frequency converter via an IE1 asynchronous motor

Requirements

River surface water is processed into drinking water. The water flows into water abstraction systems via branch canals.

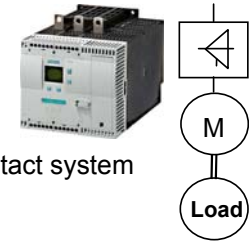
The pumps pump the water into the drinking water treatment system.
Drive power 110 kW

Continuous movement

Average

Solution

Increased efficiency in the drive train through efficiency-optimized motors and operation directly on the grid



SIRIUS switching and protection devices
SIRIUS soft starter 3RW4 with bypass contact system
SIMOTICS low-voltage motor 1LE1 IE3

Benefits

- *Energy savings:* 9,400 kWh/a
- *Saving potentials:* 750 €/a
- *CO₂ reduction:* 5.3 t/a*

*) 563 g/kWh