



Sensors



Switches



Controls

Application notes



Application Note : July 2021

Market involved : Water treatment

Product : RSGT Series

Customer : Panel builders

Subject : Full pump protection resulting in lower maintenance costs

CUSTOMER ISSUE :

In pumping applications there are 3 main phenomena that can cause severe damages to the pump and/or the installation: Water hammering / Cavitation / Dry running.

Water hammering occurs when pumps are stopped abruptly or when the deceleration of the pump is not stable. This phenomenon is more pronounced when long pipes are used and can cause pipes and valves to break.

On the other hand, cavitation happens mainly during start and it is caused by a too rapid acceleration of the pump impeller. Cavitation causes pitting on the impeller thereby reducing the pump's performance. Dry running conditions happen when the pump runs without water. This condition destroys pump seals in a matter of seconds (approx. 30 sec) because of high temperature.

All these phenomena result in high maintenance costs and high downtime.

OUR SOLUTION :

The RSGT is a 3-phase controlled soft starter designed with our well-known self-learning algorithm.

The control on all the phases not only reduces the pump starting current by > 50% vs a direct on line (DOL) start; it also results in a much smoother control of the pump's acceleration up to nominal speed. This smooth acceleration minimises cavitation issues.

During ramp-down, the RSGT triggers the torque control functionality. Torque control slows the pump down to standstill with a constant deceleration thereby eliminating water hammering.

As a new function on the RSGT, we now have dry running protection. Through this function, it is possible to detect a condition of dry running and stop the pump in about 5 seconds, preventing severe pump damage. The RSGT also comes with a built-in motor overload protection (Class 10) that is well appreciated in the market segments where pumps are used.

BENEFITS :

- Eliminates water hammering and reduces related cavitation issues
- Protection against dry running conditions (function can be enabled/disabled via Test/Reset button or Modbus)
- More protection for pumps with built-in Class 10 motor overload protection
- Lower disturbance to voltage network thanks to balanced currents and lower starting current
- Reduced maintenance costs with built-in protection and diagnostic functions
- Easy configuration – only 3 user adjustments required
- Real-time conditioning monitoring can help to schedule and lower maintenance costs