

Seamless Pump Station Retrofit

Increase energy savings and system reliability with **Clean Power VFD**

SAINT-SAUVEUR CITY PUMP STATION
SUCCESS STORY



Protect electrical & electronic equipment on the grid



Less noise pollution for a more peaceful pump station

Objective

The Saint-Sauveur city wanted to improve energy efficiency, pump reliability, and overall control by replacing the contactor with a Variable Frequency Drive (VFD) in an existing pump station. Their objective was to modernize the system, reducing energy, operational, and maintenance costs while enhancing performance.

The city aimed to achieve the following savings after the retrofit project: 25% energy consumption from 84 kWh per week.



6-pulse VFD PWM **Clean Power VFD**

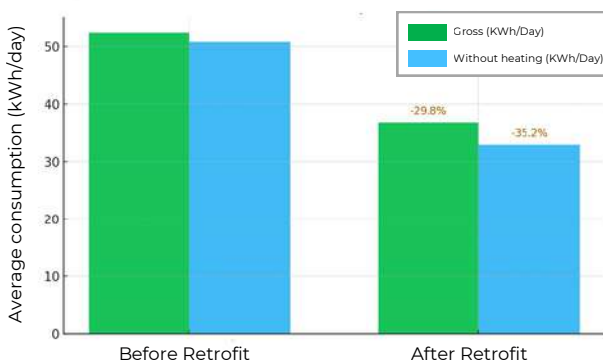
Challenges

- Limited panel and physical space within the pump station
- Motor and bearing protection for maximizing equipment lifespan
- Seamless connection to existing monitoring and control systems
- Support for 600V 3-phase input and output

Benefits

- Simple contactor replacement with easy 4-wire in, 4-wire out setup
- Seamless integration with existing monitoring and control systems via embedded Modbus interface
- Increased energy efficiency through flexible control according to water demand
- Enhanced pump reliability and extended lifespan with pure sine wave input
- Reduced operational and maintenance costs with less equipment to maintain

Impact of the renovation on daily consumption (Gross vs. Without heating)



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6-pulse VFD PWM voltage output



SMARTD sinusoidal voltage output



Solutions

Installing the Clean Power VFD was straightforward: the electrician simply disconnected the power cables, removed the contactor, and reconnected the same cables to the Clean Power VFD.

Using the mobile app, the Clean Power VFD enabled the remote control via the built-in Modbus TCP protocol feature, the contractor connected the Clean Power VFD to the PLC and the existing monitoring and control system.

During the project, an increase in pumping capacity required additional pumps to be installed with a second VFD. They used a 6-pulse VFD available on site to respond to the capacity demand.

Clean Power VFD and 6-pulse VFD

The operator then noticed a significant difference in acoustic noise between the motor powered by the conventional VFD and the one controlled by the Clean Power VFD. This noise, characteristic of the motor driven by the conventional VFD, is caused by the PWM output signal, which generates mechanical stress on the windings and the motor structure, potentially leading to overheating and premature wear.

The Clean Power VFD offers a compact design with built-in filters, including a full sine wave, made possible by advanced Silicon Carbide MOSFET technology. The Clean Power VFD ensures three sine wave output signals to the pump, eliminating the need for additional components to protect its motor, insulation, and bearing. The Clean Power VFD provides improved durability, reliability, and energy efficiency needed to provide water to the municipality's residents.



Feedback

"The Clean Power VFD exceeded our expectations. Its compact design and energy efficiency upgrades have significantly improved our pump station's performance while cutting operational costs. The quick installation and integration into our existing systems made the transition effortless." - Simon Mercure, municipal engineer for the City of Saint-Sauveur.

"It's not just quieter — it's less stress, higher efficiency, and fewer long-term risks." - Simon Mercure, municipal engineer for the City of Saint-Sauveur.

Results

- Energy consumption reduced by 35%
- Improved pump reliability with pure sine wave outputs and smooth start/stop functions
- Seamless integration with existing control systems using built-in Modbus TCP protocol
- Simplified installation completed in under an hour



Scan the QR code and **hear it for yourself!**
See the difference with **Clean Power VFD**