



Domestic water pressure boosting system upgraded with 25% yearly energy savings

Seamless transition to a Grundfos Hydro MPC pressure boosting system results in significantly increased efficiency at 345 California, a LEED Platinum-certified building in the heart of San Francisco.

In a project exemplifying successful collaboration and innovative engineering, the aging domestic water boosting system at San Francisco's 345 California building was replaced by a Grundfos Hydro MPC Quadruplex solution. The transition to the new variable-speed, packaged pump system was seamless, causing no disruptions and improving energy efficiency by at least 25%.

The situation

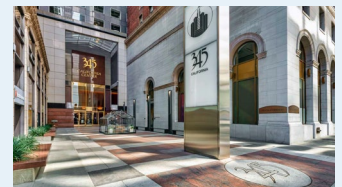
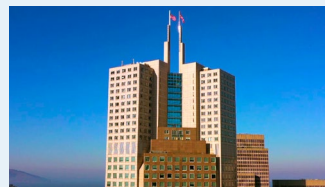
Unique to 345 California is a five-star hotel located on the top floors of the 48-story mixed-use building. Because of this, demand on their domestic water system is 24/7 with heavy office use during the day, and hotel use at night and early mornings when occupants are showering.

The building's original, constant-speed, domestic water boosting system was inefficient and starting to struggle after approaching 40 years in service. As such, it was earmarked for life-cycle replacement due to 345 California's proactive, rolling 5-year Capital

Improvement schedule that endeavours to identify vulnerabilities and address life-cycle expirations well prior to system failure.

Recognizing Grundfos as an industry leader in pumping systems, 345 California worked together with representative Osborne Company, Inc. and Grundfos to plan a high-quality, energy-efficient replacement system.

With the hotel's 24/7 demand for adequate water pressure and volume for their guests, any water supply interruptions had to be precisely choreographed to minimize disruption.



The 48-story 347 California building is in the heart of San Francisco's financial district

“Grundfos is clearly a leader in the industry for fluid, hydronic pumping systems. They would be considered the gold standard.”

Timothy D. Danz, Chief Engineer
345 California

GRUNDFOS 

Possibility in every drop

“We were able to tell the old system that it could now stop running. We were successful in doing that transplant without any service interruption or any inconvenience to occupants.”

Timothy D. Danz, Chief Engineer
345 California



The solution

A Grundfos Hydro MPC Quadruplex solution was selected. It had been shown in the pre-construction system selection peer review that it would meet or exceed all criteria related to the original system and its use case.

The Hydro MPC Quadruplex system consists of four pumps, motors, and drive. It is powered by the highly intelligent CU 352 controller that monitors constantly changing building demands with the pump's power, pressure, and curve data, and then adjusts the sequence of multi-pump operation to deliver the highest level of system performance, energy efficiency and comfort.

Rather than having to demolish the old system and build a new one in its place, which would have resulted in significant disruption and expense, the expert team was able to build the new system directly beside it.

Supply and discharge piping and fittings were set in place with only one overnight, 4-hour cutover service interruption, to transition from the old to the new system.



The Hydro MPC Quadruplex is a variable-speed packaged pump system composed of four pumps, motors, the drive and a CU 352 controller

The collaboration between the entire Grundfos team, the licensed plumbing contractor, electricians, and onsite engineering team was excellent throughout and vital to the successful outcome of the project.

“The new system is at least 25% more energy-efficient than the pre-existing system.”

Timothy D. Danz, Chief Engineer
345 California



The outcome

The Grundfos solution brought multiple advantages to the LEED Platinum-certified building:

- As the OEM, Grundfos manufactures every vital component of the Hydro MPC system, including the pumps, motors and VFDs providing single-source responsibility. Each component is designed to our impeccable standards, made from the highest quality materials in our state-of-the-art facilities, and tested to deliver years of dependable performance.
- The outgoing pumping system consisted of three vertical turbine, constant-speed pumps that ran continuously. The new Grundfos Hydro MPC Quadruplex System is powered by the industry-leading CU 352 controller — a highly intelligent “brain” that monitors both power and pressure to efficiently adjust the sequence of multi-pump operation, ensuring that system demand is met at the lowest power consumption. In addition to the efficiency improvement, this has substantially improved system redundancy and will ensure system reliability by providing advanced protection against detrimental electrical and mechanical operations.
- Utilizing revenue-grade power sub-metering on its mechanical systems, the outgoing system’s power consumption was closely tracked for up to 7 years prior to replacement, and the new Grundfos system is 26% more efficient and has significantly reduced the base kW demand. Pump design, intelligent sequence of operation from the Grundfos controller and its use of variable frequency drives are primary to its inherent efficiency.
- The stainless-steel construction of the pumps and their main suction and discharge manifolds lend themselves to improved domestic water quality in comparison to the original system construction.
- The new system’s smaller footprint, separate power and water isolation methods, and overall service accessibility are a vast improvement over the old system.

Grundfos supplied

Grundfos Hydro MPC EC 100kA SCCR 4CR45-7-2 Quadruplex, variable speed packaged pump system



The positive, close collaboration between all parties was highly effective and vital to the project’s success

“Every year that these pumps are running and saving us electric usage is going to equate to higher and higher savings. And all of that helps us achieve the LEED Platinum rating.”

Patrick Murphy, General Manager
345 California

Visit grundfos.us/pei to learn more about Department of Energy (DOE) pump energy index (PEI) requirements and PEI ratings on specific Grundfos models.

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