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## Case Study – One Maritime Plaza

EDUCATION / HEALTHCARE / LODGING / GOVERNMENT / OFFICE BUILDING / RETAIL / SPECIAL



### Chlorine-Free Carrier AquaEdge® 19XRV Chillers Help Reduce Energy Demand at San Francisco Landmark Office Tower

**Increasing Energy Savings  
by Reducing  
Electric Demand**



*Two Carrier AquaEdge® 19XRV chillers contribute to a 27 percent reduction of chiller full-load electric demand at One Maritime Plaza.*

#### OBJECTIVES:

The original decades-old Carrier chillers were still operating reliably at One Maritime Plaza in San Francisco when CBRE, the building management team, began a green initiative, including a plan to replace the legacy chillers with units that use environmentally sustainable R-134a refrigerant, which complies with Environmental Protection Agency (EPA) regulations phasing out ozone-depleting R-11 refrigerant. In addition, management sought the superior energy efficiency provided by contemporary chiller technologies. CBRE chose Servidyne, the Atlanta-based engineering firm, to select chillers to provide comfort cooling to the landmark 26-story office tower in downtown San Francisco.

#### SOLUTION:

Servidyne specified two Carrier AquaEdge® 19XRV chillers to provide comfort cooling to the 526,464ft<sup>2</sup> office areas within One Maritime Plaza. The 19XRV chillers were chosen because of their high efficiency that deliver efficient energy performance during both part- and full-load operation which provides energy savings and their use of non-ozone depleting R-134a refrigerant. The new cooling system also includes a plate cooler, larger cooling towers and a building automation system (BAS) graphical interface, which resulted in a 27 percent reduction of chiller full-load electric demand. The Carrier chillers also contributed to the award of LEED® Gold status to One Maritime Plaza.



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*"We have seen a significant reduction in energy usage with the new cooling system."*

Joe McBride,  
Chief Building Engineer  
One Maritime Plaza



### SYNOPSIS:

One Maritime Plaza, in San Francisco's financial district, has always been a forward-looking property, since its inception as one of the first buildings to use seismic trussing to prevent earthquake damage. The original decades-old Carrier chillers were still operating reliably at One Maritime Plaza in 2015 when CBRE, the building management team, began a green leadership initiative, including a plan to replace the legacy chillers — which used R-11 refrigerant, considered state-of-the-art at the time of their manufacture — with units that use present-day, environmentally sustainable R-134a refrigerant, which complies with Environmental Protection Agency (EPA) regulations phasing out chlorine-based R-11. In addition, management sought the superior energy efficiency provided by contemporary chiller technologies. CBRE chose Servidyne, the Atlanta-based engineering firm, to select chillers to provide comfort cooling to the landmark 26-story office tower and its approximately 1,600 occupants.

Servidyne specified a cooling system that included a plate cooler, larger cooling towers, and two 825-ton Carrier AquaEdge® 19XRV chillers to provide comfort cooling to the 526,464ft<sup>2</sup> office area at One Maritime Plaza. The 19XRV chillers were chosen because of their high efficiency — which provide energy savings — and their use of non-ozone depleting R-134a refrigerant.

The Carrier AquaEdge 19XRV is a water-cooled centrifugal chiller with a variable-speed compressor that delivers efficient energy performance during both part- and full-load operation. The chiller provides reliable and quiet operation, a benefit for tenants on the top occupied floor just below the mechanical room. The 19XRV chiller's digital controls integrated seamlessly with the building automation system (BAS), selected for the efficiency upgrade at One Maritime Plaza. Additionally, 95 I/O points were used, plus BACnet integration to the two chillers.

Frank Ledda, Account Manager at Matrix HG, Inc., the contractor that led the chiller retrofit at One Maritime Plaza, said, "In addition to the increased efficiency that the chillers provided, they also seamlessly integrated to the existing BAS, resulting in additional energy savings."

The legacy chillers were removed and the Carrier 19XRV chillers were installed in a phased operation via a 600-ton mobile crane. Matrix HG, Inc. removed one side of the 26th floor of the facility, where the mechanical room is located, and lifted the new chiller modules into position there. At the time of installation, it was the largest mobile crane to have been deployed in San Francisco. The project was timed to coincide with the mild winter season in San Francisco, so that supplemental chillers were not required to provide comfort cooling during the window of upgrade operations.

The 19XRV chiller upgrade project has reduced the chiller full-load electric demand energy consumption at One Maritime Plaza by 27 percent.

Joe McBride, Chief Building Engineer at One Maritime Plaza and a 33-year veteran of the facility, said, "We have seen a significant reduction in energy usage with the new cooling system."

Due to the green initiative at One Maritime Plaza, including the Carrier 19XRV chiller upgrade, the facility was awarded LEED® Gold status. This distinction not only distinguishes the property for its environmental leadership, it also marks the building as an attractive location for socially-conscious firms to locate their offices, and continues the heritage of forward-thinking design at One Maritime Plaza.

### Project Summary

**Location:** San Francisco, CA

**Project Type:** Retrofit

**Building Size:** 526,464ft<sup>2</sup>

**Built:** 1967

**Facility Usage:** Office space

**Objectives:** Green initiative to replace outdated refrigerant with chlorine-free R-134a; meet

Environmental Protection Agency guidelines; obtain contemporary energy efficiency

**Equipment:** Two 825 ton Carrier AquaEdge® 19XRV chillers

**Total Cooling Tons:** 1,650

**Controls:** Building automation system (BAS), 95 I/O points used with BACnet integration to the two chillers

**Major Decision Drivers:** Carrier AquaEdge 19XRV chillers' environmentally balanced refrigerant and efficiency

**Unique Features:** Decades-old original Carrier chillers still operated reliably, but were replaced for refrigerant compliance and contemporary energy efficiency. A 600-ton mobile crane was used to remove the side of 26th-floor mechanical room and place the chillers.

**Installation Date:** 2015

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