



HISTORIC BUILDING DOVER, DELAWARE

“Making the decision to replace our traditional chiller-style HVAC equipment with a Yanmar GHP system has far exceeded our expectations in every way. Although we expected to realize cost savings through reduced energy consumption, we could never have anticipated the full effect of this upgrade. Quiet, comfortable, efficient, and economical are just a few words to describe how pleased we are with our new Yanmar.”



PROJECT OVERVIEW

Historic multi-story building located in downtown Dover, DE consisting of a large full-length basement (offices), 1st floor offices, conference rooms, libraries and 2nd floor offices for a total of 9,800 SF.

The original building was built in 1850 as a residence with a more recent renovation of a basement with current construction standards. The spacing for mechanical equipment was very limited for installing ductwork which made the GHP & VRF systems a great fit.

REASON FOR CHOOSING YANMAR

Schmitter & Rodriguez's (S&R) existing HVAC system was a 4-pipe hydronic system with boilers and chiller. The equipment was failing after 10 years of use. Diamond Mechanical was approached to provide a design/build HVAC replacement project. The client was interested in going another direction and was disappointed with the previous system. We entertained the YANMAR GHP systems to them for comfort cooling/heating with a big potential for energy savings.

The existing boiler/chiller system had very little control of the heating and cooling and often times ran much longer than necessary. The building temperatures and humidity were a constant issue with the systems fighting each other throughout the year. The S&R team did not want to sink anymore funds into their current system. Diamond Mechanical worked with S&R towards a YANMAR GHP design that fit the client and building's needs.

Additionally, there were electrical/power challenges within the building and had a small single phase electrical service.. The existing chiller had required a Roto-Phase transformer. A gas heat pump system allowed Diamond Mechanical to re-use their existing electrical infrastructure and avoid an upgrade to their electrical service allowing for significant cost savings.

ABOUT YANMAR AMERICA ENERGY SYSTEMS

YANMAR America Energy Systems is the North, Central and South American headquarters for the company's Variable Refrigerant Flow and Combined Heat and Power systems. YANMAR's Energy Systems division began operation in 1984, and today has installed more than 375,000 Combined Heat

and Power (CHP or cogeneration) and Variable Refrigerant Flow (VRF) Natural Gas Heat Pump systems worldwide. Our team and products are focused on sustainability, reliability, and efficiency.





HISTORIC BUILDING DOVER, DE

QUICK FACTS

- APPLICATION:** Office
LOCATION: Dover, DE
PRODUCT INSTALLED:
 (2) 14-ton 3 pipe Gas Heat Pumps
 (5) Branch selector boxes
 (18) FXAQ Wall mounted units
 (19) FXLQ Floor mounted units
 (1) FXUQ Slim ceiling cassette
 (1) Daikin ITM Controller
 (1) Alpha Aire Dedicated Outdoor Air System



“The flexible (controls) scheduling is an added savings as our office is primarily open/occupied during daytime hours. Overall, not only are we saving dollars, but we feel we are doing our part in being energy conscious. I would highly recommend professionally installed Yanmar GHP’s to anyone considering new construction or replacing an existing system.”

RESULTS

Indoor air quality and comfort have dramatically been increased with the Gas Heat Pump equipment. The humidity and temperatures in the building are infinitely better with their new YANMAR GHP equipment along with the greater ability to control their building.

Energy savings for natural gas and electric are showing to be more than projected during the planning of the project. S&R has experienced tremendous reduction in gas and electric usage for their building and will be paying roughly 50% less in operating expenses to operate their HVAC systems than in previous years. S&R has been approved for an Energy Grant through the DNREC EEIF funding program and will be receiving funds as an incentive for their renovation (currently awaiting final approval) as well as reduction in their emissions and carbon footprint.



| Natural Gas Savings 2023-2024 YTD Comparison | | | Electric Savings 2023-2024 YTD Comparison | | |
|---|-----------------|-------------------------------------|--|-----------------|-------------------------------------|
| CCF's | Savings | % energy usage saved from last year | KWH | Savings | % energy usage saved from last year |
| 302 | \$ 1,480 | 28% | 10440 | \$ 1,462 | 78% |
| 287 | \$ 1,103 | 32% | 5440 | \$ 725 | 40% |
| 536 | \$ 2 | 56% | 4560 | \$ 599 | 38% |
| 462 | \$ 804 | 59% | 5640 | \$ 290 | 42% |
| 455 | \$ 685 | 54% | 6480 | \$ 267 | 46% |
| 286 | \$ 507 | 36% | 7640 | \$ 492 | 50% |
| 164 | \$ 357 | 24% | 9200 | \$ 627 | 54% |
| 276 | \$ 304 | 33% | 11440 | \$ 1,094 | 56% |
| 5536 | \$ 9,927 | 40% | 128040 | \$15,505 | 51% |

| Yearly Savings | Gas | Electric | Total |
|---------------------|----------|----------|------------------|
| Q1 | \$ 2,585 | \$ 3,124 | \$ 5,709 |
| Q2 | \$ 1,996 | \$ 4,057 | \$ 6,053 |
| Q3 | \$ 661 | \$ 2,791 | \$ 3,452 |
| Q4 | \$ - | \$ - | \$ - |
| 2024 savings | | | \$ 15,214 |

