

JUNE 2010

Among AENA's sustainable project objectives is an effort to find ways to reduce energy consumption in all new construction or newly designed spaces that are part of a renovation. We are also committed to achieving a high level of energy efficiency within existing spaces through the use of innovative strategies during occupancy. By far, one of the greatest energy loads that most buildings possess is their heating & air conditioning equipment. With this in mind, as part of a long term plan to increase energy efficiency at one of our client's facilities, we looked closely at an existing HVAC systems serving both office and retail spaces in mid-town Manhattan. Through the use of heat exchangers (HEX) we found a unique approach to reduce energy consumption without replacing existing equipment or altering the existing spaces in any way.

A heat exchanger can be described as a device that allows the thermal energy of one element to be transferred to another. A hot water baseboard is a simple example of an HEX at work. The heat which travels within the hot water piping, is transferred through the baseboard element, which in turn is transferred into the space. The baseboard becomes a medium by which heat is taken from one 'space' and is brought into another.

Since domestic hot water production is a year round demand for our client, we decided to tackle this need with our HEX project. During the wintertime, the steam's thermal energy is captured in a shell & tube type HEX and is used to pre-heat the water going into our client's domestic hot water heaters. This HEX was efficiently installed in the steam room and required few pipe modifications.

During the summertime, a similar installation occurs in one of the mechanical rooms when the HVAC compressors are running. A discharge line on an air conditioning compressor can get hot enough to boil water. The compressor's discharge line is re-routed within refrigerant piping through a flat plate type HEX to transfer this heat onto the domestic hot water piping. The refrigerant and the water never mix just as in the steam room's shell & tube HEX, the steam and water never mix.

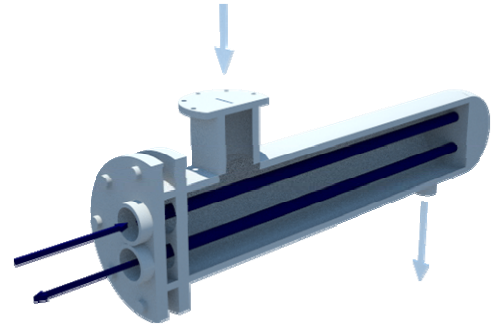
Our client's building like many office buildings has a high occupant load during the day that necessitates the use of HVAC equipment to the point that it often overlaps into the heating season. Therefore the installation of both of these heat exchangers, allows the building to nearly satisfy its domestic hot water needs. This approach allows us to use the same energy twice.

Since each AENA project not only receives a thorough design analysis but a financial feasibility review as well; we began this study by documenting the building's hot water demand through the installation of sub-meters. This 'energy load' data was used in our energy modeling software to calculate the expected energy consumption after the HEX installations, which in turn helped us ascertain the project's payback period for the building owner. Energy models are an important aspect of the energy retrofits we have performed. We also have experience working with NYSERDA and other government agencies that provide funding for energy investments. By concentrating on cost saving initiatives and researching tax credits, incentives and creative financing, we have been able to minimize our clients expenditures while maximizing their return on investment.

AENA is available to review any facility in order to determine sensible long term sustainable strategies for implementation over time as budget, financing options, and project circumstances allow.



Site



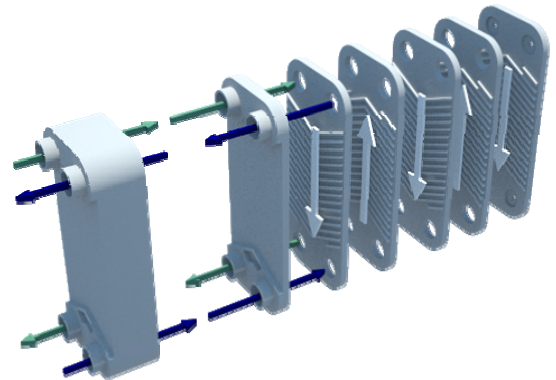
Shell and Tube HEX (Heat Exchanger), "SU" Type



Shell and Tube HEX



Flat Plate HEX



Flat plate HEX (Heat Exchanger), GBM Series