

April 11, 2007

Radio Centre – I was constructed in 2002 as a Bid-Spec project and in 2004 Sheren Plumbing & Heating was requested to design and specify the heating, ventilating and air conditioning (HVAC) system for Radio Centre – II. After discussions with the owners we obtained the objectives for the HVAC. The objective was to provide a comfortable working environment for the anticipated client, lowest cost to operate and smallest footprint for the mechanical room. What follows is summary of the two buildings and the results of our design.

Radio Centre – I

Radio Centre – I is a four story commercial office and retail building located in downtown Traverse City, MI, with 35,098 sq. ft. of rentable space. It was a bid-spec type project where an architecture firm designed the building and an engineering firm designed and specified the mechanical equipment. The architecture firm works closely with the building owner to give them what they desire. The mechanical equipment installed by Sheren Plumbing & Heating is located on page 3.

Radio Centre – II

Radio Centre – II is a four story commercial office building located in downtown Traverse City, MI, next to Radio Centre – I with 24,968 sq. ft. of rentable space. It was a design-build type of project where a construction firm designs the building and Sheren Plumbing & Heating, a mechanical contracting firm, specified and designed the mechanical equipment. Both construction firm and mechanical contractor work closely with the building owner to give them exactly what is desired. The mechanical equipment specified and installed by Sheren Plumbing & Heating is located on page no. 4. Radio Centre – II has over 3,000 sq. ft. of snow melt system, which is not available on Radio Centre – I.

The two charts below demonstrate the energy consumption index (EUI) and the energy cost index (ECI). The EUI is energy usage per square foot per year and the ECI is the energy cost per square foot per year. The results speak volumes of the results of our efforts. Radio Centre – II consumes 50.8% less energy per square foot and is 47.6% less costly per square foot than Radio Centre – I.

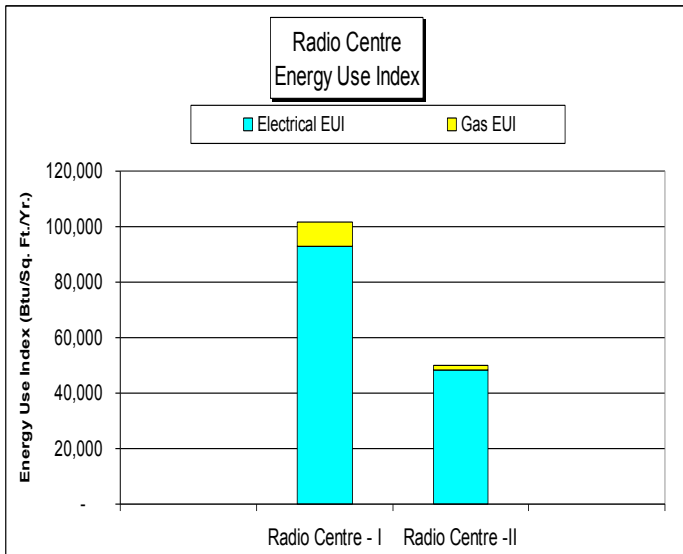


CHART No. 1

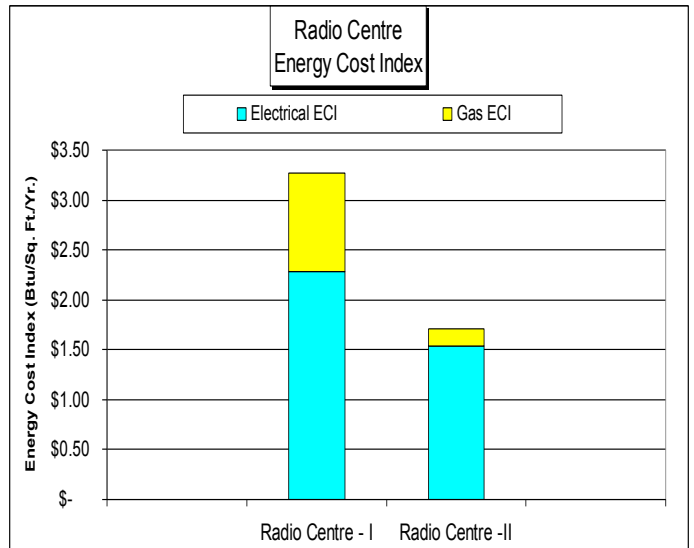


CHART No. 2

The mechanical equipment specified for Radio Centre – I was:

1. 2 – Raypak boilers rated at 1,999 MBH each, 84% maximum combustion efficiency.
 - a. Each boiler has four stages of heating.
 - b. Onboard controls adjust boiler water set-point depending upon ambient temperature.
 - c. Each boiler stores approximately 100 gallons of hot water.
2. 1 – McQuay RTU air handler for floors 2 thru 4.
 - a. Supply air rating at 35,588 CFM.
 - b. Minimum O.A. at 4,400 CFM.
 - c. Return air fan motor rated at 20-hp
 - d. Supply air fan motor rated at 50-hp (motor does have a VFD)
 - e. Hot and cold heating coils to provide a supply an air temp of 52°F to 68°F dependent on ambient temperature.
3. 1 – McQuay RTU air handler for first floor.
 - a. Supply air rating at 10,000 CFM.
 - b. Minimum O.A. 2,660 CFM.
 - c. Return air fan motor rated at 5-hp
 - d. Supply air fan motor rated at 10-hp (motor does have a VFD)
 - e. Hot and cold heating coils to provide a supply an air temperature of 52°F to 68°F dependent on ambient temperature.
 - f. Discharge temperature usually runs cooler on the first floor because of the type of retail space (coffee/snack shop).
4. 1 – McQuay RTU chiller
 - a. 2 stage compressor
 - b. 12 evaporator fans rated at 1½-hp ea.
 - c. Evaporator fans are staged to operate only when required.
5. Each office/retail space has Variable Air Volume mixing boxes to deliver final air temperature per the requirements of the space.
6. The mechanical equipment (boilers, pumps, controls and cold & hot water storage tanks) plus the plenum shafts requires 1,027 sq. ft. (3%) through out the four floors. The remainder of the mechanical equipment is on the roof.

The mechanical equipment specified for Radio Centre – II was:

1. 2 – Munchkin 92+% combustion efficiency boilers rated at 399 MBH each.
 - a. Boiler has a variable firing rate.
 - b. Boiler does not store any water.
 - c. Onboard controls adjust boiler water set-point depending upon ambient temperature.
2. 1 – Mighty Therm boiler for the snow-melt system.
 - a. Boiler is 81% combustion efficiency
 - b. Boiler is rated at 715 MBH capacity.
 - c. Snow-melt system is controlled by a Tek Mar control.
3. 32 – Climate-Master water source heat pumps.
 - a. Capacity range from 20 MBH to 42 MBH
 - b. Each heat pump is located above the ceiling.
4. 8 – Renewaire Energy Recovery Ventilators (ERV's).
 - a. Each is side wall mounted and has a capacity of 450 CFM.
 - b. Each ERV is mounted above the ceiling.
5. 1 – Evapco roof mounted cooling tower.
 - a. Cooling tower is rated at MBH
 - b. All pumps for cooling tower are located in 2nd floor mechanical room.
6. The mechanical equipment (boilers, pumps and controls) 244 sq. ft. (1%) on the second floor. The remainder of the mechanical equipment is on the roof.