

INFRASTRUCTURE I

CENTRAL REFRIGERATION PLANT

In recent years, a series of bridges and overpass failures exposed years of neglect and put a major emphasis on improving our infrastructure. The results of this neglect are unsafe bridges, overpasses that are in danger of collapse and a deficient transportation system. In less dramatic form the mechanical/electrical infrastructure that serves our home and work environment is suffering the same fate.

In many building systems the problem of age is compounded by the additional mechanical and electrical demands placed on buildings by the communications revolution. The problems range from a lack of riser space to inadequate electric service and chiller plant capacity. This service deficiency makes many buildings incapable of meeting present tenant requirements.

To address these infrastructure issues we have prepared a series of "INFRASTRUCTURE" bulletins. The first of which addresses "THE CENTRAL REFRIGERATION PLANT".

Many facilities use central chilled water as a cooling medium. A centrally located refrigeration machine or group of machines may be defined as a "central refrigeration plant". Its purpose is to manufacture chilled water.

The primary fuel driving the plant may be electric, steam or gas. The by-product of the plant (heat) may be recaptured and stored or used immediately for other systems. Some examples of opportunities to recapture heat are domestic hot water, kitchen pre-heating functions and selected process functions; the remainder is dissipated through a cooling tower.

Many sites and stand-alone buildings have central plants with multiple refrigeration machines, and more than one fuel source. The rated life of refrigeration plant equipment is in excess of 20 years. With a good maintenance program, it's not unusual to see 30 and 40-year-old machines still in operation.

In many parts of the country, the replacement of electric driven machines continues to be the target of the major electric utility companies to reduce the demand on their systems. It is less expensive for the electric company to provide a rebate to an owner, to replace an electric machine (with either a gas or steam driven machine) than to build the generator plant capacity to serve the machine with electricity. In fact, the rebate programs for lighting and chillers were so successful in reducing demand; they have been phased out.

The cost to maintain and operate older equipment vs. the cost to replace equipment and provide the additional capacity to meet today's demands (in many facilities) makes plant replacement economically viable.

The government's phasing out (and eventual banning of production) of certain refrigerant gases commonly used in refrigeration machines provides an additional incentive to upgrade and or replace the existing chiller plant.

Due to a lack of funding, many buildings are maintaining equipment on the downside of the economic curve and are functioning uneconomically and at low efficiencies.

The economics to replace plants are so compelling (in some facilities) that a new market has developed. A third party will provide the necessary capital and technical expertise to replace a refrigeration plant on a turn-key basis with a sharing of the savings as compensation.

In the 21st century firms operate on a 24-hour basis with many offices open on weekends. With the increased hours of operation and increased electrical loads, old refrigeration plants just cost too much to service and maintain.

If a third party can come in, finance the replacement, lower your operating costs and still make a profit it's worth taking a look at what you have.