

White Paper #4

Typical Equipment Life Spans

Unless the building is intended to be sold, planned equipment replacement is a reality. The best approach is to plan for it and budget for it...to stay ahead of the wave. Here are some typical energy consuming equipment life spans to help you plan.

From the table it should be easy to see that after 20 years, much of the mechanical equipment will need replacing.

Setting aside 2 to 3 percent per year of the building cost is usually sufficient to sustain the building systems. This may also help you if planning to purchase an existing building.

Equipment	Normal Expected Replacement Life
Hot Water Boiler	25 years
Steam Boiler	30 years
Steam Traps	7 years
Conventional Direct Gas-Fired Tank-Type Domestic Water Heater	8-12 years
Centrifugal Chillers	23 years
Reciprocating Chiller	10-14 years
Screw Chiller	20 years
Galvanized Cooling Towers	20 years
Rooftop A/C Unit	15 years
Split System A/C	15 years
Fan Coil	20 years
VAV Boxes	20 years
Hot Water Unit Heaters	20 years
PTAC (Packaged Terminal Air Conditioner)	10-15 years
Computer Room Air Conditioner	10-15 years
Gas Furnace	18 years
Gas Fired Radiant Tube Heater	10 years
Water Source or Ground Source Heat Pump (closed loop)	19 years

Equipment	Normal Expected Replacement Life
Ground Source Heat Pump Bore Field (pipe life is 50 years. System life is limited by the grout and the heat transfer interface to the earth)	30 years
Indoor Air Handler	20-25 years
Air-Side Economizers	10 years
Electric Baseboard Heat	10-15 years
Hot Water Baseboard Heat	25 years
Base Mounted Pump	20 years
Utility Fans	20 years
Ductwork	30 years
Air Curtain	10 years
Kitchen Exhaust Hood Make-Up Air Tempering Unit	10 years
Shell and Tube Heat Exchanger	24 years
Heat Pipe Heat Recovery	14 years
Rotary Wheel Heat Recovery	11 years
Thermal Energy Storage System (TES) - Ice	19 years
Thermal Energy Storage System (TES) - Water	20 years
Direct Evaporative Cooling	7-10 years
Evaporative Pre-Cooling	8-12 years
Indirect-Direct Evaporative Cooling	15-20 years
Evaporative Cooling Cellulose Media	5 years
Evaporative Cooling Pads	2 years
Motors	17 years
VFD	15 years
Motor Starter	17 years
Lighting Fixture	20 years
Motion Sensor	10 years
Double Pane Windows	12-20 years
Solar Shade Film	7-10 years
Control Valves	20 years
Dampers	20 years

Equipment	Normal Expected Replacement Life
Valve/Damper Actuator - pneumatic	20 years
Valve/Damper Actuator – hydraulic	15 years
Valve/Damper Actuator – mini hydraulic (for terminal units)	5 years
Valve/Damper Actuator – electric – oil filled	10-15 years
Valve/Damper Actuator – electric – open air	5-7 years
Valve/Damper Actuator – self contained (system powered)	10 years
Valve/Damper Actuator – Residential style “clock motor” terminal valves	5 years
“Active” control sensors and transmitters (powered-type)	5 years
Pneumatic Controls – General	20 years
Analog Electronic Controls - General	7-10 years
DDC Controls (before made obsolete by technology advances)	7-10 years