Why is it so important to cool a new elevator machine room properly?

Recently and in the past, elevator machine room cooling design has consisted of an exhaust fan and make-up air to cool the room. As new elevators are controlled by microprocessors and are now installed without hydraulic oil coolers, machine room temperatures are increasing and seriously affecting the operation of the equipment and controls especially 'stop levels.'

What are the requirements for cooling the elevator machine room?

Per the Uniform Building Code, Section 3005

3005.1 Operation of Solid-State Equipment. When solid-state equipment is used to operate the elevators, the elevator equipment room shall be provided with an independent ventilation or air conditioning system to prevent overheating of the electrical equipment. The operating temperature shall be established by the elevator equipment manufacture's specification. When standby power is connected to the elevators, the machine room ventilation or air conditioning shall be connected to standby.

The important information required to design and install a system that will ensure the equipment room is properly cooled is to determine the load generated by the equipment and what the manufacturer's recommended space temperature. In general, the maximum allowable temperature in the room is 90°F and the heat generated to the space is a minimum of 9,000 BTUh. Based on ASHRAE Outdoor Summer Design Temperature of 88°F for the Seattle / Tacoma area, the exhaust fan air volume would be extremely high.

How do we maintain these new elevator equipment room temperatures below 90°F and what other precautions should be put in place?

<u>Maintaining <90°F</u>

Provide a split system air conditioning system with an outdoor condensing unit and an indoor unit located OUTSIDE of the elevator equipment room. Some elevator equipment manufacturers and inspectors do not allow for any other equipment inside the room so that their equipment can be serviced and unaffected by an HVAC unit. Set the thermostat to maintain 86°F to ensure space temperature is met.

Design Considerations

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1) Verify manufacturer's requirements for space temperature and obtain manufacturer's equipment list with heat generation information

2 Provide an over-temperature alarm connected to the building's DDC system or a warning light/buzzer to warn occupants when unsafe condition exists