COLMAC COIL
Manufacturing Inc.

Technical Bulletin

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WATER DEFROSTING AT FREEZER TEMPERATURES

Introduction

The following guidelines should be used when designing water defrost systems for low temperature freezer applications.

1. Water defrost is fast and effective at medium ***and*** low temperatures.

2. Coil steaming can be minimized by keeping water temperatures below about 60F. Typically, frost accumulation problems in cold stores are the result of excessive infiltration of humid outside air. Water defrost generally produces less steam over the defrost period compared to hot gas and electric defrost, due to its shorter duration and lower temperatures.

3. Water temperature must be kept above 40F to avoid refreezing problems.

4. Use of cooling tower or evaporative condenser sump water is not recommended because of entrained sediments that will be present. If sump water is used it must be filtered. Also, water temperatures must be controlled to avoid excessive steaming. Normally, tap water can effectively be used for water defrosting if kept within the temperature range mentioned above.

5. In low temperature applications, it is critical that water be allowed to completely drain from water supply lines and control valves when defrost is terminated to avoid freezing. See Installation, Operation & Maintenance manual for instructions.

6. One potential nightmare in low temperature cold stores is a water supply valve that sticks and allows water to continue to flow to the air cooler after defrost has terminated. Water must be filtered, and piping designed to eliminate this possibility.

7. In blast freezer applications, water defrost is desirable for cleanup reasons. A "hot gas assist" system is very effective where the coil is warmed with hot gas to loosen ice and frost, then washed off with water.

8. To avoid water hammer in defrost lines, use motorized water supply valves instead of fast-acting solenoid valves.

9. Pitch drain lines exposed to freezing temperatures approx. 1-1/2” per foot. Heat tracing of drain lines is not necessary if they are properly pitched, even in low temperature rooms.

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