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From: T King/K Edwards

Subject: OPERATION OF UNITS OUTSIDE OF DESIGN CONDITIONS (ESPECIALLY ON START-UP)
Units: VARIOUS

It has come to our attention in recent times that contractors have been operating units outside of standard design conditions with little or no regard to the consequences.

If units are expected to be operated outside of the published operating parameters then **temperzone** Engineering should be consulted as special protection or precautions may be necessary.

On one site in particular we recently found three out of the eight units installed (packaged rooftop units) being operated continuously in heating mode in a shopping mall where the doors and windows were not yet fitted. The space temperature was below 13°Cdb, the ambient temperature was around 0°C and the units were stressed to the max with the outside coils a massive ball of ice. Three units were never going to satisfy the demand, even all eight units combined would have struggled under these conditions.

The units never managed to de-ice properly as there was no heat source from which to draw enough heat to transfer to the outdoor coil. Therefore the coils were never clear of ice and the ice continued to build up.

This led to catastrophic failure of the outdoor coils to such an extent that fin material fractured and broke away and tubes were crushed resulting in the coils having to be replaced.

We have now heard of another site with similar symptoms of fin material breaking away and the suspicion is that again they have been operated in the middle of winter with the building in an unfinished state leading to extreme icing.

Operating in such conditions especially for long periods of time will void the standard warranty. Units must be given a reasonable chance to operate at conditions for which they were designed.

In a situation such as a shopping mall or other large volume building with large masses of very cold concrete and steel, the thermal inertia and associated 'Pull Up' heat load, units need to be nursed carefully through their initial start up and commissioning phase to avoid this stressed state arising. It must be remembered that it may take several days to build up the thermal inertia.