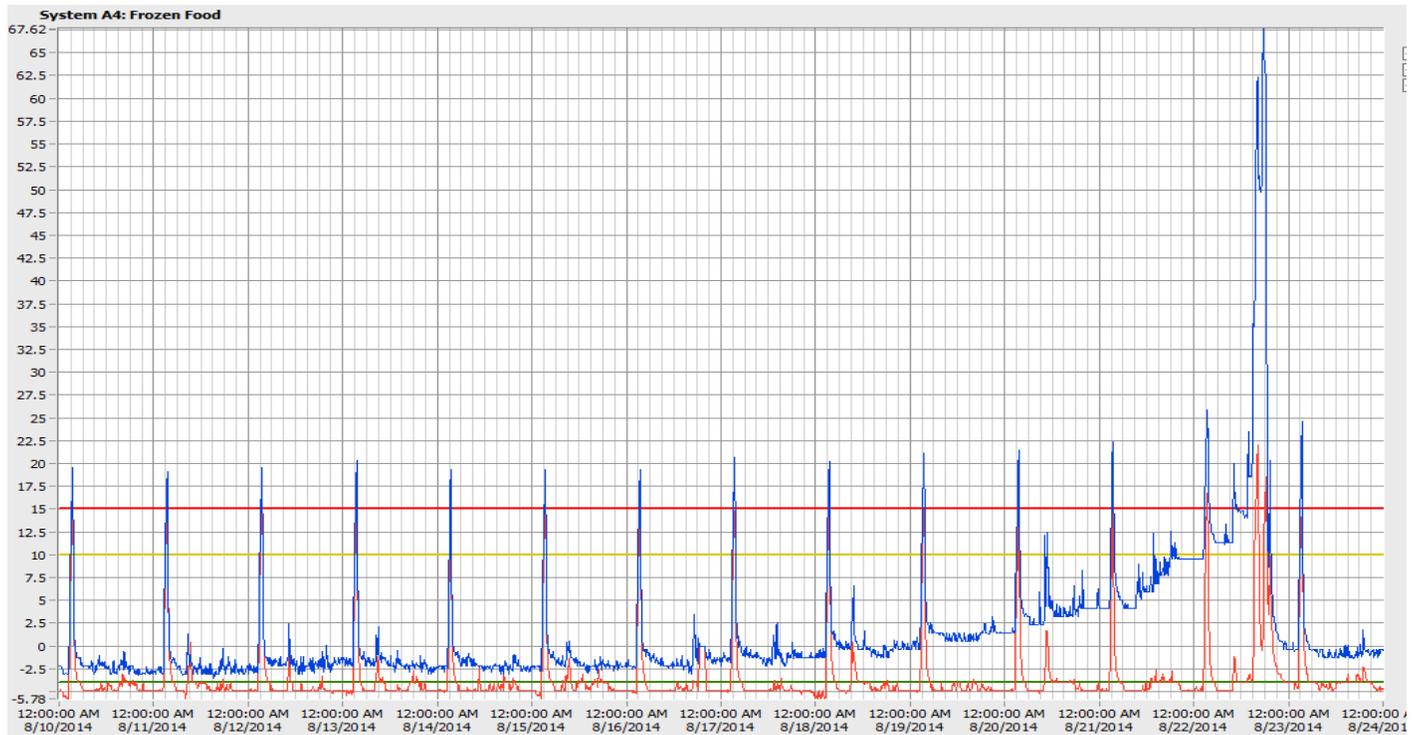


## CASE STUDY

# Icing Up



Picture: The graph shows 2 weeks of operation of two Frozen Food cases.

This refrigeration system serves Frozen Food cases. One day something happened!

The graph shows 2 weeks of operation of two Frozen Food cases. The green line is the set point of -4°F. The yellow and red lines are the alarm markers of High (H) and HighHigh (HH) settings. Defrost runs once very day.

**The Symptom:** While the red case runs as expected the blue case show slow increase in temperature. After slow temperature increase for a week the temperature cross the H alarm settings and shortly after the HH alarm setting. Alarm emails are issued automatically.

**The Analysis:** As only one case has problem and not others on the same system the problem is associated with parts of this case and not the function of the compressor, condenser or other parts serving both the blue and red cases.

**The Problem:** When looking at the evaporator it becomes clear that this is an icing problem. The freezing capacity of the blue case is inadequate as its evaporator slowly ices up which makes the situation still worse. In the end there is almost no freezing action as the evaporator is clogged up. The icing is caused by a drain problem in the evaporator; its drain is plugged up. As the water of the melted ice during defrost cannot escape the situation becomes worse as time passes.

**The Cure:** Stop the compressor, clear the drain, defrost the evaporator and run defrost to remove the icing. The red case is affected and warms up when freezing is removed during repair of the drain of the blue case.

**The Recovery:** The blue case works again but its operation needs to be tuned. The red case is back to normal almost instantly.

*This VDVRM case study is from a serie of real-world examples from refrigeration systems monitored by VDV Refrigeration Monitoring system. The purpose of this serie is to bring forward actual problems, its effect on refrigeration temperatures, how the problem was detected and how the refrigeration system recovered.*