



Take action to mitigate
risk in your cold chain



Quality Assurance for Cold Chain Logistics

How to reduce risk in the food
transportation industry.

TRANE
TECHNOLOGIES

THE SIGNIFICANCE OF FOOD SAFETY

Take action to mitigate risk in your cold chain by adopting the following Standard Operating Procedures (SOPs).

If food is improperly handled, there is risk of temperature excursions, which can negatively impact public health, reduce product shelf life, or lead to rejected loads. Not only will any of these situations increase your operating costs, but they will negatively impact your reputation within the industry.



MAINTAIN PRECISE TEMPERATURE CONTROL

Ensure your trailer is optimized to maintain the desired temperature. There are various configurations that improve airflow within the trailer and can help the trailer refrigeration unit work as efficiently as possible to maintain tight temperature control.

Air Chute

Airflow throughout a trailer is key to ensuring that the entire trailer is at the desired set point and reducing the risk of hot spots, especially around temperature-sensitive cargo.

With the use of an air chute down the top of your trailer, cold air will be funneled to the back of the trailer before it cycles through back toward the front, which reduces risk of short cycling.

Built-In Temperature Loss Protection

Featured in both the single-temperature and multi-temperature unit models, OptiSet® Plus ensures that temperatures are optimized and personalized with pre-set profiles for your cargo. OptiSet Plus

has over 500 cargo profiles available to ensure your refrigeration unit delivers what you expect. Trip after trip, you can be confident that temperature set points and ranges are locked into best match your needs while resulting in fewer shipper and driver errors, and improving the efficiency of your reefer unit.

Door Switches

It's best practice to turn off the trailer before the doors are opened and cargo is loaded. If the doors are open and the unit is running, hot air will be pulled into the trailer.

In food distribution with multiple stops throughout the day, drivers may forget to turn off the unit before the cargo is unloaded, which will increase the overall trailer temperature.

With door switches, the unit can be configured to turn the unit off when doors are opened. This process will automatically protect the integrity of your cargo until the last skid is unloaded.

MAXIMIZE LOGISTICS TRACEABILITY

If you know immediately when a problem occurs, you can gain the visibility needed to initiate an effective response. This will ensure that your fleet is kept up and running.

Fleet Tracking and Monitoring

TrackKing® is a 4G LTE temperature and asset management system that gives you end-to-end visibility on different platforms. This technology delivers real-time and historical temperature data alongside fleet information – all to help you increase fleet efficiency and reduce the potential for cargo loss.

With TrackKing's reporting features, easily share your trip status from pick up to delivery for transparency to your end customer as well as for regulatory compliance records.

Independent Sensors

Independent sensors are ideal for providing a separate data point on the temperature within the trailer. The main two sensors are on the refrigeration unit – the return air sensor and the discharge air sensor. With increasing regulations, there is a need for independent sensors to confirm the accuracy of the host unit as a risk mitigation measure to protect against instances of unit sensor errors.

ACHIEVE QUALITY ASSURANCE

Take simple steps to achieve quality assurance by doing the following:

1. Integrate load practices into your SOPs.
2. Work with your transporter to review their trailer and how it is optimized for tight temperature control. Does it have air chutes, door switches, sensors, etc. and is it reliable?
3. Validate the various levels of visibility set up to reduce risk and catch problems before they occur such as TK Notify and status lights.

Alarm Notification

Set alerts for your cargo so you are immediately notified of any event. Is a door open? Was there a change of set point? Was there a shutdown alarm or increase in temperature? With TK Notify, you'll know exactly what is happening inside the trailer and can contact the driver immediately. You can even set up an escalation process if an event continues to occur with no action taken to change the status.

Status Lights

With status lights, your driver will have a visual reminder of the set points within the trailer, the refrigeration unit fuel levels, and any alarms occurring on the unit. With real-time feedback, the driver won't need to exit the tractor to verify immediate condition changes. This redundancy measure, paired with monitoring via TracKing, will reduce risk.

IMPROVE RELIABILITY

Solar Power

Have you ever had a dead battery on a refrigeration unit or tractor that resulted in a lost or rejected load because the unit couldn't run? If so, then ThermoLite® solar panels are a perfect solution to ensure refrigeration units have healthy batteries at all times so they can start when they are needed most to maintain load temperature.

Solar also delivers clean and reliable power generation resulting in longer battery life, decreased waste, lower fuel consumption, and reduced emissions.

EON Battery

Upgrading to an EON battery will increase the life of your battery. Wet cell batteries have a shorter life and, thus, a higher risk of failing during delivery. Our dry cell technology offers greater efficiency, longer life, and a lower life-cycle cost. It also has improved heat and vibration resistance.

With an expected 5- to 8-year service life (backed by our 4-year warranty), the EON saves you the time and money of battery replacements.

LOADING CHECK LIST:

- ☐ **Make sure your packaging is:**
 - Protected against other cargo shifting during transit
 - Non-vented for frozen products
 - Vented for fresh products
- ☐ **Confirm product is at desired temperature before loading**
- ☐ **Set unit controller to the desired temperature**
- ☐ **Ensure correct mode selection**
 - Choose continuous run or cycle sentry
- ☐ **Pre-cool trailer to desired temperature**
- ☐ **Verify product temperature to confirm it is at the desired temperature**
- ☐ **Turn unit off while loading**
- ☐ **Load cargo quickly and efficiently**
- ☐ **Stabilize the load to minimize load shift risk and resulting cargo physical damage**
- ☐ **Initiate defrost cycle to clear evaporator coil**

DELIVERY CHECK LIST:

- ☐ **Be sure both the product and trailer are at the desired temperature before unloading**
- ☐ **Turn reefer unit off before opening doors, which can be done automatically by adding electronic door switches**
- ☐ **Minimize number and duration of door openings**
- ☐ **Give unit time to recover box temperature from when doors were open**
- ☐ **Ensure tight seal between trailer and doors**

TIPS FOR PROPER AIRFLOW:

YOU SHOULD ALWAYS:

- ✓ Use three-way block pallets to help provide adequate air flow
- ✓ Load evenly and in patterns that provide adequate air space
- ✓ Provide adequate air space between top of the cargo and ceiling
- ✓ Remove all debris and obstructions
- ✓ Exercise caution

DO NOT:

- ✓ Block unit evaporator air inlet (return air)
- ✓ Load product tight against unit, walls or doors
- ✓ Load product to ceiling - it causes air to short cycle
- ✓ Obstruct floor under cargo
- ✓ Use slip sheets or hand stacking

WHY IS PROPER AIRFLOW CRITICAL?

Poor air distribution is the primary cause of product deterioration, even with adequate unit capacity.

Obstructions due to improper loading cause poor air flow and product hot spots.



Thermo King – by Trane Technologies (NYSE: TT), a global climate innovator – is a worldwide leader in sustainable transport temperature control solutions. Thermo King has been providing transport temperature control solutions for a variety of applications, including trailers, truck bodies, buses, air, shipboard containers and railway cars since 1938. For more information, visit thermoking.com or tranetechnologies.com.

