



PharmaSolutions

Vital expertise for pharmaceutical transport and storage solutions.



Manage risk through the pharmaceutical cold chain with **PharmaSolutions**

Maintaining the quality and integrity of medical and biological products during transport is critical for pharmaceutical manufacturers and logistics providers to support public health and patient safety.

As most medical and biological products require a temperature controlled environment at all stages of manufacturing and distribution, the control of temperatures during storage and transportation is vital in maintaining the quality and effectiveness of medicines.

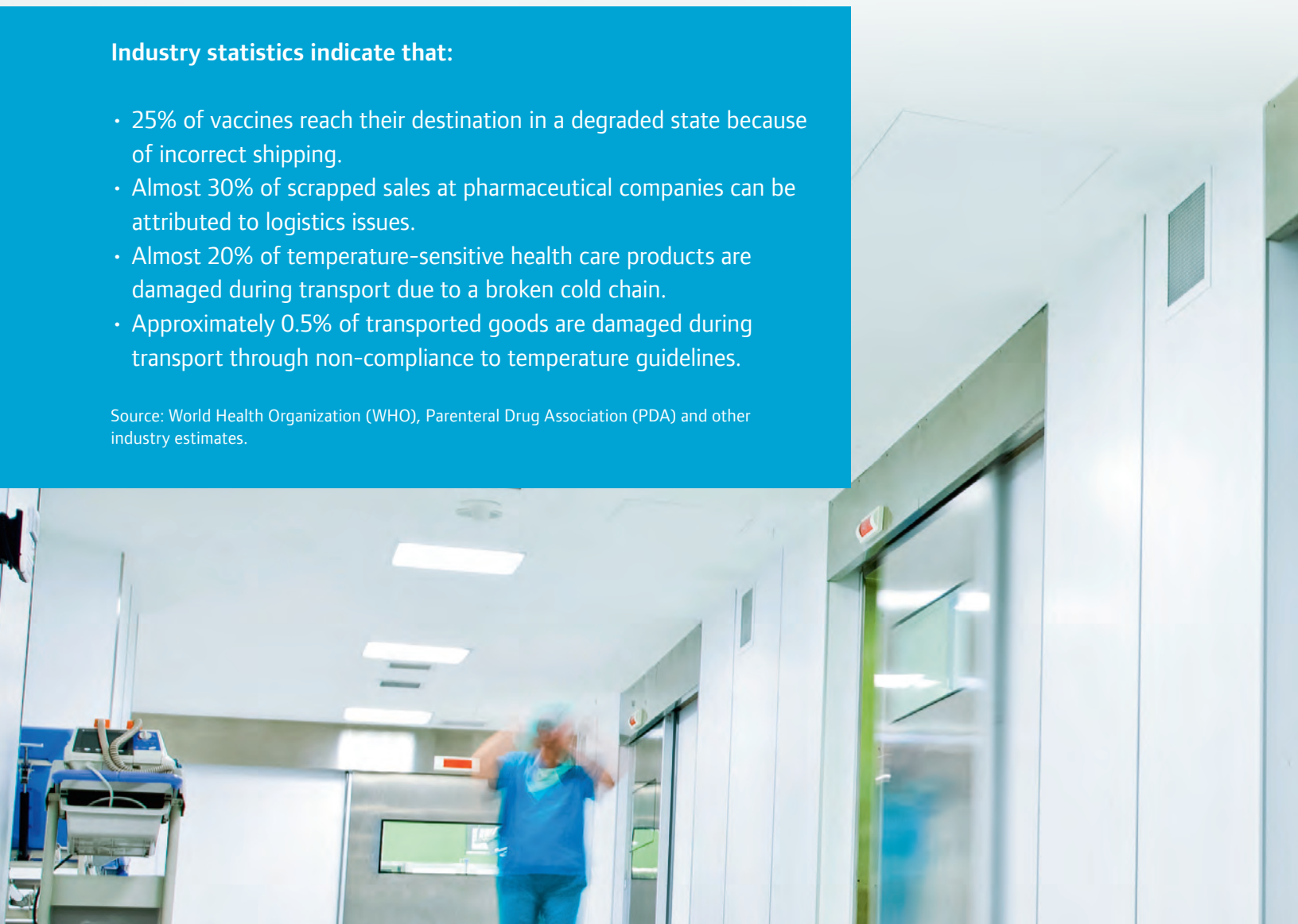
At Thermo King, we understand that if the quality of pharmaceutical product shipments is compromised, the risk is more than loss of cargo - it can compromise the health and well-being of patients. PharmaSolutions, a comprehensive and dedicated portfolio from Thermo King, addresses the precise needs of the pharmaceutical industry by delivering application expertise and a broad spectrum of products and services.

Leverage already-proven global solutions and certifications that elicit confidence throughout the pharma cold chain.

Industry statistics indicate that:

- 25% of vaccines reach their destination in a degraded state because of incorrect shipping.
- Almost 30% of scrapped sales at pharmaceutical companies can be attributed to logistics issues.
- Almost 20% of temperature-sensitive health care products are damaged during transport due to a broken cold chain.
- Approximately 0.5% of transported goods are damaged during transport through non-compliance to temperature guidelines.

Source: World Health Organization (WHO), Parenteral Drug Association (PDA) and other industry estimates.





PharmaSolutions

Leveraging our strong global experience in this industry, Thermo King serves the pharmaceutical industry by helping to ensure a safe, secure and efficient cold chain so that you can protect those you serve. We provide answers to many of the most common challenges:

"I have trouble sleeping when my cargo is on the road."

"I immediately need alerts and insights when issues arise."

"If failures happen, I need an instant action plan and the support to enact it."

"Pilferage and theft are concerns."

1

PREVENT
load
loss



2

MONITOR
temperature
& location



3

CORRECT
issues with
confidence



4

SECURE
cargo during
transport



PREVENT load loss

Plan for the unexpected

Your objective is to ensure that the highest level of product quality is maintained throughout the cold chain. There are unforeseen obstacles that can cause a detour to even the best-laid plan. We can help you plan for the unexpected.

Redundancy

- Dual temperature sensors deliver confidence in temperature readings and system performance.
- Leverage alternative power sources such as Thermo King's SmartPower™ electric standby system for flexibility and protection of cargo integrity whether stationary or on the road.
- Enjoy peace of mind with redundant system refrigeration options.

"The pharma cold chain must be reliable. If something fails, there has to be a redundant pathway to keep it safe."

Proactive Service

- Prevent on the road failures with proactive service with customizable service agreements.

Built-In Temperature Excursion Protection

- Reduce the risk of temperature excursions with equipment features focused on pharmaceutical product.
- Solar panels and an integral battery charge protect the visibility of telematics data and the health of the unit battery, to ensure safe delivery to the patient.
- Deliver consistent load temperatures from the front of the load to the back, by selecting from a variety of air management systems.
- Extend the viability of the pharmaceutical product with a stable cold environment—and use of dry ice, with down to -70C storage temperature.

Human Error

- Enable systems that decrease the driver's ability to change the temperature set point.
- Educate your drivers, logistics, and warehouse team through risk management training by a local Thermo King dealer to ensure quality procedures are followed.



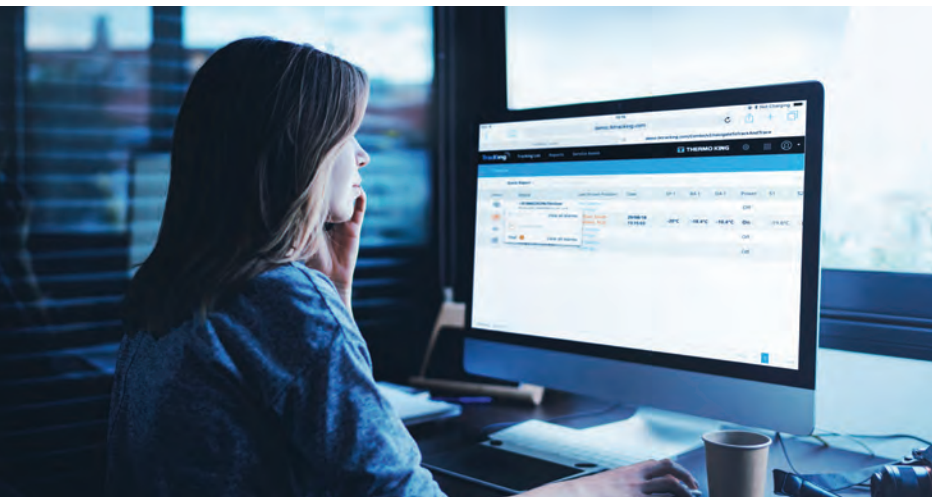
MONITOR temperature and location

Track and monitor fleets in real-time

The need to establish critical controls at all points of the supply chain for patient safety is an increasing challenge for all pharmaceutical companies and their partners when handling and transporting medicines. With the help of Thermo King's telematics technology and knowledge, stakeholders have control at their fingertips, so they can rest assured their problem will be solved quickly and effectively to protect what matters most—the patient.



- Reduce the risk of damage and loss of valuable medical and biological products with remote monitoring systems such as Thermo King's TracKing® telematics, which accurately monitors temperatures throughout the entire refrigerated space.
- Get 24/7 fleet monitoring services for end-to-end management of any refrigerated vehicle fleet. If desired, a local Thermo King dealer can remotely access your alarm codes to help diagnose issues on-the-spot.
- Increase fleet efficiency and reduce the potential for cargo loss by capturing data such as temperatures, operating modes or alarm codes. This brings around-the-clock fleet traceability.
- Receive notifications straight to your phone and email when the vehicle hauling your product leaves or enters a designated geofence.



"I have the ability to track the shipment location and condition of the cargo so I can respond instantly to new challenges."

TracKing is a web-based solution that tracks and traces shipments in real-time.

- Records a log of temperature data during transport, which is available through Thermo King dataloggers.
- Indicates instances of door open events and alarms on refrigeration equipment.
- Allows manufacturers, shippers and fleet operators to ensure product integrity and on-time delivery.
- Sends immediate alerts to multiple people via email and/or text with the TK Notify mobile app for situations such as door openings, low fuel and temperature changes. Issues can be escalated to notify another individual if the action is not resolved.
- Enables drivers to use Bluetooth to view unit operation alerts without leaving the truck cab.

CORRECT issues with confidence

Get support anywhere, anytime

With the help of TrackKing, stakeholders have control at their fingertips, so they can rest assured their problem will be solved quickly and effectively.

Basic operational training, provided by Thermo King dealers, can give fleet management teams the ability to see and correct issues from in or outside of the office.

When that is just not enough, fleet managers have the support of Thermo King's unmatched service network. On behalf of the fleet, dealers can remotely problem-solve issues as they occur and, with TrackKing, adjust unit settings or start a backup unit without ever stopping a vehicle. If a critical issue should arise, the driver can be directed to a dealer location for immediate assistance.

Dealer Locator

Thermo King has a global Dealer Locator to enable you to find your nearest dealer in more than 75 countries worldwide.

Check it out now at thermoking.com/dealer

- 900+ factory certified technicians
- 500+ mobile trucks
- 800+ service bays



PORTABLE pharma coolers and ultra-cold storage

Variety of sizes for multiple applications

We offer several mobile refrigeration and storage units that can safely transport pharma cold chain products in any environmental condition. Whether you need a blood transport cooler, portable vaccine refrigerator, cooled transport of biological samples, or temperature-controlled shipping unit for vaccines and medicines, we have a solution.



Coldtainer from Thermo King - For use in trucks, vans, or within hospitals. Storage temps ranging from -24C to +30C.



Magnum® Plus or Superfreezer - For mobile, temporary cold storage for larger quantities at temp ranges from -70C to +40C.

SECURE cargo during transport

Prevent theft

Taking cargo security seriously is a full time job and requires many layers of protection because the patient is at risk if the treatment does not arrive.

Solutions like mobile technician service or remote alerts can turn a potentially hazardous situation into a successful delivery. Knowing where assets are at all times, within geofences, and whether door openings occur outside pickup or delivery locations is critical.

We'll help you safeguard your products from the pickup all the way through delivery.

"You helped us solve a 3-month mystery of our missing trailers. If it wasn't for TracKing technology, we may not have seen our new trailer ever again."

iHaul Freight Ltd



Thermo King is committed to providing a standard of assurance that is unequalled. Our refrigeration and temperature control solutions enhance the quality of life by keeping products at their optimal temperature throughout the pharma cold chain.



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.

