SONOCO THERMOSAFE®

AIRBRIDGECARGO

CASE STUDY

Sonoco ThermoSafe's new **Pegasus ULD®** provides exceptional ease of use, operationally friendly processes and smart telemetry, allowing global life science and healthcare companies to ship a large amount of medicines in a cost effective and efficient way.

AMERICAS | EUROPE | ASIA PACIFIC

thermosafe.com/Pegasus-ULD

Sonoco ThermoSafe's **Pegasus ULD®** successfully uplifted by AirBridgeCargo demonstrating the container's innovative performance for temperature-controlled life science products.

The ability for global life sciences and healthcare companies to ship large amounts of temperature sensitive products from their production facilities into distribution centers is fundamental, and for this reason many are looking to adopt alternative smart packaging to reduce cost and increase efficiencies.

As a new entrant to the air freight bulk container pharma market, Pegasus provides exceptional ease of use, operationally friendly processes and smart telemetry for 2° C to 8° C life sciences and healthcare products.

THE SITUATION

A complex multimodal journey is a significant challenge for the thermal duration of a bulk passive shipper, especially when protecting life sciences and healthcare products. In this case (see figure 1), the entire shipping process involved multiple segments of ground and air transportation, starting in London and including stops in Amsterdam, Moscow and Frankfurt, extending beyond 130 hours. Some of the key challenges for passive packaging technologies are generating efficiency and thermal performance that supports operational handling: from trucking to ground handling to flying. Additionally, as the world witnesses the impacts of Covid-19 on supply chains, more than ever before, a renewed focus and appreciation for cold chain transportation has revealed the importance of data collection to verify integrity.

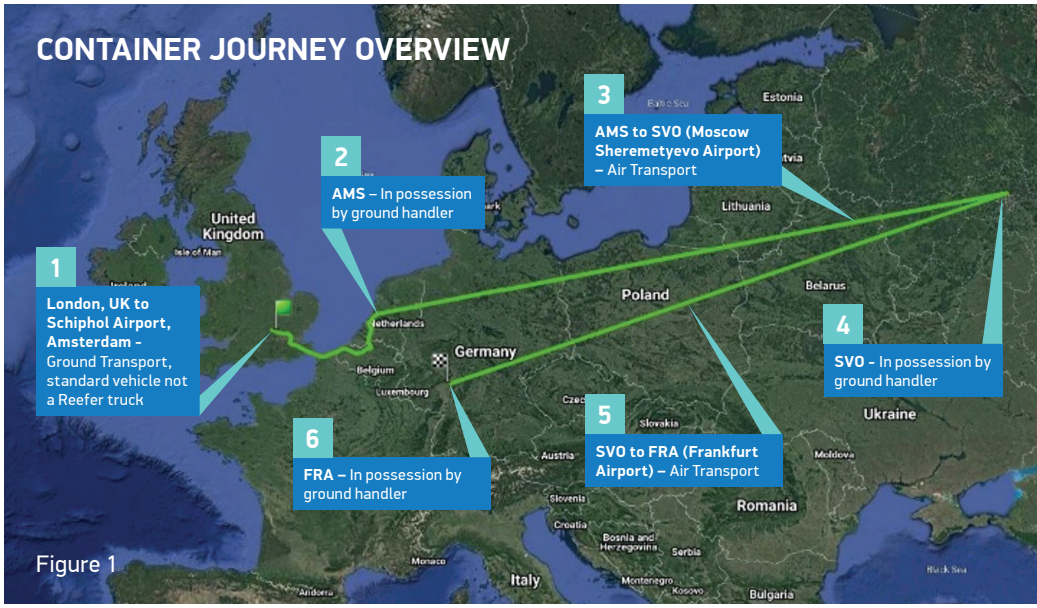


Figure 1

THE SOLUTION

Pegasus contains a fully integrated, FAA and EASA approved telemetry system, providing real-time, cloud-based data on both payload and ambient temperature and key environmental factors, precisely synchronized with GPS location, which confirmed that the internal temperature held between 2°C and 8°C throughout the entire journey.

As a passive ULD, Pegasus can be directly loaded into an aircraft cargo hold using standard LD3 loading procedures. This simplifies the cargo loading process, removing the need to apply an aircraft Pallet/PMC, wrapping and netting to traditional passive pallet shippers and containers.

Because of the ease of use, AirBridgeCargo was able to easily forward the container from Amsterdam into Moscow, where the winter season ambient conditions did not cause freezing or alteration of the payload temperature of the Pegasus.

Figure 2

The Pegasus ULD container is loaded into the cargo hold using standard airport handling equipment.

The Pegasus ULD container makes the most efficient use of the lower cargo deck space in a wide body aircraft (Figure 2.1).

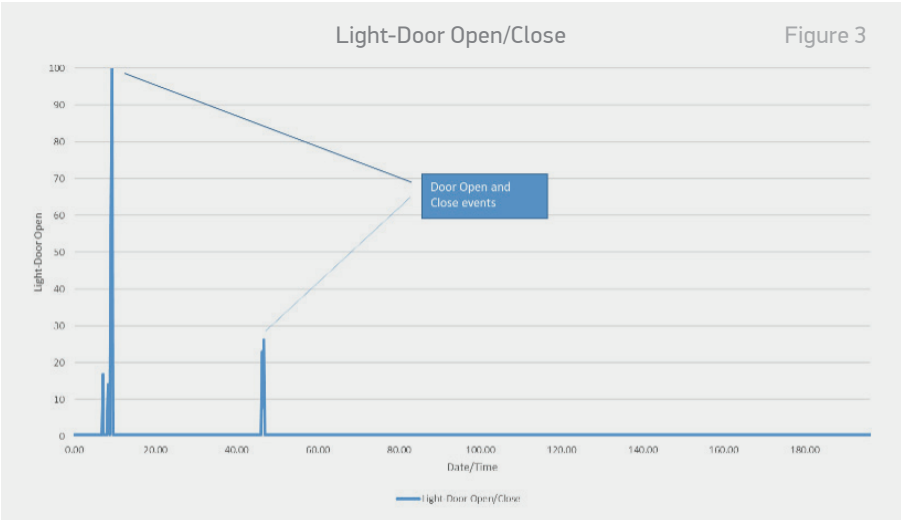
Figure 2.1

The container has an integrated telemetry system that collects real-time data that allows the users to keep track of critical product and shipper parameters. These include geo-location of the shipper, ambient conditions, light sensor (door open/close) indicator, tilt, humidity, pressure and internal temperature.

WHY COULD MEASURING LIGHT BE OF SIGNIFICANCE FOR A TEMPERATURE CONTROLLED PHARMACEUTICAL SHIPMENT?

Light-Door Open/Close

Figure 3



Air freight cargo containing lifesaving and life enrichening temperature sensitive products move throughout all hours of the day, week, and year - equipment moves like clockwork. With potential disruptions that may go unnoticed, that's where the Pegasus's "light sensor data" informs users when the door of the container has been opened and closed. This helps ensure that the internal temperature of the Pegasus is not compromised or that there is no unauthorized access to the container – something which is closely monitored to prevent theft or counterfeit.

The sensor provides an additional layer of protection to keep the product safe and secure. The door open/close events for the Pegasus are shown in Figure 3 for the journey from London to Moscow and then delivery into Frankfurt. The first event shown in the graph corresponds to the loading of the container at the start of the journey in London. The second event corresponds to a customs inspection before loading onto the flight from Amsterdam to Moscow. With information like this, nothing is left to the imagination – the data speaks for itself.

KEEPING IT COOL AND IN THE KNOW WITH AMBIENT AND INTERNAL TEMPERATURE DATA?

Keeping pharmaceutical products at the correct temperature is a challenge that is critical to helping patients maintain their health. During the entire storage and distribution lifecycle, if a part of the process is not accounted for, it could negatively impact a patient's life.

Once the pharmaceutical products are on their way to their destination, they are now in an environment where the unpredictable can happen. Situations that can affect the temperature control are accidents, and human handling errors on the packaging. To ensure that these situations are taken care of, the Pegasus is capturing both external ambient and internal temperature measurements.

Temperature data collected by all the thermal probes during the test shipment is shown in Figure 4.
The operational segments of the trial move happened between London and Amsterdam. By the time the Pegasus container arrives in Moscow, the container temperature is just right, and the product can be loaded into the container.

Figure 4

With the data, you have additional insights to support the move of your shipment to help mitigate risk. If something unexpected happens, airline carriers, freight forwarders and truckers can be agile to respond to the products shipping requirements. The collected temperature data shows that all thermal probes maintained temperatures between 2°C and 8°C for 135 hours.

THE SUCCESS

This shipment demonstrated Pegasus' ability to address two of the key challenges for bulk passive pharmaceutical packaging technologies: providing long duration (>5 day) thermal performance, and a design that eases operational handling at every step, from trucking to ground handling to flying.

Pegasus is the world's first passive bulk temperature-controlled container for pharmaceutical use that is a Federal Aviation Administration (FAA) /EASA-approved unit load device, which allows it to speed through existing international ground handling and customs processes at the lowest possible cost. Engineered with composite materials, Pegasus will offer a lighter solution that is substantially more damage-resistant than traditional metal containers. Additionally, Pegasus contains a fully integrated, telemetry system, providing real-time, cloud-based data on payload and ambient temperature and key environmental factors, precisely synchronized with GPS location.

"As Covid-19 accelerates global pharmaceutical companies' evolution of their processes to ship large amounts of medicines from their production facilities into distribution centers, the ability to adopt alternative smart packaging to reduce cost and increase efficiencies has driven many to reconsider packaging as a strategic decision," said Ron Haub, Segment Director at Sonoco ThermoSafe. "The renewed focus on cold chain transportation has revealed the importance of data collection to verify cold chain integrity. In keeping with our digital DNA, Sonoco ThermoSafe has specialized in harnessing the visibility data generates for its customers. That's why the Pegasus pallet shipper is equipped with an integrated telemetry system that provides critical real-time data on multiple parameters."

These data sets provided AirBridgeCargo's team with a real-time status of the pallet shipper, providing valuable information for the safe and secure transport of medicinal products.

"We are proud to be given this opportunity to demonstrate the quality of the pharma solutions we can provide together with our global partner - Sonoco ThermoSafe. Pegasus's telemetry capability and design, exceeds market expectations and we are sure that it will be highly appreciated by the Life Science and Healthcare community, especially for large volumes of pharmaceutical shipments" highlighted Yulia Celetaria, Healthcare Director for Volga-Dnepr Group.

For more information on the Pegasus ULD, visit www.thermosafe.com/Pegasus-ULD to learn more.