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LIGHTENING LOADS

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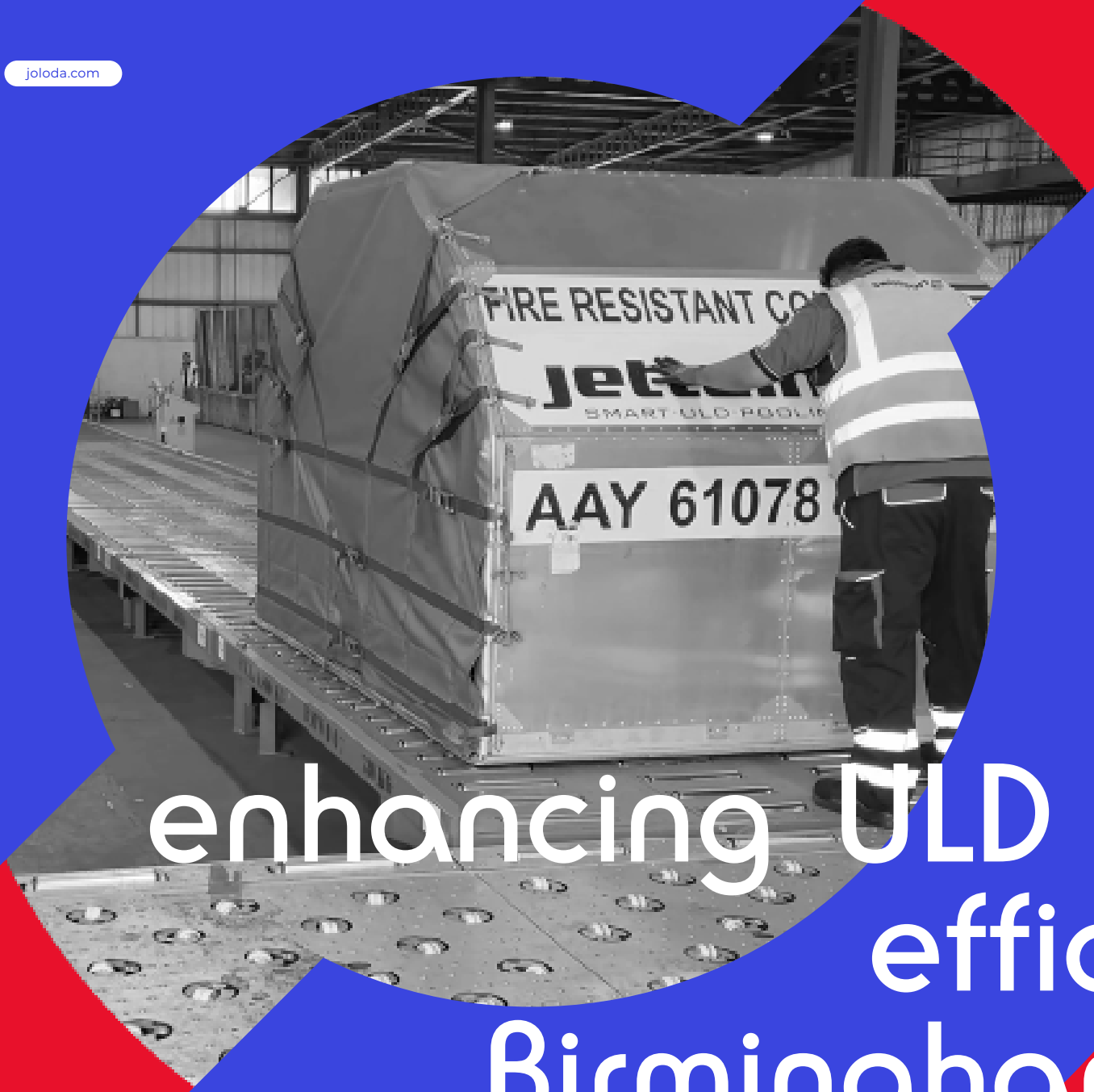
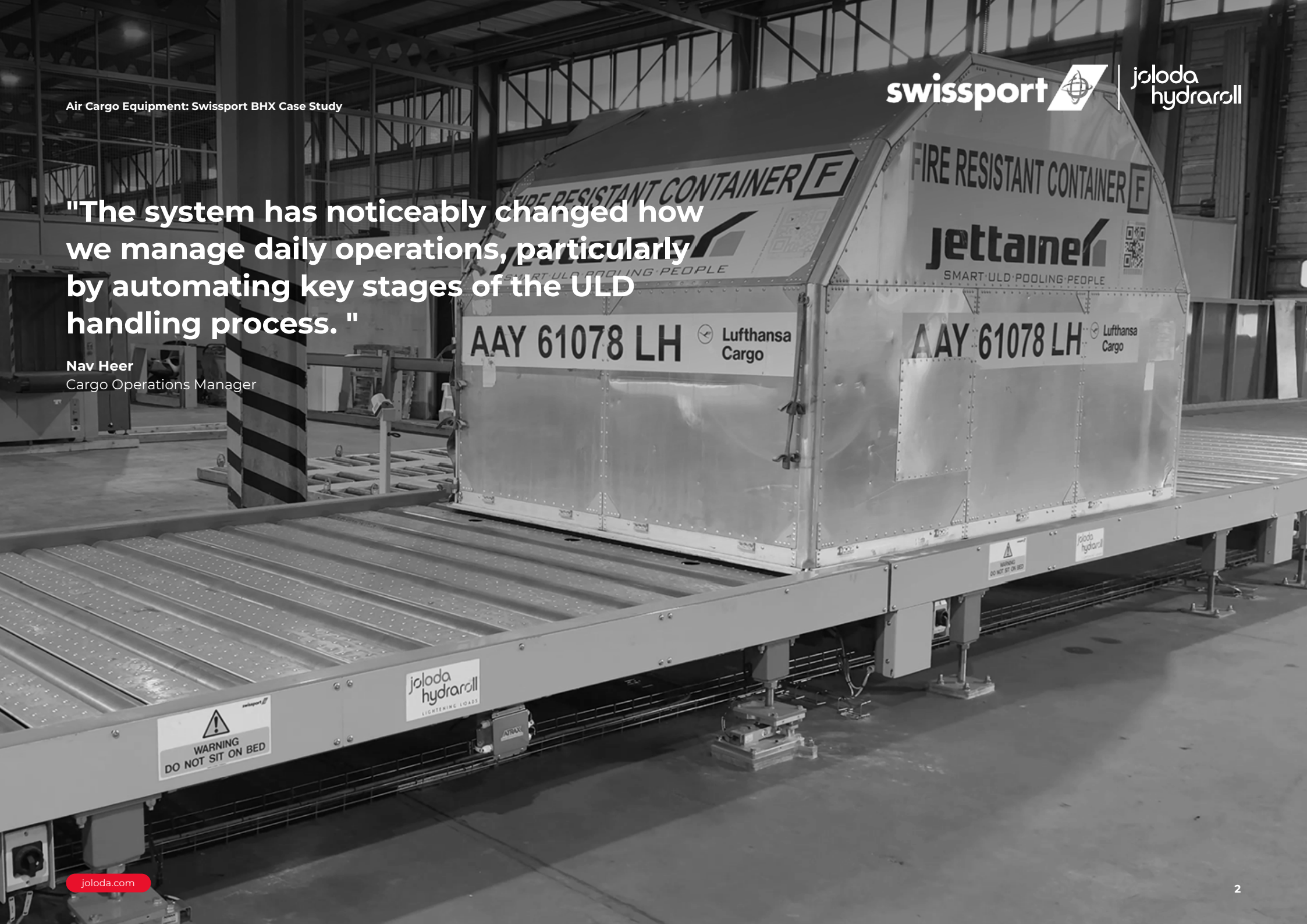
swissport



enhancing ULD handling efficiency at Birmingham Airport



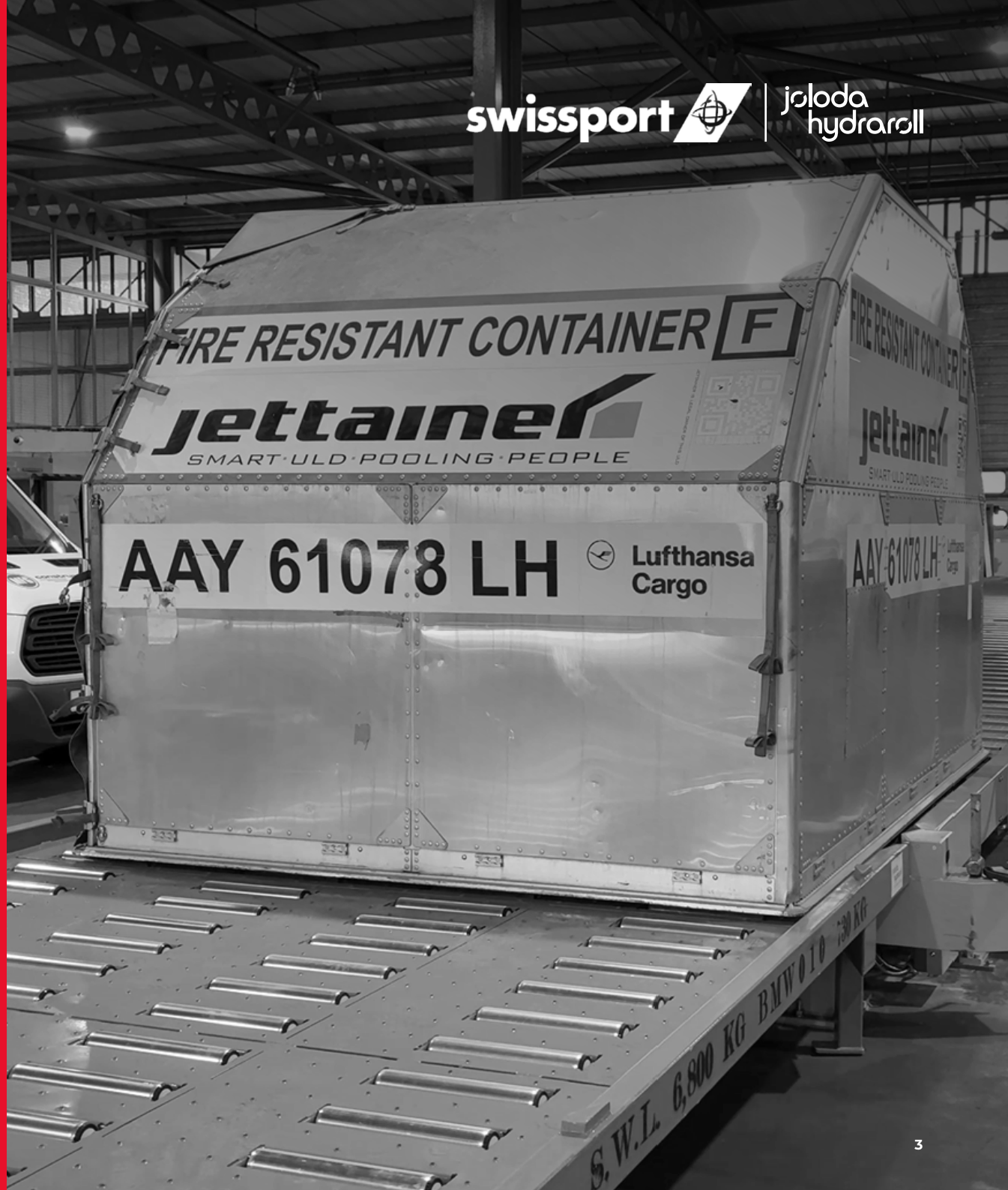
"The system has noticeably changed how we manage daily operations, particularly by automating key stages of the ULD handling process. "

Nav Heer
Cargo Operations Manager

introduction

Rising air cargo volumes and time-sensitive operations demand efficient ground handling systems that improve throughput, safety, and scalability. At Birmingham Airport (BHX), a major ground handling provider required a solution to optimise its ULD handling process, especially for freighter aircraft with large payloads.

Joloda Hydraroll delivered a comprehensive air cargo handling system that integrated **Powered Rollerbeds, Roller Decks, Mobile Workstations**, and a **Castor Deck** field. This case study outlines how the system enhanced operational flow, reduced manual handling, and created a scalable setup to support future demand.



the client

Swissport International Ltd is a global leader in ground and air cargo services, operating at approximately 300 airports across 45 countries. The company handles over 5 million tons of air cargo annually across 117 facilities.

The solution was installed in their Birmingham Airport (BHX) who operates air cargo services for a wide range of freight types, spanning perishables, e-commerce, time-critical shipments including pharmaceuticals and perishables and general cargo.

The BHX site handles a mix of inbound and outbound cargo from dedicated freighters to provide a full suite of cargo services including general and special cargo handling, temperature-controlled handling, hub handling, express services, and forwarder handling.

the challenge

The site handles high volumes of cargo from dedicated air freighters, each capable of transporting up to 39 ULDs. The handling process was previously reliant on forklifts to move ULDs across the warehouse from truck docks to airside dollies.

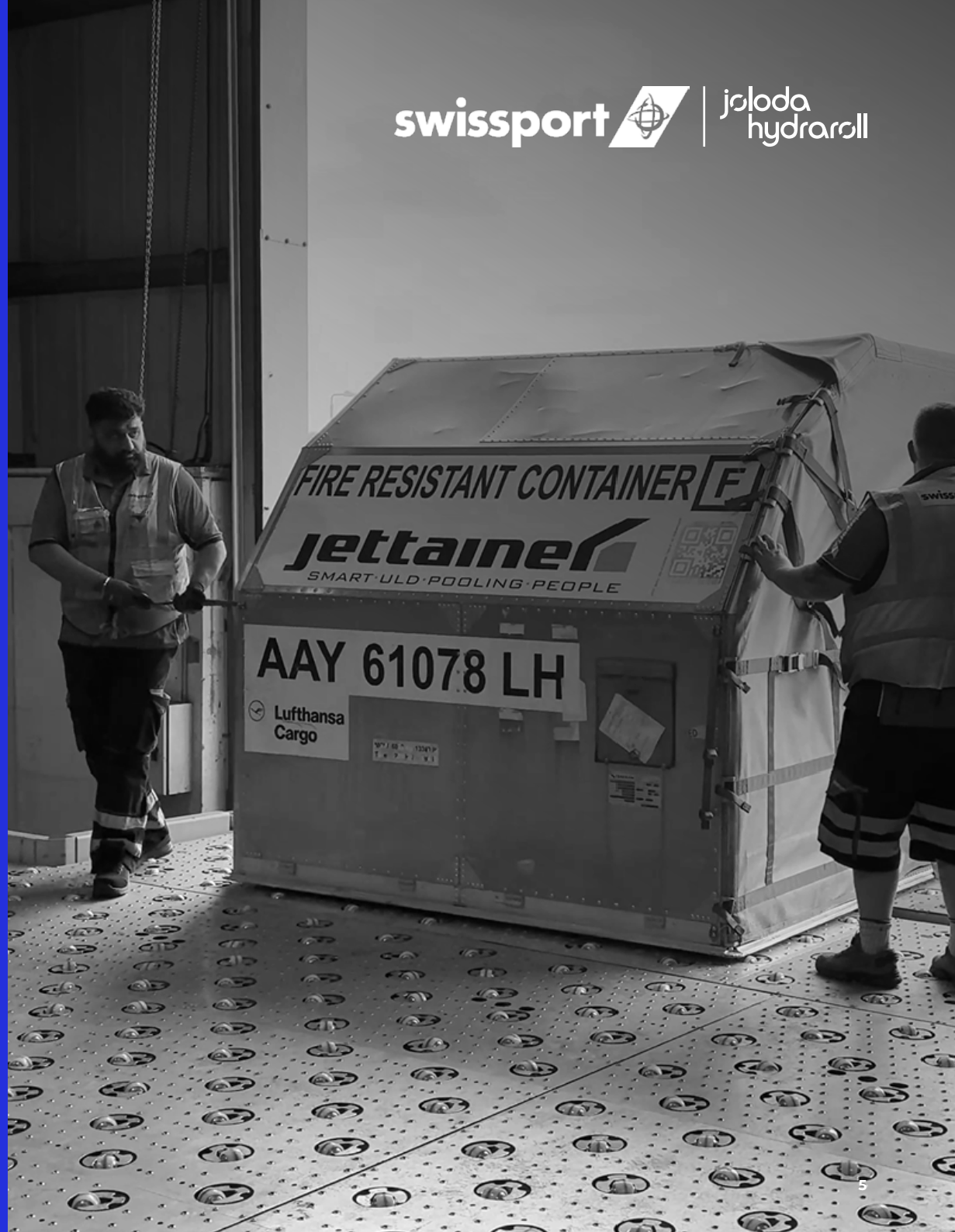
The key operational challenge they face is to handle inbound and outbound cargo efficiently, particularly during peak overnight windows, is essential to minimise aircraft turnaround times and ground time.

For outbound shipments, ULDs are built up in-house and must undergo several compliance procedures, including x-ray screening, weight verification, and detailed classification of both the goods and the containers they are transported in. These steps introduce additional handling requirements and increase operational complexity, making process efficiency even more critical.

There was a heavy dependence on manual processes and regular forklift use to transfer ULDs between the existing truck dock across the width of the warehouse and towards the air side dollies. While import operations account for the majority of cargo throughput and tend to follow a more streamlined process, export operations are notably more labour-intensive.

This dependence on manual movement and limited automation created several operational challenges:

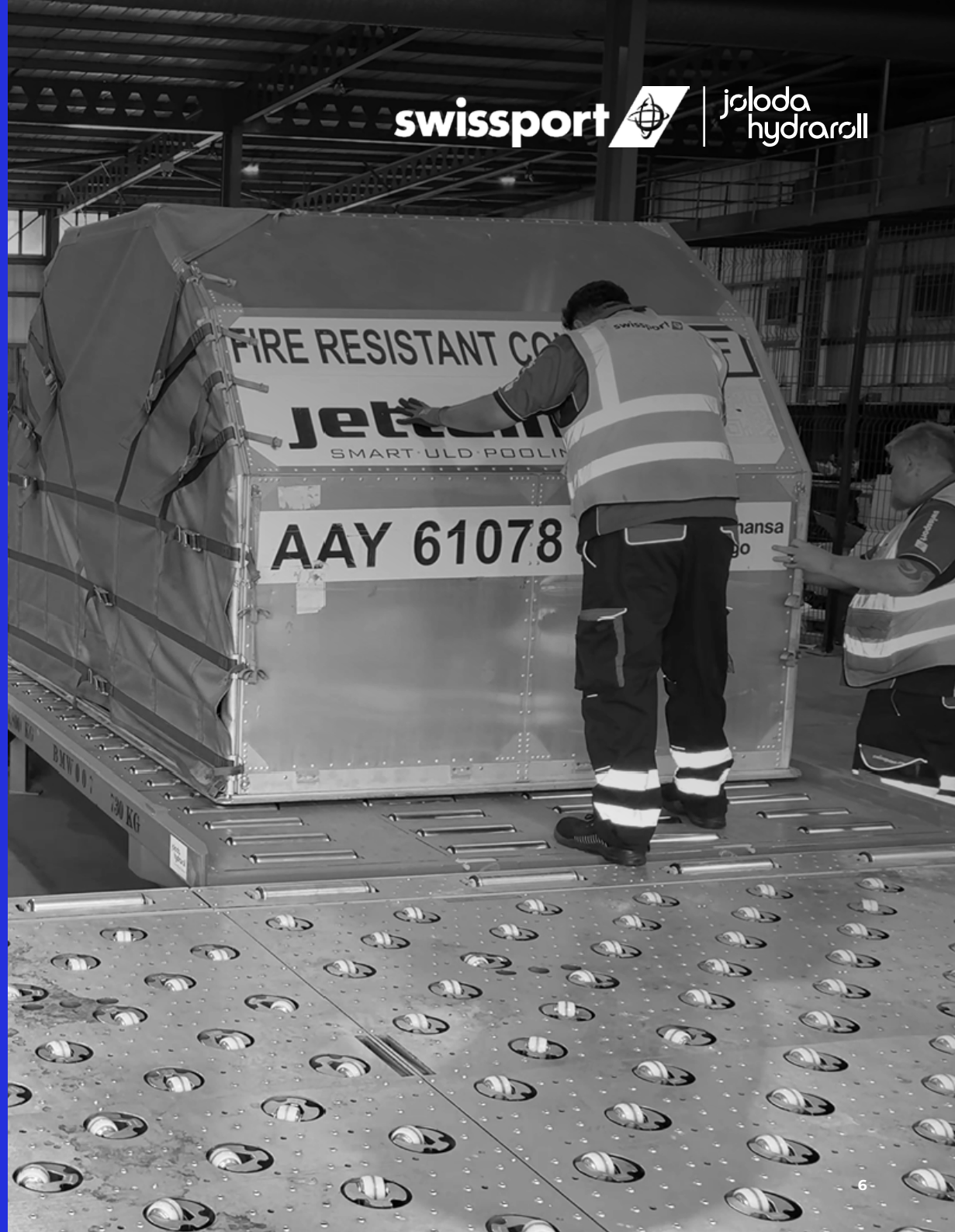
- **Labour-intensive handling:** Physically moving ULDs using forklifts increased the risk of damage and workplace injuries.



the challenge

- **Limited throughput:** The layout of the facility restricted how quickly cargo could be transferred from airside dollies into the warehouse.
- **Peak-time bottlenecks:** High volumes of overnight and express shipments often led to delays during peak periods and could not get quickly temporarily stored.
- **Fragmented weighing process:** ULDs had to be weighed separately, introducing extra steps and slowing the overall workflow.

The site required a flexible system that would integrate with existing infrastructure, automate key steps, and streamline compliance for export cargo, while reducing reliance on forklifts and minimising disruption during installation. This would see improved turnaround speeds for dedicated freighter aircraft, increase daily throughput, and ensure the solution could scale with future demand—without compromising safety, efficiency, or compliance.



the solution

Joloda Hydraroll installed a suite of modular air cargo handling equipment designed around the existing warehouse footprint and futureproofed the site for growing cargo volumes. As a result, the installation reduced manual handling, streamlined ULD movement, improved safety and enabled increased throughput.

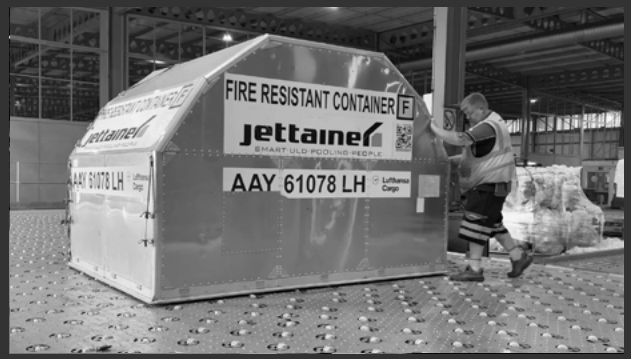
The system needed to integrate with existing infrastructure, such as a 20ft Truck Dock supplied by AirTech, who Joloda Hydraroll partnered with in 2024.

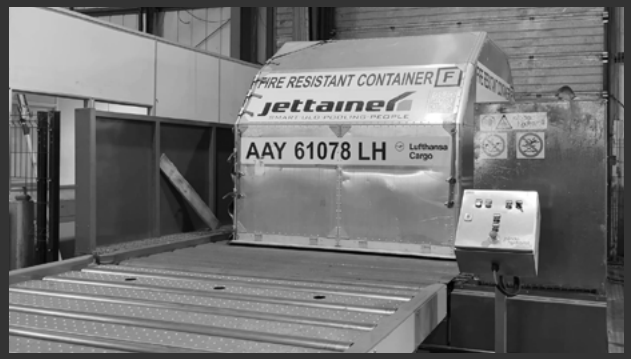
Powered Rollerbeds: Installed at the critical interface between the dock and the warehouse, the Powered Rollerbeds automate the movement of ULDs, significantly reducing manual handling. This improves both the speed and consistency of cargo transfers, helping to accelerate turnaround times.

One of the Powered Rollerbeds was fitted with a certified integrated weighing scale, allowing cargo to be weighed during handling. This eliminates the need to move ULDs to a separate weighing station, saving time and reducing unnecessary ULD movements.

Castor Deck Field: A new castor deck zone was created to allow 360° movement of ULDs, giving operators maximum flexibility for positioning and aligning loads. The Castor Deck was designed to simplify manual movement and staging in tight areas, especially useful in busy or constrained warehouse layouts. The number of Castor Deck positions was intentionally chosen to create a space where a larger number of ULDs can be quickly and temporarily stored, enabling faster unloading of freighter aircraft and improving turnaround efficiency. Within the Castor Deck area:

- **Dolly Connection Zones** enable smooth transfer of ULDs from airside dollies to the warehouse system, reducing handling steps and improving process flow.





the solution

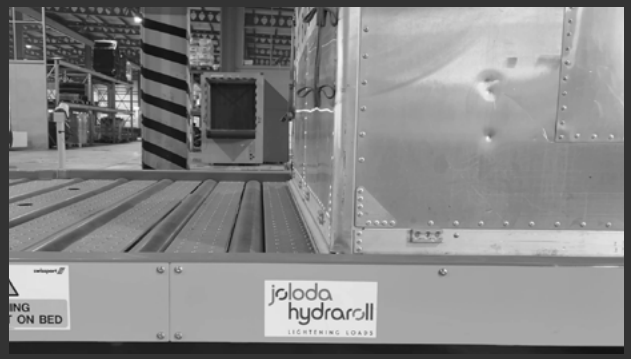
- **Walkways and Handrails** were installed to provide designated safe access for staff, enhancing on-site safety and helping to enforce safe routes through operational areas.

- **Safety Barriers** act as physical separation between staff and moving ULDs, reducing the risk of contact injuries and supporting compliance with health and safety protocols.

Roller Decks: To link the Castor Deck to the Powered Rollerbed, standard Roller Decks were installed. These Mobile Workstations set at a height of 508mm and can be moved or removed easily with a forklift truck when not in use. This flexibility maximises operational warehouse space as needed. When in position, the Roller Decks create a fastlane connection between the airside and landside, allowing ULDs to be moved with minimal force across the warehouse floor. This reduces physical strain on workers and speeds up the manual positioning of cargo units between systems.

Mobile Workstations (Slave Pallets): Specialised mobile units—designed to be picked up using forklift forks were included to manoeuvre ULDs safely between handling zones. These Slave Pallets reduce the risk of damage during movement by stabilising ULDs and avoiding direct contact with forks or other hard surfaces. The Mobile Workstations are also set at a low height of just 208mm, which makes it easier for operators to build up and break down cargo directly from ULDs, improving ergonomics and handling efficiency.

New Control Panel: A centralised control panel was supplied to operate the Powered Rollerbed and dock equipment. By consolidating control into a single access point from a simplified remote support and streamlined communication with higher-level systems. Maintaining one program reduces the need to update multiple projects and ensures that software fixes

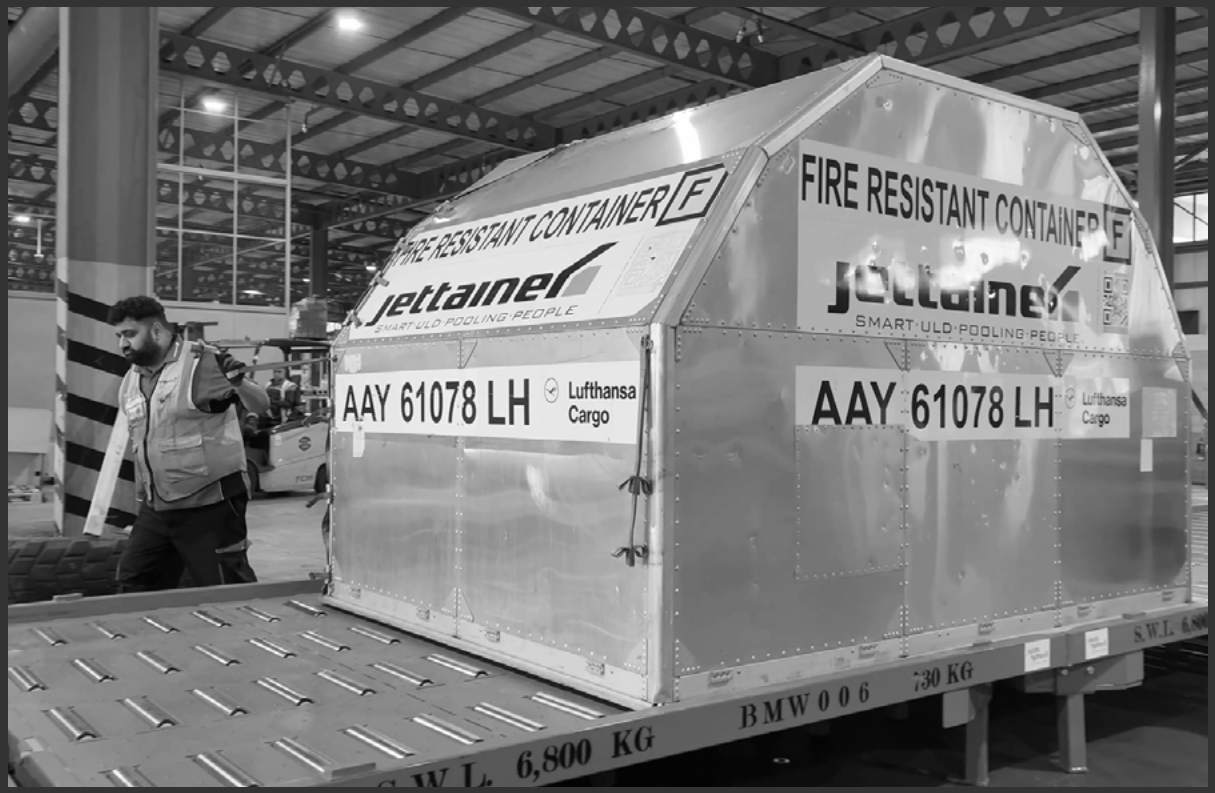


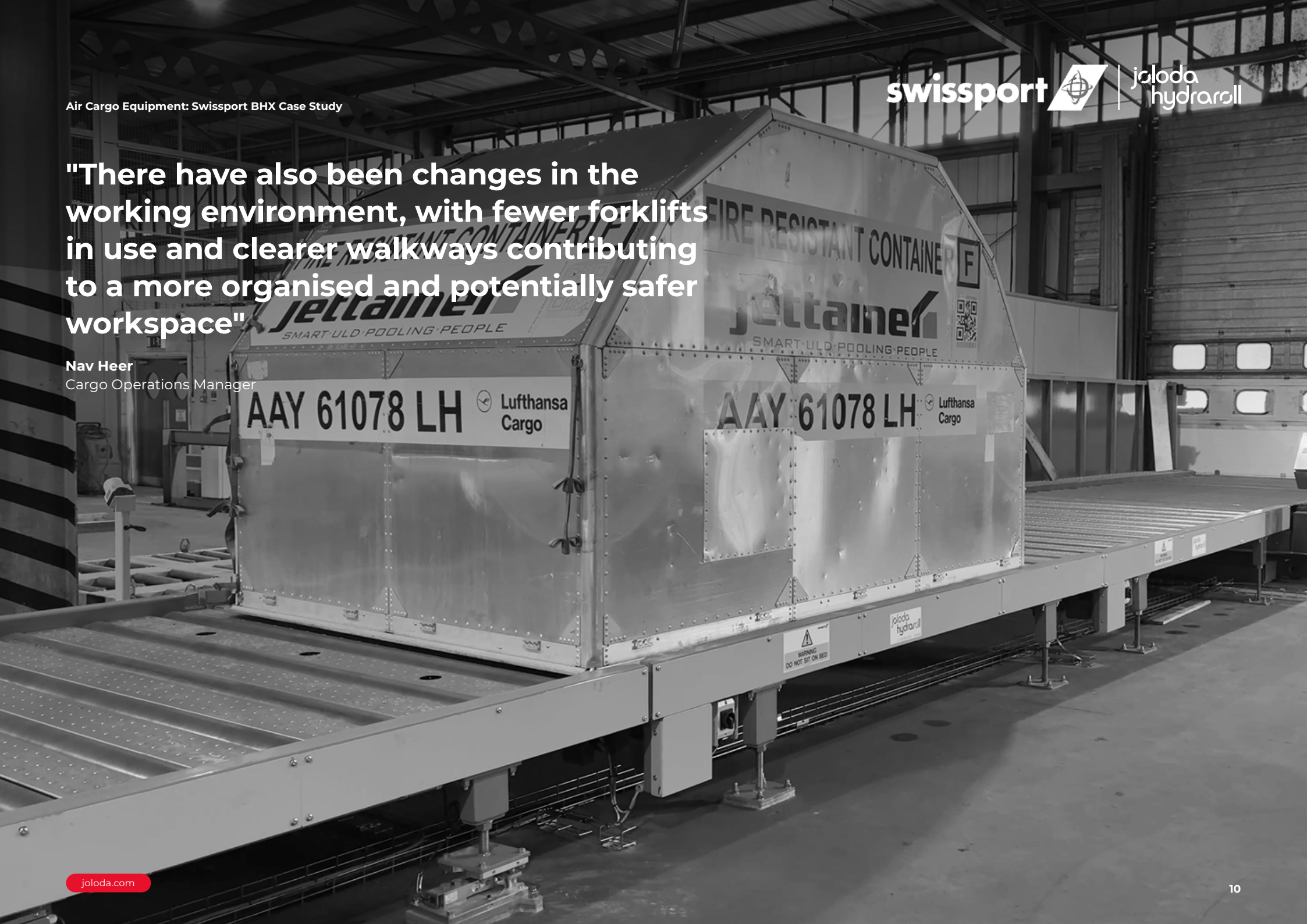
the solution

propagate across the entire system. Technicians require training on only one PLC system, minimising complexity and errors, while spare parts management is simplified due to reduced variation.

The centralised setup also allows for easier implementation of redundancy and backups, improving reliability. Consistent PLC logic, developed by a dedicated inhouse team, it provides uniform performance, and the system's architecture facilitates future integration of SCADA for real-time monitoring and enhanced operational control.

Together, this configuration enabled a one-directional cargo flow from dolly arrival to storage or outbound loading, with easy movement of cargo across the width of the warehouse and for loading into trailers.





"There have also been changes in the working environment, with fewer forklifts in use and clearer walkways contributing to a more organised and potentially safer workspace"

Nav Heer
Cargo Operations Manager

system features

1. Automated ULD Movement
Powered Rollerbeds automate the movement of ULDs, significantly reducing manual handling and improving both the speed and consistency of cargo transfers.

2. Dolly Connection Zones:
Enable smooth transfer of ULDs from airside dollies to the warehouse system, reducing handling steps and improving process flow.

3. Temporary ULD Storage Capacity:
The number of Castor Deck positions was intentionally chosen to enable quick, temporary storage of a larger number of ULDs, allowing faster unloading of freighter aircraft.

4. Fastlane Connection:
When in position, Mobile Workstations create a fastlane connection between airside and landside, allowing ULDs to be moved with minimal force and reducing physical strain on workers.

5. Integrated Weighing Scales:
One of the Powered Rollerbeds was fitted with a certified integrated weighing scale, allowing cargo to be weighed in-line during handling, eliminating the need for a separate weighing station.

6. Mobile Roller Decks:
Standard Roller Decks, set at a height of 508mm, can be moved or removed with a forklift when not in use, maximising operational warehouse space.

7. Walkways and Handrails:
Provide designated safe access for staff, enhancing on-site safety and enforcing safe routes through operational areas.

8. Safety Barriers:
Act as physical separation between staff and moving ULDs, reducing the risk of contact injuries and supporting compliance with health and safety protocols.

the benefits of implementation

The integrated solution delivered immediate improvements. The flow of cargo across the warehouse, from Truck Dock to storage or outbound trailers, was significantly improved, with fewer manual steps and reduced congestion.

1. Improved turnaround speeds:
especially during peak freighter arrivals.

2. Increased cargo throughput:
due to faster ULD movement and in-line weighing.

3. Enhanced safety:
with fewer forklifts in use and clearer warehouse walkways.

4. Operational flexibility:
Through modular layout and slave pallet mobility.

5. Future-ready infrastructure:
with the ability to scale the system over time.

the feedback

Nav Heer
Cargo Operations Manager

Nav Heer, Cargo Operations Manager at Swissport BHX noted operational improvements:

"The system has noticeably changed how we manage daily operations, particularly by automating key stages of the ULD handling process. This has helped us improve aircraft turnaround times, especially during busy periods. The in-line weighing function has also addressed a previous bottleneck in our export flow, supporting better handling of time-sensitive cargo.

There have also been changes in the working environment, with fewer forklifts in use and clearer walkways contributing to a more organised and potentially safer workspace. The installation process went smoothly, and the system now gives us a more scalable setup to manage growing volumes."

Bart Sloot
Sales Manager

Bart Sloot, Sales Manager from Joloda Air Cargo Handling Equipment, commented:

"It was a pleasure working with Nav and the team throughout this project. From the outset, their focus was clear, improving efficiency, safety, and scalability within a high-pressure cargo environment.

Our role was to listen carefully, understand the operational challenges, and propose a solution that not only met today's needs but also allowed room for future growth.

A special thanks to Seb Gasior, who expertly managed the project delivery, and to the wider Joloda Hydraroll team across design, production, and installation. This was a team effort that reflects what can be achieved through close collaboration and shared goals."

conclusion

This project highlights how a modular, integrated air cargo handling system can address key pain points at busy airport terminals. By combining automation with safe, flexible cargo movement, the solution delivered at Birmingham Airport supports both current and future operational demands.

For air cargo warehouses aiming to optimise flows, reduce manual handling, and future-proof infrastructure, this case illustrates the advantages of intelligent material handling design.

joloda air cargo equipment
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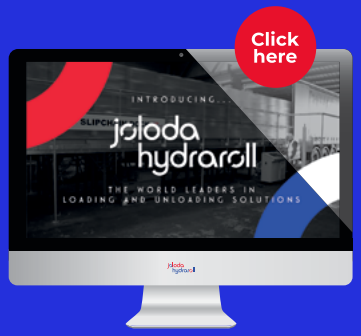
if you have any questions, please get in touch!



Learn more about Joloda Hydraroll...
watch our video

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