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Daifuku Airport Technologies

Case Study

Wuhan Tianhe International Airport T3

Supporting the advancement of Central China's largest airport

Background

Globally, airport passenger numbers continue to increase with China in particular experiencing growing aviation demands for business. Chinese air passenger numbers in 2017 increased 12.9% from the previous year to 1.1 billion people. By 2022, the Chinese market is expected to become the world's second biggest market, after the United States.

Real and expected increases are a pressing issue for Wuhan Tianhe International Airport, China's fourth largest airport by overall floor space (519 million sq.m). Passenger numbers at Wuhan Airport reached 24.5 million during 2018 and are anticipated to increase to 26.2 million annually by 2020, with the airport expecting up to 35 million beyond this time. In response, the airport opened a new terminal in 2017, Terminal 3, which required a baggage handling system (BHS) capable of not only meeting anticipated growth, but bringing about improved tracking and ensuring CAAC compliance.

Primary drivers:

- Airport passenger numbers anticipated to increase significantly
- Construction of Terminal 3

Key requirements:

- High-throughput bagagge handling system capable of meeting passenger increases
- CAAC compliant

24.5 million

Domestic passengers during 2018

Key requirements:

- Improve bagagge tracking
- Reduce need for manual coding and double handling

In addition to ensuring an increased number of bags are processed efficiently and accurately, airports globally now face heightened security requirements (TSA, ECAC Standard 3, CATSA, CAAC).

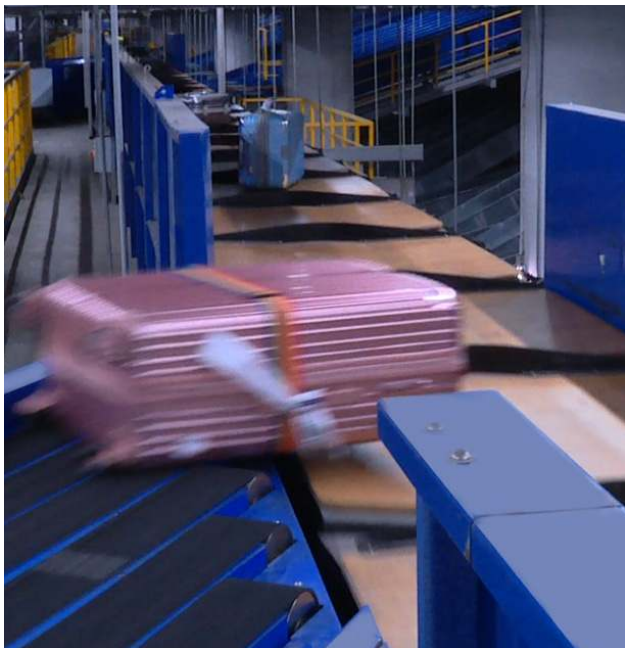
Understanding the customer's needs, Daifuku and its China-based joint venture company, Logan KSEC, provided a comprehensive BHS that centers around the Tilt Tray Sorter (TTS):

- Improved system maintenance
- Smart technology
- Dynamic handling capacity
- Environmentally friendly
- Enhanced efficiency
- WiFi connectivity
- Unparalleled reliability
- Integrated redundancy protocols

16,800

Combined TTS hourly baggage processing capacity

Solution



Daifuku Airport Technologies provided and installed an integrated BHS centered around four TTS systems providing 1,462 trays linked with over 350 chutes. Using improved linear motors ensures high-throughput and energy efficiency compared to conventional models. Daifuku's TTS uses patented technology to deliver high efficiency and prevents bags from being induced together or in-between trays, reducing the need for items to be double-handled by baggage handlers at the airport.

The installed system, totaling 16km of conveyors, also comprises of vertical sorting units (VSU) and early bag storage (EBS) lines, and is fully integrated with an CAAC compliant baggage inspection system.

Further, RFID tags were selected over conventional bar code readers to ensure enhanced tracking capabilities throughout the system.

Wuhan's Tilt Tray Sorter key features:

- Induction flow rate of 1 in 2 trays
- Standard tray pitch of 1200mm
- Spiral bend radius of 3.65m
- Fully enclosed track
- Fitted with hot standby PLC based controls system
- Maximum incline/decline angle of 10°
- Integrated cable routing
- Maximum single tray load of 60kg

1,462

Trays across four TTS systems

Outcome

Since installation was completed in 2017, the airport has processed over 3.15 million bags and has successfully managed volumes during peak seasons. Further, the installed system provides the capacity for up to 40 million passengers per year, ensuring the airport can meet expected future growth. In addition, the installation of the TTS and RFID has greatly reduced the necessity of manual coding, providing increased tracking functions for the airport.

> The installed system successfully manages volumes during spring

Baggage carousel

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