



Application Report:

Denver International Airport

Computerized Tube Systems (CTS) Improve Speed and Efficiency of Airline Maintenance and Passenger Ticketing Operations at DIA



New airport facility will be a showcase for innovative transport system technologies

Integral to the operation of the new Denver International Airport (DIA) are many automated systems that will help make DIA one of the most efficient and "flier friendly" airports in the world. Each automated system is key to an overall smooth operation, but none may be more key than the Computerized Tube Systems (CTS) operating throughout the Main Terminal, Concourse A, Concourse B and the adjacent maintenance hangars.

A gateway through which the world's major airlines will pass. Denver International Airport was built by the City of Denver in order to provide unsurpassed facilities for the world's airlines to deliver business people, visitors and tourists to Colorado. Essential to the successful operation of DIA are the "hub" carriers, United Airlines and Continental Airlines. In conjunction with the City of Denver, United and Continental recognized the need for Computerized Tube Systems to support both the cus-

tomers service/ticketing counters and the aircraft line maintenance function. Before construction began, TransLogic was consulted to design a tube system that would enable the airlines to provide customer satisfaction far beyond the levels found at other airports.

United Airlines Maintenance Parts Distribution System

The Challenge: With the ambitious goal of having the shortest "Aircraft on Ground" (AOG) time in the industry, United Airlines Manager, Supply & Distribution Operations, Marvin Guerrero, realized that the traditional method of delivering parts to the aircraft at the gate via personnel carts driven across the apron, tarmac and taxiways was unacceptable. He also

"...the new 10" CTS parts delivery system will help us perform most routine maintenance faster and keep our planes flying on schedule"

Marvin Guerrero

United Airlines Manager, Supply & Distribution Operations

was convinced that "line" maintenance at the gates and the overnight maintenance in the remote hangars could be supported by a single inventory of parts. With tens of millions of dollars in inventory required to support both maintenance functions, a single inventory became a key driver in the transport system design.

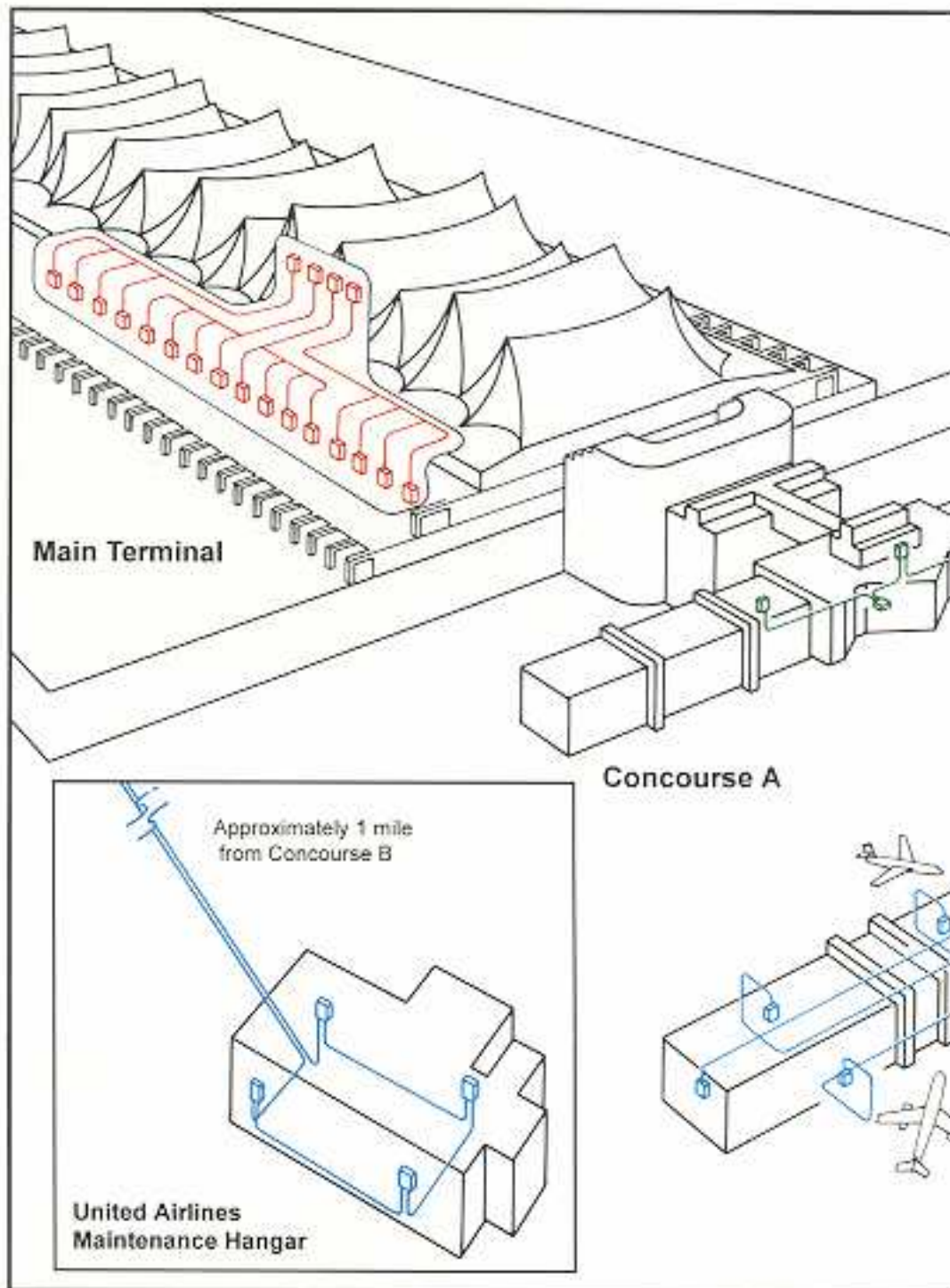
The Solution: It was decided that the maintenance parts inventory should be located within the Concourse B structure. This would position the bulk of the inventory closest to the planes and assure the fastest delivery of parts to the mechanics at the gates. United Airlines selected a Computerized Tube System, which transports at speeds up to 1500 feet per minute and provides air cushioned delivery of sensitive aircraft components. This system could connect the parts inventory to line mechanics at the gates, in addition to those at the maintenance hangar located approximately one mile away. However, to assure feasibility and maximize efficiency under this plan, the capacity of the tube system would have to be increased. Traditional 6" tube systems can handle only 29% of parts requests. This new system would have to accommodate up to 80% of routine parts requests.

TransLogic set about the task of designing a 10" diameter Computerized Tube System. The dynamics introduced by a 40 lb. carrier moving at 25 feet per second through an 11 gauge galvanized steel tube were unlike those experienced in thousands of 4" & 6" systems. The engineering, fabrication and installation schedules were coordinated and the tasks were assigned to project team members. Despite having to navigate within the basement and utility chases and

between the nearly installed baggage system, the system was installed on schedule.

Highlights: At the core of the system design are three stations located within the central stores area at the center of Concourse B. Two of the stations send parts placed in the 10" diameter carriers to each of the sixteen stations

strategically located amongst the 44 gates. A third station connects the parts inventory with four stations located over a mile away in the maintenance hangar. Through interconnecting tube, any station can send to any other station in the entire system. This enables a flexible operation that can respond to emergency needs at any of United's facilities nationwide.



Benefits:

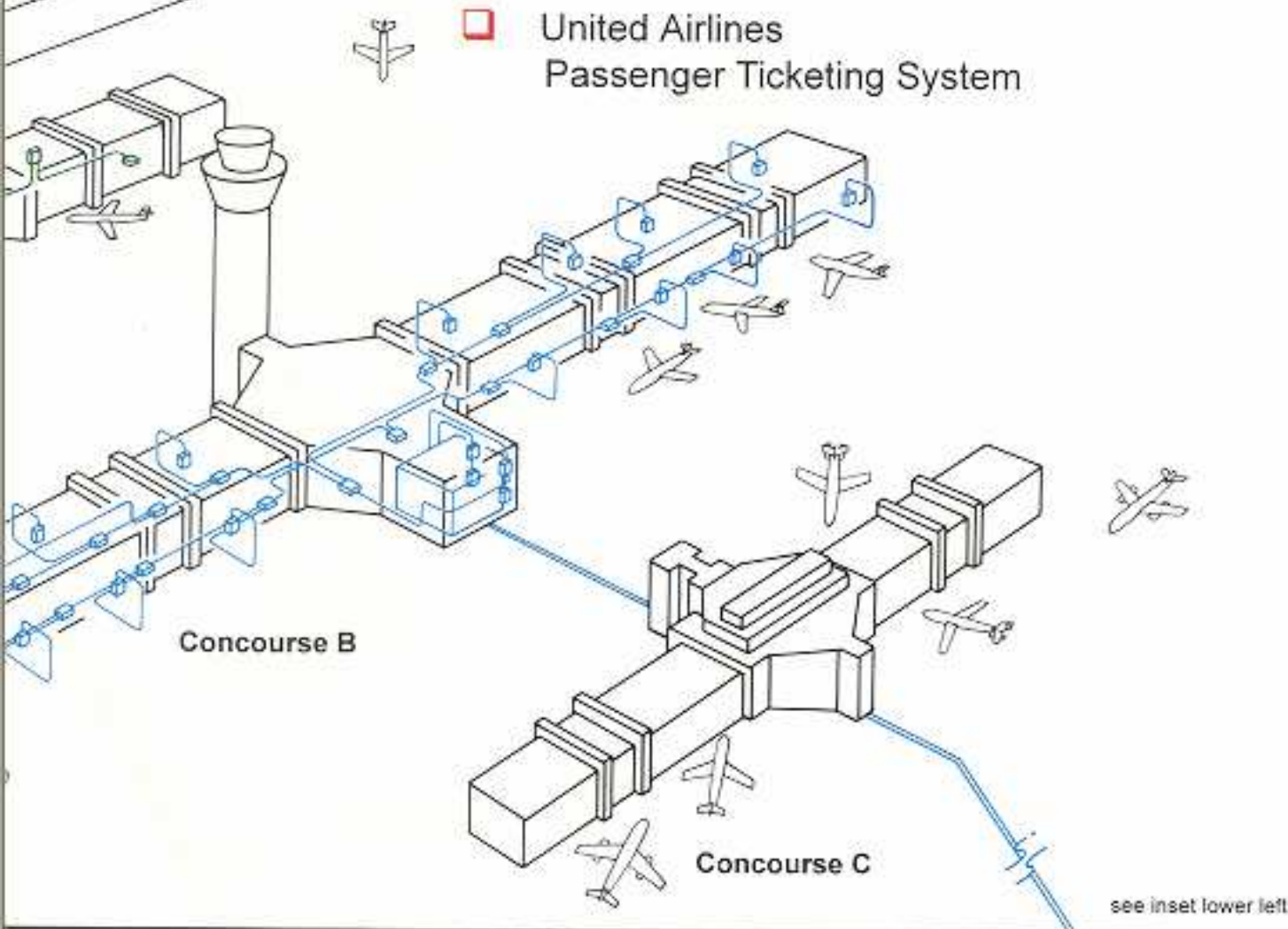
- 1500 feet per minute delivery speed minimizes AOG time
- Reduces the need for duplicate inventories to support both the line and overnight maintenance operations
- Flexibility to send parts from the avionics shops located in the hangars directly to the aircraft at the gate

- Up to 80% of all requested parts are transported by the 10" CTS
- Minimizes labor and delivery carts on apron and tarmac
- Accurate and timely delivery (average of 7 minutes from part request to delivery)
- Improved component tracking and security within the system
- Ability to support downline aircraft maintenance operations

Continental Airlines Maintenance Parts Distribution System

Challenges: The manpower and vehicles required to deliver parts from a central stores area in Concourse A at the new DIA to the mechanics at the gates would be a costly venture for Continental.

- ☐ United Airlines Maintenance Parts Distribution System
- ☐ Continental Airlines Maintenance Parts Distribution System
- ☐ United Airlines Passenger Ticketing System



Additionally, the timeliness of delivery and inability to track the parts during the travel process posed service problems that could ultimately affect passenger service and AOG time.

Solution: During the engineering phase of developing the 10" diameter CTS, Continental recognized the huge savings and positive service impact that the 10" system could provide for them. It was decided that Continental could utilize the CTS to deliver parts from their central stores area, located in the basement of Concourse A, to their maintenance rooms located along the length of the concourse.

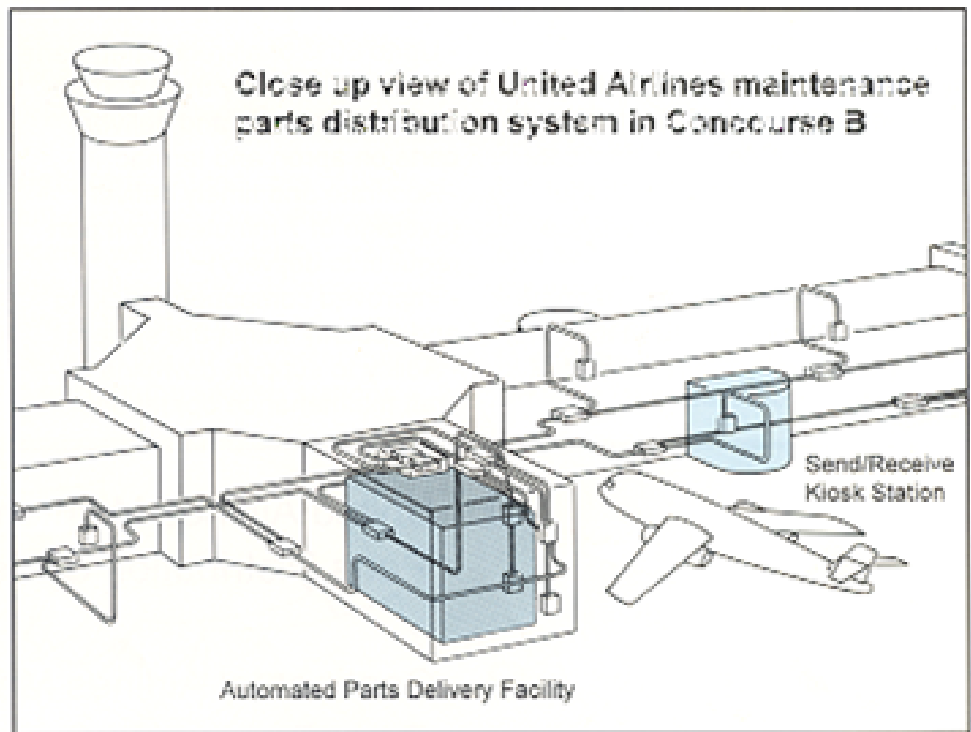
Highlights: Continental's parts inventory is located in a single stores area within Concourse A. A CTS station is located in this area. From here parts are placed in a 10" carrier and sent to one of two CTS stations located in maintenance rooms along the length of the concourse. Plans call for additional CTS stations to be located in new maintenance rooms as the concourse grows to accommodate more Continental gates.

Benefits:

- 1500 feet per minute delivery speed minimizes AOG time
- Approximately 80% of all parts delivered by the 10" CTS system
- Reduces labor & delivery carts on apron and tarmac
- Improved security of parts within the system
- Reliable air cushioned delivery of sensitive aircraft components

United Airlines Passenger Ticketing System

Challenges: During many ticketing transactions at the Customer Service counter in an airport, there is an exchange of cash, credit



The new 10" CTS parts delivery system allows the airlines to perform more aircraft maintenance within a shorter period of time. This system minimizes the time that aircraft are parked at the gate, saving both time and money.

cards, vouchers, etc. Maintaining a cash drawer, securing the contents and processing the transaction all detract from the productivity of the airline agent and thus affects the level of service provided to passengers. United Airlines was determined to eliminate this type of transaction at the Customer Service counter.

Solution: United selected a TransLogic CTS system to transport cash, credit cards and vouchers between the Customer Service counter and a central Cashier's Office located in a secure area within the terminal. With a delivery speed of 25 feet per second, individual carriers can be dispatched to the Cashier's Office where accounting personnel process the transaction, leaving the ticketing agent at the Customer Service counter free to assist passengers with their baggage and other special requirements.

Highlights: The ticketing CTS system design has a total of 38 stations located along the length of the United Airlines Customer Service counter. Each station is shared by two ticketing agents. The carriers containing cash, credit cards or vouchers are sent to one of four stations in the Cashier's Office.

Benefits:

- Improved customer service
- Improved productivity
- Improved security

SUMMARY

Through the utilization of advanced technologies, DIA will be able to deliver an unsurpassed level of service to its visitors from around the world. TransLogic is pleased to have provided automated material transport systems which will keep this facility operating at maximum efficiency for many years to come.

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TransLogic Pneumatic Tube System
For more information contact Customer
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800-764-0300