CINCINNATI INTERNATIONAL AIRPORT
DELTA AIRLINES CVG AUTOMATED BAGGAGE SYSTEM

OWNER
DELTA AIRLINES

OWNER'S REPRESENTATIVE
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LOCATION
CINCINNATI, OHIO, USA

CONTRACT PERIOD
1991 - 1993

PROJECT AMOUNT
US $40 MILLION

REFERENCE
DELTA AIRLINES
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SCOPE OF SERVICES
CONCEPTUAL DESIGN
DESIGN DEVELOPMENT
CONTRACT DOCUMENTS
BIDDING AND PROCUREMENT
CONSTRUCTION MONITORING

RELEVANCE
AUTOMATED BAGGAGE HANDLING SYSTEM UTILIZING 10-DIGIT IATA BAG TAGS

The Delta Airlines installation in Cincinnati is one of the most successful baggage handling system applications in the world. Quite a claim, but this installation combines proven high speed technologies to enhance passenger service levels and minimize labor costs. Development risk was never a concern since all of the equipment utilized has been used in other installations. Equipment cost was justified by decreased operating costs. This system was commissioned in 1995 and, although the start-up was not without difficulties, it's performance has since proven itself. The first phase of the CVG master plan consisted of a major redevelopment of Delta's facilities at this major hub, an expansion of airside capabilities from 25 gates to 50-plus gates. Construction activities included a major new Federal Inspections Services Facility, a new remote concourse providing superior transfer passenger handling, concessions and inspiring architecture, a new landside terminal providing interfaces to the local Cincinnati passengers, an expansion of the Concourse A facility and a new 50-plus gate commuter aircraft passenger terminal. Interconnecting these facilities was a new state-of-the-art people mover system. In combination, the CVG project represents one the best origin/destination and transfer terminals in the world. The Delta Air Lines Automated Baggage System (ABS) is designed to process originating, terminating, and "hot" transfer baggage. The originating baggage handling system is somewhat unique for a United States carrier in that individual feeder conveyors are provided at each ticketing position. The first and foremost reason for these conveyors is the superior ergonomics afforded customer service agents in that the need to manually lift a customer's baggage is all but eliminated. However, these conveyors also offer a significant advantage to the baggage system as it has allowed us to apply the ability to track baggage from the ticket counter directly to the outbound sortation point without the need to provide any intermediate laser scanner arrays.

The interface between the baggage system and the ticket counter agent is transparent; it is accomplished via the smart Delta workstation where, as the IATA ten-digit bag tag is printed, the message is also sent to the baggage system sortation controller. The oversize luggage system is also quite unique in that this system employs five-foot wide conveyors to convey almost anything from both sides of the lobby to the basement collection area. Finally, the integration of the baggage tag printing system with the automated baggage system quickly led the Delta/BNP design team to the realization that it would be beneficial to ensure all bags have a code prior to entering the system thereby eliminating the need for any downline laser scanning systems except as required for verification. Therefore, the remaining baggage function at the departures level of the facility, the curbside check-in system, provides the capability to identify the bag by means of a hand-held scanner and a manual encoding console. After induction into the baggage system at the departures level, bags are transported by conveyor to either the A or B Concourse. Given the distances between the facilities and the terminal it is necessary to transport the bags at the highest speed practical. In this regard, the BNP design employs high-speed conveyors which operate at speeds of 500 feet per minute or approximately 5 miles per hour. It is of note that the conveyors convey bags on both the upper and lower surfaces (i.e., originating on the top surface and terminating bags on the return conveyor). The use of the belt in both directions offers a space advantage and also reduces the conveyor system capital cost. The main focus of the system is the two tilt-tray sorters located at the remote concourse. These units measure approximately 3800 linear feet each and operate at a speed equal to 100 trays per minute. The tray sorters feed each of the gate bag rooms. Encoding is accomplished at the apron input point using scan guns.

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