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## **Noisy, Costly, Cranky Dinosaurs Eradicated From Orlando Terminal**

Orlando International Airport had a problem - fifteen of them, to be exact. Fifteen of their baggage carousels were ancient relics; dinosaurs, you might say, that had outlived their time. These ancient units averaged 25 years of age, well beyond their projected useful life.

The headaches that OIA experienced from asking relics to perform the work of modern equipment were much as you'd expect: frequent outages with lots of downtime. In fact, some of the units were so ancient that off-the-shelf parts were no longer available. So an outage would turn into an agonizing delay of days, waiting for new parts to be fabricated from scratch. And in the meantime, terminal operations were thrown into chaos as baggage claims from the downed unit were juggled among the remaining functioning units. Not much fun for airport management, airline personnel *or* passengers.

OIA management knew that the time had come to eradicate those dinosaurian baggage carousals and replace them with modern units. The task then fell to the Greater Orlando Aviation Authority (GOAA) to determine which manufacturer offered the best choice in modern baggage carousels.

### **Providential Timing...**

Around the time that OIA's dinosaur problems were really beginning to get out of hand, Siemens was kicking off a brand new project. Their goal was to raise the state-of-the-art in baggage carousels to a new level.

According to Siemens engineer Chris Maness, "we're always looking for opportunities to provide industry leading solutions." The Siemens team felt that they could develop a new baggage carousel that, using the latest in cutting-edge technology, could significantly outperform their competition. Maness said that the goal was for the new design "to be low cost, easy to maintain, easy to install, and very reliable. And we also wanted the design to offer significant energy savings compared to competing units."

Thus was born the Siemens 300C Flat Plate Carousel.

### **A New Standard in Baggage Carousels**

The Siemens team achieved all of their design goals with the 300C Flat Plate Carousel. Perhaps the most innovative feature of the 300C is its distributed drive system. As Chris Maness explained, "the traditional flat plate carousel uses a number of drive motors that are engaged at all times. Whether the carousel is running with a full load of baggage or with just one bag, it's running at maximum power."

But Siemens engineers recognized the waste inherent in such a design. They wanted to design a carousel would conserve energy, using only as much power as needed to handle the load on the carousel at any given time. They did this by replacing the old, always-on drive motors of traditional designs with a series of small, retractable drive motors.

"After starting, the carousel speed and motor loads are monitored by a system controller which determines the minimum number of drives needed to operate the carousel most efficiently," explained Maness. "Unneeded drives are disengaged and turned off, saving energy and wear. If the load increases, the system controller senses the need for more power, and the required number of drives are re-engaged." As a result, the 300C is projected to slash energy costs by roughly half in comparison with traditional carousels.

The system controller also tracks the run time of each drive motor. Whenever an additional motor must be engaged to handle an increased load on the carousel, the controller selects the motor with the least run time. That feature balances the wear among the drive motors, maximizing the useful service life of each and minimizing maintenance downtime.

### **The Heart of the System**

For Siemens' distributed drive concept to become a reality, Siemens engineers needed to find a way to smoothly and reliably engage and disengage each individual drive motor. They turned to a supplier they had used for past projects, Warner Linear.

"We received an inquiry from Siemens," said Warner Linear engineer Jim Licari. "Siemens engineers had developed a unique, energy-saving drive control system for airport baggage carousels. The system operates similar to a 12-cylinder engine where all cylinders are engaged on start-up, and then some cylinders disengage as torque demands diminish at higher speeds."

"We furnished an actuator that, when activated, pivots the carriage into position under the carousel center chain, allowing the friction wheels to engage and drive the chain. When the controller shuts down a motor, the actuator disengages the friction wheels of the motor away from the center chain, so that the de-energized motor doesn't become a source of drag."

The Warner Linear actuator-driven retractable drives are the heart of the system that makes the Siemens 300C Flat Plate Carousel such an innovative new concept in airport baggage carousels.

### **Back To Orlando...**

The Siemens team finished development of their new carousel in time to submit a technical proposal to the GOAA. The GOAA selection committee evaluated each

contractor's proposal, considering many factors including price and technical specifications.

And any energy savings offered by proposed replacement carousels would help the GOAA achieve its goals of reducing energy consumption. "As electricity costs have risen, lower energy consumption has become very important," said Michael Patterson, Director of Construction at Orlando International. Siemens was awarded the contract, and replaced the fifteen old 'dinosaur' carousels with thirteen 300C Flat Plate Carousel units.

The energy consumption of baggage carousels at OIA isn't metered separately from other terminal operations, but after several months of operation, Patterson stated that "based on what we have seen so far, we have no reason to dispute Siemens calculations" for energy savings.

Another benefit of the Siemens carousels is the reduced noise levels compared to the old units. "The new units are significantly quieter than the units they replaced," said Patterson. One OAI representative dubbed the Siemens carousels "whisper units." And of course, gone are the days of downtime that plagued the old units, along with the resultant heaping helpings of stress for all involved.

### **Dinosaur Carousels Still Lurk Worldwide**

With the help of Siemens and Warner Linear, Orlando International eradicated its dinosaurs. Many airports worldwide, though, are still plagued by lumbering, unreliable, ancient baggage carousels.

But the quiet, efficient, reliable Siemens 300C is ready and able to rescue any airport from dinosaur domination. According to Siemens' Chris Maness, "the 300C is a standard product, and is available for installation in any airport."