World’s Largest Package Delivery Company Identifies Millions in Savings with Arena Logistics Simulation

**Challenge**
Schedule resources based on aircraft arrivals, aircraft departures, and package volumes, while reducing overall turnaround time.

**Solutions**
Rockwell Software Arena® Simulation Software

**Information**
Using Arena simulation software the Total Air Park Simulation (TAPS) model was created.

The model simulates the:
- Unloading of aircraft
- Transportation of packages
- Sorting of packages
- Loading of packages on outbound aircraft.

The model also simulates aircraft maintenance and fueling and can be used to determine staffing levels and equipment needs.

**Results**
- Elimination of large material handling purchases
- Enhanced service quality
- Reduced production costs
- Cost savings in millions of dollars through improved scheduling and efficient equipment allocation

**Background**
This company operates as the world’s largest packaged goods service company and is a leading global provider of logistics and transportation services.

**Challenge**
Making sure that several thousand packages find their way to the correct outbound aircraft is a complication compounded by the narrow window of time constraints required at this service provider’s Louisville, KY hub. Hundreds of thousands of packages must be processed and pass through this site every day, which is their largest air hub in the United States. A miscalculated volume of packages, or a delayed flight, can quickly become a logistical ordeal.

Arena Simulation Software from Rockwell Automation helps protect a business by analyzing the impact of “what-if” scenarios offline, without causing disruptions in service.
Solution

Each night, more than eighty aircraft arrive at the site to drop off packages, undergo any required servicing, and depart to deliver the next day’s packages. In order to achieve and maintain customer satisfaction levels this company demands, aircraft turnaround must be performed quickly and efficiently to meet departure schedules that are critical for a successful operation. The company needed a tool that would allow planners to schedule resources based on aircraft arrivals, aircraft departures, and variable package volumes. They looked to the Rockwell Automation Arena consulting team and the Rockwell Software Arena Simulation Software to reduce aircraft turnaround time.

The world’s largest packaged goods service company saved millions with Arena by modeling their complex logistics and transportation services

Arena Simulation Software

Working closely with this company’s staffers, Rockwell Automation used Arena to create a detailed model of the Louisville hub. The modeling project, entitled Total Air Park Simulation (TAPS), simulates the unloading of aircraft, transporting packages into the hub, sorting them, and loading the packages onto outbound aircraft. The model also simulates aircraft maintenance and fueling and can be used to determine required staffing levels and equipment needs.

The TAPS model is fully animated so that quintessential personnel can observe the movement of aircraft, crews, and equipment from an aerial view of the Louisville hub. Customized output reports from the Arena simulation model include aircraft departure information, crew utilization, and equipment requirements. These reports allow planners to correctly schedule and staff the crews for expected activities each evening. The model was designed with an emphasis on flexibility so that it can meet the company’s needs today and into the future as well.

Results

The Arena simulation model provided recommendations which allowed the company insight into whether or not the need to make large capital material handling purchases for the expensive aircraft loading and unloading equipment would be required. By correctly scheduling work crews and determining preferred equipment allocations the potential savings to the company can be measured in millions of dollars. In addition, the testing of new process strategies has allowed improvements to be implemented, while enhancing service quality and reducing production costs.

One of the many advantages of using TAPS is that the company can experiment with operational changes before implementing them. A virtually unlimited number of scenarios can be examined by changing model inputs such as flight schedules, labor allocation, and equipment levels. Company staff can now simulate a six-hour span of time (one night’s operation) in just a few minutes, which allows the model to be used for last-minute changes to help prevent flight delays.

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