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COMPUTER-AIDED DESIGN SHOWS THE WAY FORWARD

Computer-aided design products have proved to be invaluable tools in the design and planning of airfield taxiways and runways, while the latest applications are assisting designers in the area of apron and bridge planning.

The art of airfield planning and design has evolved tremendously in the last 20 years. The principles and practices for planning have changed little, but the techniques and tools used all those years ago are barely recognizable to airport designers today.

Back in the late 1980s and early 1990s, taxiway and runway intersection designs were typically prepared using complicated mathematical formulae. Aircraft templates were created from clear transparencies. These templates were used on hardcopy engineering drawings to determine the tracking characteristics of a particular aircraft.

DESIGN REVOLUTION

The evolution of versatile applications in computer design in the 1980s led to the widespread use of computer-aided design (CAD), and the template process was effectively replicated in CAD. However, despite the positive advancements that computer based techniques brought about in airport design at this time, these techniques were still time consuming, and they did not necessarily lead to the best designs.

The introduction of software programs such as AutoTURN in the mid 1990s

revolutionized the design process. These CAD-based programs made it quite simple for a designer to very quickly simulate aircraft turning paths. Alternatively, a designer could quickly determine whether a particular intersection was adequate to serve a specific aircraft. More recent products, such as AutoTURN Aircraft, have exploited the latest cutting-edge technology for performing aircraft swept path analysis and simulating forward and reverse maneuvers.

With preparations now being made at many airports for the arrival of the first new Airbus A380s, and plans being considered to introduce newer, longer aircraft - such as Boeing's B777-300 and Airbus' A340-600 - airports and airport designers are turning to these tools to provide a reliable and cost effective method for evaluating existing facilities and assisting in the design of new facilities.

LATEST SOLUTION

With the upcoming introduction of AeroTURN Pro, a new product from Transoft Solutions, the art of airfield planning and design has been advanced quite significantly, this time in the area of apron and bridge planning and design. Previously when a designer needed to design passenger boarding bridge facilities, they used a CAD program for the basic layout and dimensioning and created a spreadsheet file to configure their calculations and record their notes. They also had to have hardcopies of bridge manufacturers' model specifications close at hand to consult. Next they needed to go through the tedious process of placing each aircraft

type in a test position, measuring lengths and distances to check slope calculations within their spreadsheet and comparing them with the manufacturers' tables.

With AeroTURN Pro, this design process is significantly simplified. With a few simple commands, a designer can specify the basic design parameters, select a bridge type from a comprehensive bridge manufacturers' library and choose an aircraft model to immediately determine the layout needed to achieve the required passenger boarding bridge slope, the placement of rotunda and the location of the parked aircraft - or alternatively, where the bridge needs to be connected to the terminal to achieve the required slope. The airport planner can investigate many bridge/aircraft model combinations for each gate within minutes. A report is automatically produced to record all of the applicable aircraft stand properties.

FLEXIBLE AND FAST

At Vancouver International Airport, a beta version of AeroTURN Pro was tested and found to be very user friendly and easy to learn. The flexibility that the software provides allows designers to check an existing design very quickly compared with conventional techniques.

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Visit www.papi.ca for more information.