Airport Capacity to Double

Innovative technologies are being introduced that may effectively double airport capacity almost overnight with only minor infrastructure adjustments.

The B747 started the trend and the A380 took it further. A second deck has doubled the capacity of the aircraft without increasing the aircraft length or width. Double-decker buses have been with us for many decades, and double-deck carriages are used on some denser rail networks.

Proof of concept tests are already underway to demonstrate the significant benefits of “piggybacking” aircraft for landings at some of the world’s most congested airports. The concept of the “piggyback” in aerospace is not new. The space shuttle has been carried on the back of a 747 for testing and transport. The modifications required included retractable docking frames on the fuselage and undercarriage of planes. Some strengthening of landing gear is also required to accommodate the increased landing weight of two planes rather than one. This is somewhat offset by the lower fuel load for landing compared to take-off. Software has been developed for integration into the Flight Management Systems (FMS) to coordinate the alignment of aircraft during the mating process, usually 10 minutes prior to arrival at the airport. Air Traffic Management (ATM) systems are also being upgraded to coordinate the stacking and sorting of aircraft as they approach terminal airspace to provide the best match for a “piggyback” or “coupled” landing.

Once on the ground, taxiway congestion is also halved while the two aircraft are coupled. Concepts for “decoupling” are proving more difficult to implement, as the overhead crane systems to lift the upper aircraft from the lower aircraft will infringe obstacle surfaces if located close to the terminal aprons. The interim solution is simply to build another level on the terminal building with additional aerobridge links to the upper aircraft. This solution provides major benefits in effectively doubling the aircraft parking capacity of existing aprons.

Airport investors are excited about increasing capacity of the airport system, with minor capital expenditure outlays, short lead times, and potential additional airport revenues from increased land development on existing airport land. Passengers will benefit from shorter walking distances as twice as many planes are crammed on existing aprons. Solutions to kerbside and surface access congestion as the airfield and terminal capacity is doubled are still to be resolved.

Airbiz is hosting a workshop involving key industry stakeholders to explore terminal facilitation issues associated with the concept on 1st April 2007.

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