

Southwest Set To Start Fuel-Saving FMS Tuning

AIRLINES

Southwest Airlines pilots landing at select airports will soon be saving fuel by using wind information uplinked from an operations center in Orlando as part of a monthly subscription service between the carrier and Sweden's Avtech.

By digitally injecting better wind information into an aircraft's flight management system (FMS), Avtech's Aventus NowCast tool can save on the order of 20 lb. of fuel per approach on a narrowbody aircraft like the 737 to 150 lb. for a widebody aircraft in certain wind conditions, says Ryan Ellison, vice-president and director of global consultancy for Stockholm-based Avtech, a 10-employee firm specializing in air traffic management products and services. While the single-aircraft savings may sound small, the multiplier for a fleet like Southwest, which completes 94,000 trips per month, justifies the investment, Ellison points out.

Avtech is teamed with meteorological data provider Panasonic on the Southwest contract. Panasonic's weather information is acquired in part through the company's tropospheric airborne meteorological data reporting (Tamdar) system of onboard weather sensors flying on hundreds of commercial aircraft.

An aircraft's FMS traditionally allows for programming of 3-5 wind profiles to use in internal performance computations at various altitudes along a descent from cruise altitude. The winds that pilots enter by hand vary based on individual airlines, but are generally relatively stale and not optimal in terms of wind velocity and direction at the selected altitudes.

Gradual Rollout

Ellison says an airline might have its pilots enter forecasted winds at 30,000 ft., 20,000 ft., and 10,000 ft., even if actual wind changes occur at different altitudes. The FMS uses the data to compute performance parameters for a descent, including the top of descent (TOD) location where the aircraft throttles back and begins descending. The more accurate the winds, the more precise the FMS can control engines and flight parameters to save fuel or stay on schedule.

With Nowcast Descent, the onboard communications management unit sends the aircraft's trajectory information from the FMS to an Avtech server collocated with Panasonic Weather Solutions' ground station in Orlando via the Aircraft Communications Addressing and Reporting System (ACARS) at a fixed time before the descent starts. In the ground station, Aventus algorithms simulate the planned trajectory with the latest "weather grid" for the landing airport and create an optimal trajectory for that particular FMS. The optimal wind data is sent back to the aircraft via ACARS, and the pilots can accept the input, which then goes directly into the FMS to update the descent schedule.

Avtech charges a flat monthly fee for the service based on fleet size, the number of operations per day and the expected benefits, says Ellison. The airline pays the ACARS charges, which Ellison says are minimal given that the largest data block to be transmitted is less than 1 Kb.

Southwest's goal is to roll out the system gradually, eventually making it fleet-wide and available at all 96 of its destinations. The system does not require any new on board hardware or software, Ellison notes.

Existing customers for the Nowcast Descent product include Air New Zealand and Air Malta, although Ellison says the company has other customers whose names have not yet been released. Avtech is also marketing a "full flight" package that offers FMS trajectory tuning throughout a flight.

"We're in discussions with airlines about that," he says.

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