

Making Ground

Automated airport surface movements may reduce congestion and enhance safety

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A European research project intended to streamline aircraft ground movements and increase the safety of airport operations seems promising, judging from results achieved by a recent Italian trial.

The project aims to develop Advanced Surface Movement Guidance and Control System (A-SMGCS) tools and procedures that can improve safety, particularly in reduced visibility conditions, and simplify pilot and air traffic controller workload. While much money has been invested

in improving air traffic management en route and on approach, airports themselves are widely considered a prime traffic bottleneck (*AW&ST* Jan. 5, p. 42).

Started in 2004 and set to be completed this year, the €38-million (\$49-million) project—EMMA (European airport Movement Management by A-SMGCS)—is a two-phase undertaking co-funded by the European Commission's 6th Framework research program and backed by 24 participants. EMMA1 is aimed at developing surveillance and conflict alert functions/systems to help pilots and ground

controllers alike; EMMA2 will introduce onboard guidance for pilots, and planning support for air controllers.

Once validated, these tools and procedures are to be adopted as a new European standard and implemented gradually across the continent.

The Italian trial, run by ATV service provider ENAV and Selex Sistemi Integrati at Milan Malpensa Airport on Feb. 26, is one of three planned under EMMA2 (the others are in Prague and Toulouse). The test was preceded by simulations carried out in Rome by ENAV, in Naples by Italian consortium Sicta, and validated by Dutch national laboratory NLR in Amsterdam.

A primary objective of EMMA2 is to automate and integrate ground movement functions, which at many airports are still performed manually with ground controllers tasked to monitor the traffic on taxiways, runways and other airport choke points. A-SMGCS, which works by radar multilateration, is the main tool. For the Malpensa demonstration, Selex provided an integrated platform including electronic flight strips that replace paper ground flight plans with an electronic database.

A route-planning tool allows the ground traffic controller to automatically select and assign the best possible route for aircraft on the ground, and provides a divergence check in case the pilot deviates from the assigned route. Other tools include Automatic Dependent Surveillance-Broadcast (ADS-B), which allows aircraft to be tracked on the ground via its own transmissions instead of radar; Traffic Information System Broadcast, which transmits surveillance data from the tower to the cockpit; and Controller Pilot Data Link Communications (CPDLC), which replaces voice radio transmissions between the pilots and the tower with a data link.

ENAV and Selex say the Malpensa test proves that automated procedures not only increase safety but lead to a sharp reduction in taxi time, minimizing ground delays and decreasing fuel consumption and environmental pollution. ✉

With Michael A. Taverna in Paris.

EU-funded Italian trials run in February demonstrated that automated systems can reduce taxi time and ground delays, decrease fuel consumption and improve safety.