

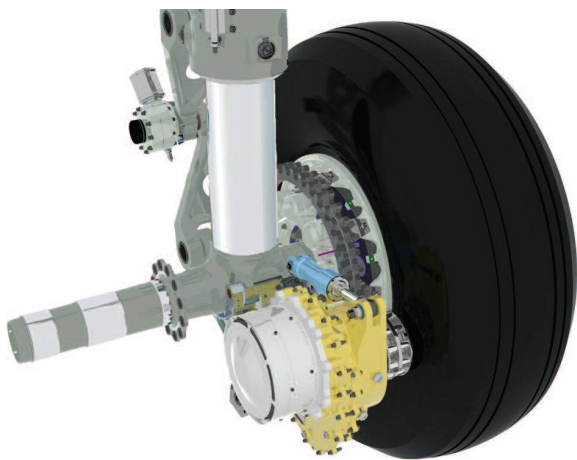
ELECTRIC TAXIING BY SAFRAN

The Electric Taxiing by Safran can strongly improve airlines' operational efficiency by reducing fuel consumption, push back and taxi-related costs, as well as providing environmental benefits by slashing the carbon emissions created during ground operations.

ELECTRIC TAXIING OPERATION

Two of the main landing gears wheels are equipped with an electric motor. A single power electronics and systems controller give pilots total control of the aircraft's speed and direction during taxi operations.

The Auxiliary Power Unit (APU) generator, chosen for maximized performance and agility, supplies the necessary power to the motors housed in the main wheels. This system allows the aircraft to **pushback and taxi fully autonomously** without requiring the use of aircraft engines.



Operating cost reduction and environmental initiatives are at the top of airlines' concerns. The Electric Taxiing by Safran provides a viable solution to achieve a better operational efficiency associated to a lower carbon footprint.

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RESPONSE TO THE AIRLINES' NEEDS

Operating cost reduction and environmental initiatives are at the top of airlines' concerns. The Electric Taxiing by Safran provides a viable solution to achieve a better operational efficiency associated to a lower carbon footprint.

Today's turbofan engines are optimized for flying, not for powering aircraft on the ground. By choosing this innovative, strategic and revolutionary system, airlines can save several hundred thousand dollars per aircraft per year and improve their bottom line while reducing the environmental impact of airport ground operations.

> LOWER FUEL BURN

With a constant worldwide increase of the airplanes' traffic, the global short haul fleet can burn as much as five million tons of fuel per year. Electric Taxiing by Safran can result in saving up to 4% of total block fuel budget, may lead for airlines' average of \$250.000 savings per aircraft and per year.

> IMPROVED "ON TIME" PERFORMANCE

An aircraft equipped with the Electric Taxiing by Safran will be able to "pushback and go" more quickly, thus reducing both gate and apron congestion, improving on-time departure performance and saving valuable time on the ground.

> REDUCTIONS IN EMISSIONS

Electric Taxiing by Safran can reduce up to 73% in carbon emissions and up to 51% in NOx emissions during airport taxiing operations.

> ADDED VALUE

Electric Taxiing by Safran eliminates the need for aircraft pushback and towing via ground equipment, extending main engine life and decreasing the maintenance by limiting Foreign Object Debris (FOD) damage caused by material being ingested into the engines while taxiing, enhancing ground crew health and safety, and reducing noise in the airport environment.

SAFRAN LANDING SYSTEMS

- > World leader in aircraft landing and braking systems and associated equipment.
- > Capabilities to cover the complete life cycle of our products, from design to development, manufacture and in-service support.
- > 10 years of background in development of electric taxiing technology.
- > Expertise of the Safran Group for a fully integrated system.



ELECTRIC TAXIING BY SAFRAN BENEFITS

- > Lower block fuel needs.
- > Slashes on-ground emissions.
- > Eliminates the need of tractor/tugs for ground operations.
- > Improves On Time performance with "pushback and go", reducing pushback time by 60%.
- > Decreases engine maintenance by limiting Foreign Object Debris (FOD) damage.
- > Reduce noise at the gate area.
- > Increases safety for ground personnel.



Electric Taxiing by Safran will be available as both a retrofit and forward fit option, delivering significant environmental benefits and greatly improving aircraft operating efficiency.