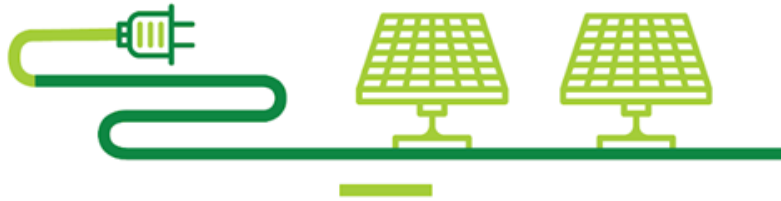
AVIATION CO_2 REDUCTIONS



STOCKTAKING SEMINAR

TECHNOLOGY · OPERATIONS · SUSTAINABLE AVIATION FUELS

Air Operations

ICAO STOCKTAKING 2020

Jean Brice Dumont,

Executive Vice President Engineering – Airbus SAS

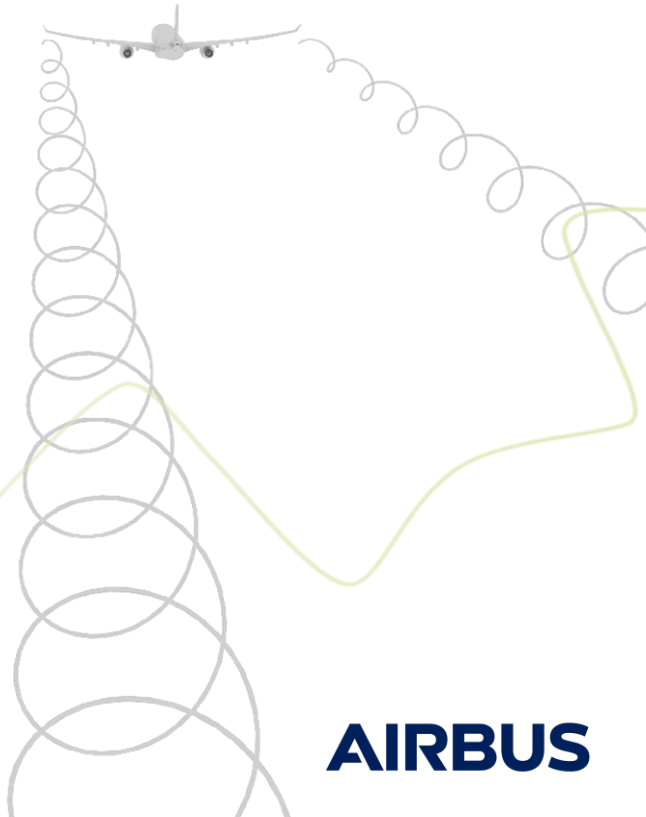
fello'fly

Taking our lessons from nature

- Migrating birds fly together to retrieve energy from the wakes of the birds in front
- Our fello'fly demonstrator project aims to apply this insight to civil aircraft

Aircraft can perform Wake Energy Retrieval

- Two vortices are present in every aircraft's wake
- Smooth air surrounding each vortex contains updrafts
- Aircraft following uses updraft for 'free' lift, and reduces engine thrust



AIRBUS

What's our plan?

fello'fly aims to prove the technical, operational and commercial viability of wake energy retrieval for airline operations.

fello'fly

Technical
Pilot assistance for safely finding and following the wake

2020
Technical feasibility flight tests

Operational
Concepts for planning and executing fello'fly missions

2021
Operational feasibility flight trials with airlines & ATC

SAS Frenchbee EUROCONTROL dgac DSNA NATS

Commercial
Ensuring value-chain has benefits for stakeholders

By 2025
Controlled Entry-Into-Service for oceanic operations

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AIRBUS

fello'fly

Reduce emissions. Save fuel. Make friends.

Wake Energy Retrieval demonstrator

Inspired by the behaviour of migrating birds

Using air upwash to lift a follower aircraft

5 to **10%** trip fuel savings on long-haul flights

Helps towards reaching industry emissions targets

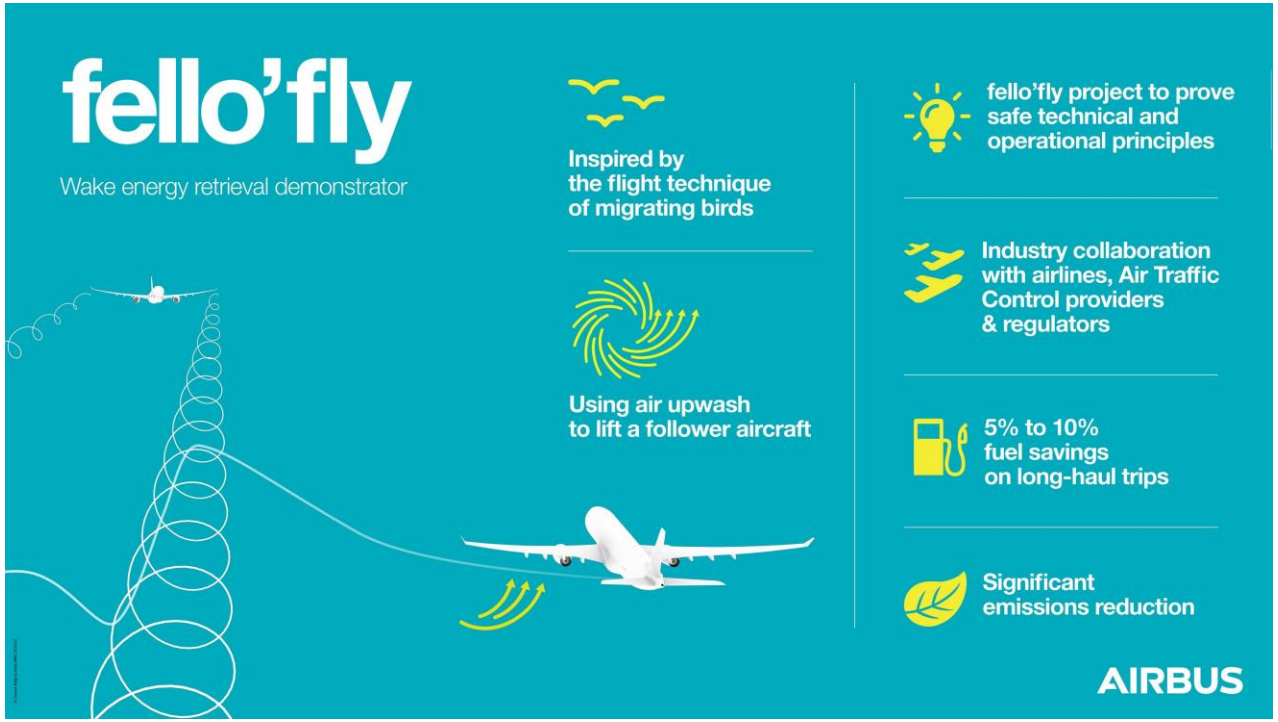
Collaboration with airlines, ATC and regulators (new operational standards)

AIRBUS

Fello'fly

Operations

Main characteristics: wake energy retrieval for commercial aircraft, applicable industry-wide



CO_2 reductions per flight	5-10%
Level of finance required	Aircraft technology, ATC procedures, rulemaking & standardization
Timeframe	By 2025
Main challenges	New operational standards

Thank You

ICAO