

STEPLESS



High-Lift Configurations for Optimised Aircraft Energy Management in the Terminal Manoeuvring Area

CONTEXT



Environmental sustainability is a key solution to tackle aviation's challenges. It can be achieved with greater fuel efficiency of aircraft and measures to reduce noise exposure in the vicinity of airports.



Aviation's sustainability goals can be met only if technical developments are coupled with operational means.

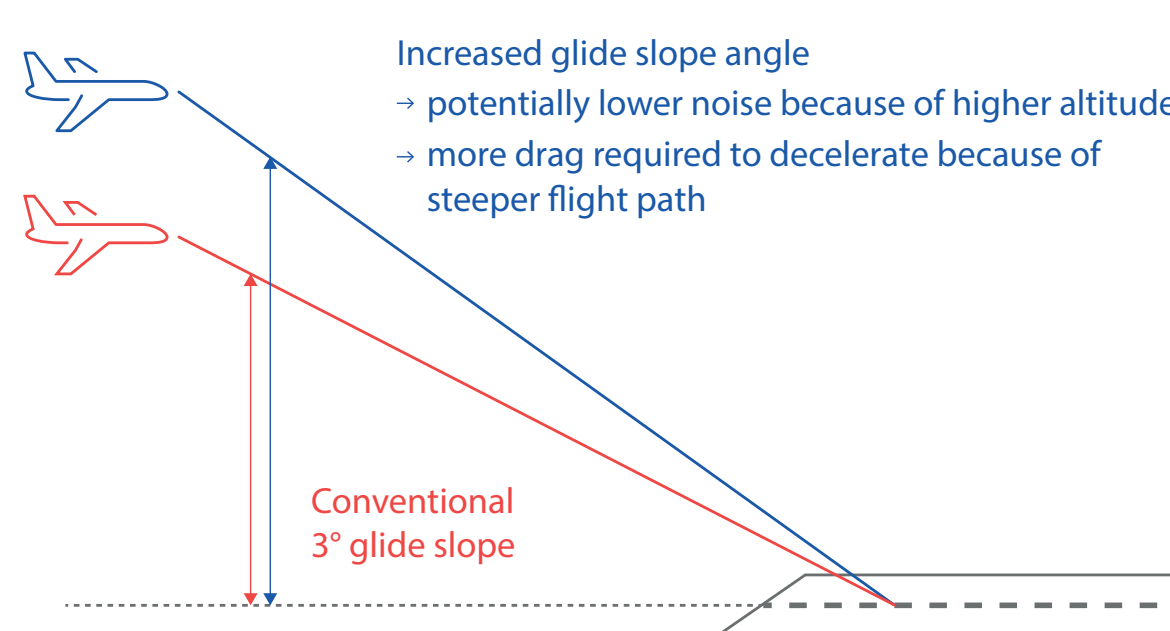
Increased glide slope angles (IGS) operations are one operational means to improve the energy management and noise impact of approaching aircraft under the conventional 3 degree glide slope angle.



However, steeper approach angles may also reduce aircraft's capability to decelerate to final approach speed forcing pilots to configure the aircraft for landing earlier, which has deteriorating effects on noise and fuel consumption.

OBJECTIVES

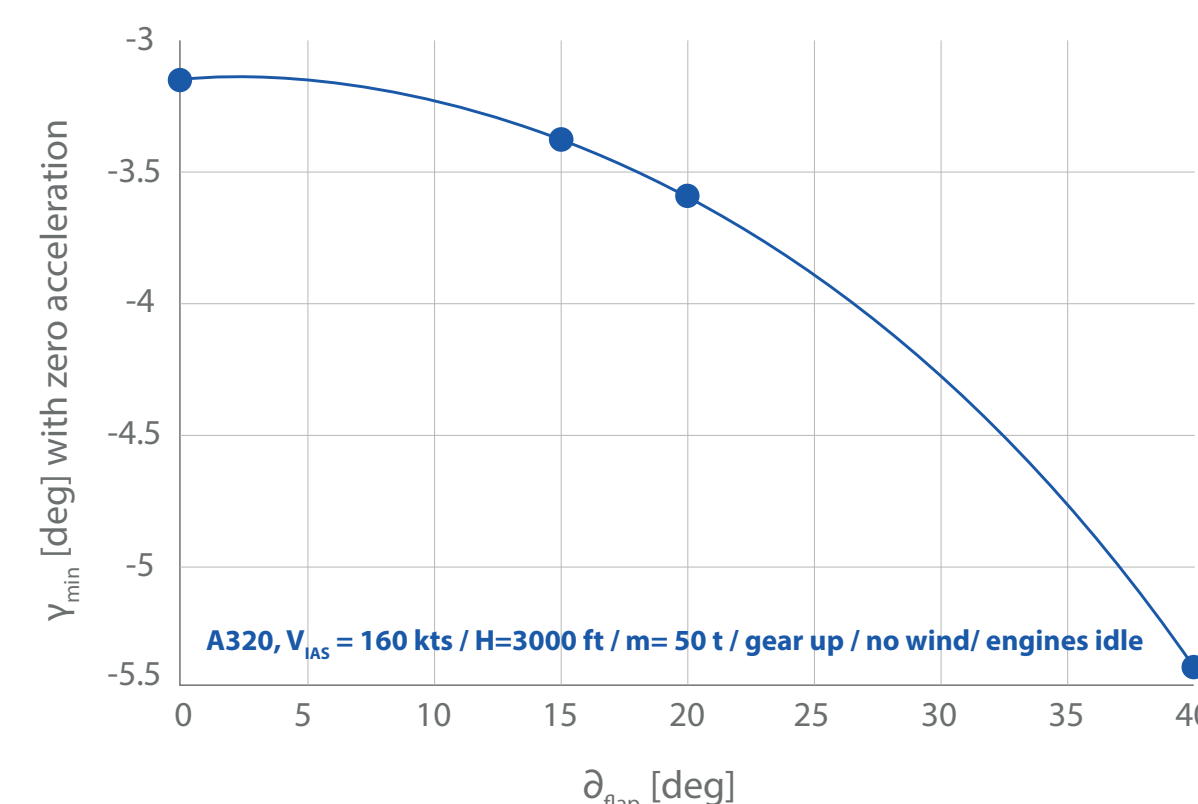
The STEPLESS project aims to transform aircraft approach procedures by introducing a **novel high-lift system designed for optimised energy management**. This innovative approach focuses on enabling (automatic) stepless adjustments to aircraft high-lift configurations during approach, allowing for dynamic adaptation to glide slope angles and flight conditions.



Variation of the glide slope angle and related effects

IMPACT

STEPLESS will require Flight Management System (FMS) enhancements to drive optimal flaps settings during approach operations. It is expected to reduce aircraft fuel consumption and noise exposure on ground. STEPLESS will also improve air traffic management (ATM) efficiency by enhancing aircraft compliance with air traffic control (ATC) speed constraints, ultimately increasing airspace capacity.



Minimum glide slope angle of A320 under exemplary conditions as a function of the flap deflection angle (fixed step high-lift configurations indicated by blue dots)



Starting date
01/09/2024



EU requested contribution
1 999 605€



Project type
Exploratory research



Duration
30 months



Grant ID
101166837



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