IFALPA
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Position

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All Engine-Out Taxi (AEOT)

Several concepts are being developed to enable aircraft ground movement without any aircraft engine running. Such concepts can be electrically-driven devices that connect and disconnect from the aircraft (such as tugs) or a motor permanently fitted to the nose or main landing gear.

Whilst IFALPA supports technical developments that can help reducing noise, emissions and fuel, it is essential to guarantee a high level of safety during taxiing, which is a critical phase of flight. The Federation believes that safe and sustainable All Engine-Out Taxi (AEOT) can only be achieved provided the following general, design and operational requirements are met.

GENERAL CONSIDERATIONS

- Pilot responsibility for obstacle clearance should be clearly defined
- Flight crew and ground staff should be fully trained in AEOT operations
- Apron management service should be available to regulate all apron traffic
- The effects of AEOT on ATC operations and airport capacity should be taken into account. Examples include deceleration and acceleration during AEOT, engine start time and AEOT device disconnection (where relevant)

DESIGN CONSIDERATIONS

- Control of the aircraft during AEOT should be easy to perform and intuitive
- Pilots should be able to maintain full authority over the aircraft at all times
- AEOT should not decrease aircraft performance compared to taxi with one or more engine(s) running, regardless of the condition of the taxiway (slippery, contaminated, etc)
- Means for outside monitoring should be available in case detachable devices are used for AEOT. Both pilots should be able to continuously monitor if all relevant areas around the aircraft are clear. This monitoring capability should be available in the pilot's field of view and not significantly influence workload, to prevent taking away focus from normal duties to be performed during aircraft movement
- The AEOT interface should be easy to use and intuitive, requiring minimal head down time
- Aircraft behaviour during brake application should not be different from taxi operations with one or more engine(s) running during forward movement. Brake application during backward movement should not introduce an extra safety risk
- Emergency braking capability and manual disconnection of the AEOT power source should be available at all times
- Devices used during AEOT should not introduce extra risks during normal and abnormal operation and evacuation
- Control of the aircraft during AEOT should ideally be available from both pilot stations

OPERATIONAL CONSIDERATIONS

- AEOT operation should be coordinated with ATC
- During backward movement ground staff should be available and in communication with the flight crew to ensure obstacle clearance
- All aspects of AEOT operations should be covered by SOPs, including engine start procedures when the aircraft is moving
- Any AEOT limitation should be clearly stated. These may include low visibility operations, restrictions on slippery and contaminated taxiways, de-icing procedures, effects of taxiway slope/width/layout, turn radius, maximum weight, temperature and altitude range, etc.
- AEOT should not increase pilot workload as compared to operations with one or more engine(s) running
- The transition time from AEOT to all engines running should be minimal
- AEOT should be covered by abnormal procedures when influenced by technical system failures, such as APU shutdown. Evacuation procedures without engines running should be addressed
- AEOT should always be conducted in a high level of safety, even under low visibility operations