Main thematic area: Economics/*Science/Technology*
Cost: £/ff/fff

Balancing noise costs against reduced carbon emissions in advanced open rotor engines

Background

The next generation of Advanced Open Rotor (AOR) aircraft engines are theoretically capable of achieving significant economies in carbon emissions of around 25% to 30% compared to eqivalent turbofan engines in short and medium haul aircraft.

However community noise has been identified as a major obstacle to the introduction of this type of power plant. Engine manufacturers appear confident that the noise problem can be solved, and this is being addressed in an earlier Omega study which is focused on developing a whole aircraft noise model including open rotor propulsion.

There is a clear requirement for manufacturers, as well as policy makers, airport authorities and airports to be able to predict the likely trade-offs between community noise costs and reduced carbon emissions that might ensue from alternative detailed AOR engine designs, taking into account both existing design information and likely community response.

Study aims

This study takes the form of a scoping study and preliminary work aimed at developing a simple trade-off tool for balancing noise costs against emissions benefits for generic AOR designs. The tool is important for understanding noise and carbon tradeoffs in AORs.

Methodology

The first part of this study will involve collecting views and input from stakeholders and potential users. This will define the objectives for the tool by identifying the metrics that will be used. The second part will focus on adapting the specialist methods (noise, emissions, economics) and the strategy for combining them into a single platform.

Benefits

The study will provide policy makers and airport authorities with an independent tool for assessing community noise and emissions trade-off options. It will facilitate the design of AOR engines to accommodate their carbon versus noise impact. It will assist efforts to design optimum configuration of AOR for a range of scenarios. It will also build capacity within Omega to identify tradeoffs.

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Duration: 10 months

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