

Protégé Topic: Fan Design with Boundary Layer Ingestion (BLI)

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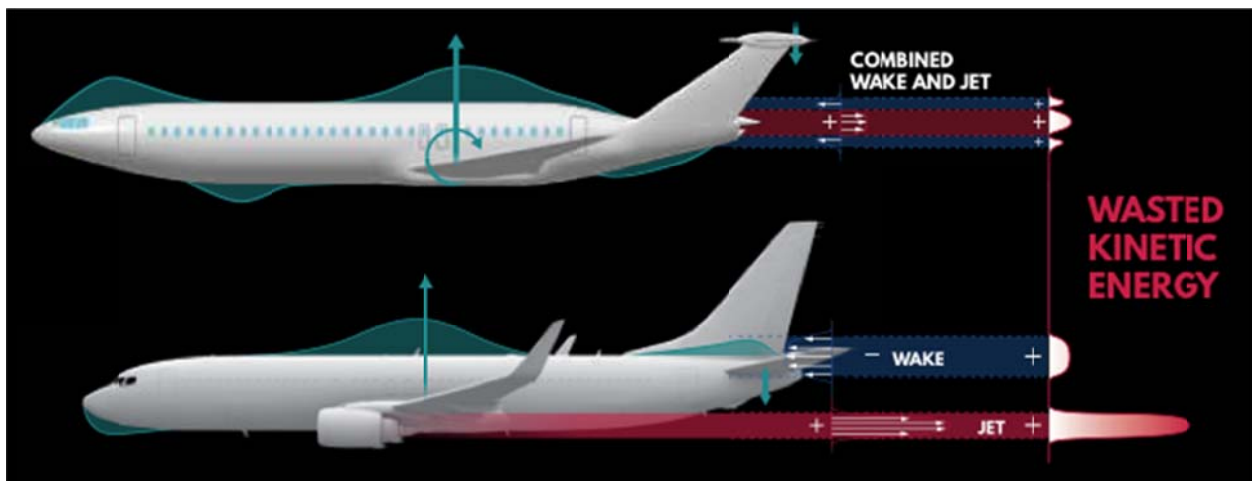
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Advanced aircraft concepts such as the Aurora D8 shown above plan to take advantage of ingesting the fuselage (or wing boundary layers in other concept aircraft) into the engines. This has the potential of improving efficiency by up to 15% due to combining a wake and jet as shown in the upper airplane in the figure below. A conventional airplane

below has a separate jet and wake which leads to a large amount of wasted kinetic energy. The drawback will be to interactions of the boundary layer with the fan, and the fan of the engine must be specifically designed for this environment. A group of students and Prof. Turner will explore fan designs that are tolerant of the large distortion produced by the ingested boundary layer.



Figures from Aurora Flight Sciences website and downloaded D8 brochure
<http://www.aurora.aero/d8/>