

Integration and Coordination of the National Jet Fuels Combustion Program

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Cost Share Partner: DLR Germany, University of Dayton, NRC Canada

Research Approach:

Evaluate the **operability impacts of alternative aviation fuels** across NJFCP institutions and allied partners

Test fuels were designed to stress several **key property effects in engines**

Diverse rigs evaluate test fuels at **varying conditions** and compare results to **OEM experience**

Model chemical kinetics and operability limits of fuels

Objective:

Streamline the evaluation and qualification process of novel Sustainable Aviation Fuel candidates

Project Benefits:

Development of **focused tests** to minimize operability impacts of SAFs *with prescreening*
Proposed testing to reduce and eventual elimination Tier 3 and 4 operability tests *with the Referee Rig*

Major Accomplishments (to date):

Evaluation of ~12 fuels across dozens of experimental devices
Analysis suggests bounding of **~8 properties** can account for **~90% of all observed variance**
Referee Rig operability limits at relevant conditions match all known OEM hardware trends
CFD matches operability trends
Process for custom chemical kinetics developed
Publish a **Frontiers in Energy Research Paper**
AIAA BOOK PUBLISHED <https://doi.org/10.2514/4.106040>

Future Work / Schedule:

Work with OEMs on next steps for SAF research prioritization