

## Project 33



# Alternative Jet Fuel Test Database Library

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Cost Share Partner: Ansys, Inc.

## Objective:

*Establish a comprehensive database of current and emerging alternative jet fuels* to support research for design and certification of new jet fuels.

- Connecting database with European SAF research programs and domestic airports to reflect most recent changes in industry and elucidate regional variation in new fuel development and deployment.

## Project Benefits:

- Centralized SAF database support future SAF R&D
- Diverse test data provide better understanding of SAF usage and variability in global context and support R&D advancements

## Research Approach:

- Assemble centralized database
- Apply Machine-Learning based strategies
- Connect database to international work: ALIGHT, NewJET
- Fuel test data integration through US airports
- Broaden available test data categories
  
- Incorporate diverse and inclusive sampling of global sustainable aviation fuel (SAF) test data to help:
  - Monitor regionally resolved jet fuel development and deployment trends
  - Support SAF certification
- Integrate data from European programs
- Retrieve domestic airport data to reflect recent developments
- Support detailed analysis of SAF safety with comprehensive data

## Major Accomplishments (to date):

### Accomplishments in Current Year

- Improved online interface, data retrieval and analysis functionalities
- Connected with airlines at US airports, began data retrieval planning
- Established contact with international programs for data sharing
- Advanced machine learning: Data imputation, model robustness, optimization techniques, physics-informed predictive modeling
- Refined machine learning based SAF chemical kinetics mechanisms

### Future Work / Schedule:

- Continue data collection from pre-established fuel data sources
- Improve online database analysis tools and user interface
- Detail data types and retrieval mechanisms from US airports
- Start data sharing with A-Light and NewJET programs
- Expand machine learning applications: computational isomer distribution predictions, detailed uncertainty quantification, chemical kinetics modeling innovations