

ASCENT Project 73



Fuel Composition Impact on Combustor Durability

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Cost Share Partner: Fuel producers, engine/airframe OEMs

Research Approach:

Develop radiative heat transfer measurement system for referee combustor

Initial experiments to evaluate operating points and sensitivity of instrumentation

Determine radiative transfer for test fuels with varying composition

Unfortunately, laboratory access time has been limited due to COVID restrictions

Objective:

Understand and characterize the **impact of fuel composition on gas turbine combustor liner radiative loads and lifetime**

Project Benefits:

Determine impact of alternative fuels on combustor liner lifetime

Quantify/qualify **potential benefits for combustor liner radiative load and lifetime from alternative jet fuel use**

Minimize (hopefully eliminate) engine liner durability issues with use of alternative fuels

Major Accomplishments (to date):

Purchase of IR windows and radiometer for referee combustor

Built hardware for installation of surface thermocouples and IR camera/radiometer

Developed plans for experimental evaluations of instrumentation on referee rig with AFRL cooperation

Future Work / Schedule:

Proceed with research approach toward beginning testing spring 2022