

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

Experiments to be conducted over a range of combustor conditions

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):

Design and built hardware for installation of surface thermocouples and IR windows & radiometer

Conducted initial sensitivity studies which show agreement in trends between surface thermocouples, IR camera and radiometer

Refined the design for IR windows and conducted initial experiments using new window design

Future Work / Schedule:

Proceed with detailed experiments with multiple fuels in spring of 2023