ASCENT Project 80

Hydrogen and Power to Liquid (PtL) Concepts for SAF Production (WSU –PNNL portion)

Washington State University

PIs: Manuel Garcia-Perez, Michael Wolcott

Co-PIs: Su Ha, Xiao Zhang

Collaborators: Jonathan Male, Kristin Brant

PM: Nate Brown

Research Approach (WSU):

1. **CRITICAL ASSESSMENT: Strengths and weaknesses of hydrogen production and Power to Liquid concepts**
2. **INTEGRATION OF HYDROGEN PRODUCTION WITH EXISTING INFRASTRUCTURE AND SAF TECHNOLOGIES. COST REDUCTION OPORTUNITIES!**
3. **INTEGRATION OF NEW SOURCES OF C AND H TO EXISTING SAF PRODUCTION PATHWAYS**
4. **APPLY LCA AND TEA MODELS TO ANALYSE ECONOMICS AND ENVIRONMENTAL FOOTPRINT OF NOVEL SAF PATHWAYS DEVELOPED IN THE PROPOCAL**

Objective: Comprehensive assessment of potential combinations between different sources of Carbon, hydrogen and energy for the production of SAF at the lowest cost possible and with the highest GHG emissions reduction possible.

Project Benefits:

1. Evaluate the strengths and weaknesses of hydrogen production and Power-to-Liquid (PtL) concepts
2. Assess the state-of-the-art of hydrogen and PtL production and potential integration with existing infrastructure
3. Analyze the cost and environmental impacts of these production pathways
4. Synthesize the information and obtain rules on how to best combine the C, H, energy sources with different conversion technologies to improve environmental impacts and costs.

Major Accomplishments (to date):

New project

Future Work / Schedule:

- Critical assessment of Hydrogen production and integration with new sources of C and energy in new SAF technologies.
- Estimation of Environmental footprint and minimum fuel selling price for novel SAF

This research was funded by the U.S. Federal Aviation Administration Office of Environment and Energy through ASCENT, the FAA Center of Excellence for Alternative Jet Fuels and the Environment, project 1 through FAA Award Number 13-C-AJFE-MIT under the supervision of Dan Williams, Nate Brown and Jim Hileman. Any opinions, findings, conclusions or recommendations expressed in this this material are those of the authors and do not necessarily reflect the views of the FAA.