



PRATT & WHITNEY AWARDED DOE PROJECT TO DEVELOP HYDROGEN PROPULSION TECHNOLOGY

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Pratt & Whitney has been selected by the U.S. Department of Energy to develop novel, high-efficiency hydrogen-fueled propulsion technology for commercial aviation, as part of [DoE's Advanced Research Projects Agency-Energy \(ARPA-E\)](#). The Hydrogen Steam Injected, Inter-Cooled Turbine Engine (HySITE) project will use liquid hydrogen combustion and water vapor recovery to achieve zero in-flight CO₂ emissions, while reducing nitrogen-oxide (NO_x) emissions by up to 80 percent and reducing fuel consumption by up to 35 percent for next generation single-aisle aircraft.

“This truly is an exciting opportunity to start developing the key technologies that could bring the industry’s first hydrogen steam injected, inter-cooled engine from concept to reality,” said Geoff Hunt, senior vice president, Engineering and Technology, at Pratt & Whitney. “For nearly 100 years, Pratt & Whitney has been at the forefront of innovating cutting-edge technologies to continually advance the efficiency of aircraft engines, and we are thrilled to be selected to work on what could be the next breakthrough technology for aviation.”

The HySIITE engine will burn hydrogen in a thermodynamic engine cycle that incorporates steam injection to dramatically reduce emissions of NOx, a greenhouse gas. The semi-closed system architecture planned for HySIITE will achieve thermal efficiency greater than fuel cells and reduce total operating costs when compared to using “drop in” sustainable aviation fuels. This is the first direct collaboration between Pratt & Whitney and ARPA-E.

“Pratt & Whitney has a long legacy with hydrogen-fueled propulsion, and we are excited to advance this emerging technology as part of our comprehensive strategy to support the aviation industry’s ambitious goal of achieving net zero aircraft CO2 emissions by 2050,” said Graham Webb, chief sustainability officer at Pratt & Whitney. “Partnerships with public agencies such as the Department of Energy have a vital role to play towards developing and maturing technologies that could have a global impact on reducing the environmental footprint of aviation.”

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