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Engine Company Evaluation of Feasibility of Aircraft Retrofit Water-Injected Turbomachines

By Arthur Becker

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 38 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. This study supports the NASA Glenn Research Center and the U. S. Air Force Research Laboratory in their efforts to evaluate the effect of water injection on aircraft engine performance and emissions. In this study, water is only injected during the takeoff and initial climb phase of a flight. There is no water injection during engine start or ground operations, nor during climb, cruise, descent, or landing. This study determined the maintenance benefit of water injection during takeoff and initial climb and evaluated the feasibility of retrofitting a current production engine, the PW4062 (Pratt and Whitney, East Hartford, CT), with a water injection system. Predicted NO(x) emissions based on a 1: 1 water-to-fuel ratio are likely to be reduced between 30 to 60 percent in Environmental Protection Agency parameter (EPAP). The maintenance cost benefit for an idealized combustor water injection system installed on a PW4062 engine in a Boeing 747-400ER aircraft (The Boeing Company, Chicago, IL) is computed to be 22 per engine flight hour (EFH). Adding water injection as a retrofit kit would cost up to 375, 000 per engine...



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