

An example of Air Force supported SBIR/STTR technology that has been transitioned into an Air Force or other DoD system or subsystem or used by Air Force test ranges and facilities or maintenance depots.

SBIR Topic Number:

AF05-186

SBIR Title:

Maintenance Cost Model for Advanced Propulsion Technologies

Contract Number:

FA8650-06-C-2617

SBIR Company Name:

Impact Technologies, LLC, Rochester, NY

Technical Project Office:

AFRL Propulsion Directorate, Wright-Patterson AFB, OH



Work Scope Optimization Tool Contributes to Lower Maintenance Costs and Higher Reliability in Aircraft Engines

- The Air Force needed an innovative solution to use reliability data and established cost estimates to determine a statistically rigorous method to allocate maintenance costs in the decision-making process
- The optimization algorithm allows specification of any number of goals and constraints
- The Workscope Optimizer is currently being used at Dyess AFB, Little Rock AFB, and Hurlburt Field on the Rolls Royce T56 Engines used on the C-130 fleet
- The SBIR-developed Work Scope Optimization Tool (WSOT) is capable of predicting time on wing (TOW) and cost for a specific work scope

Commercialization Pilot Program Series

08-0509

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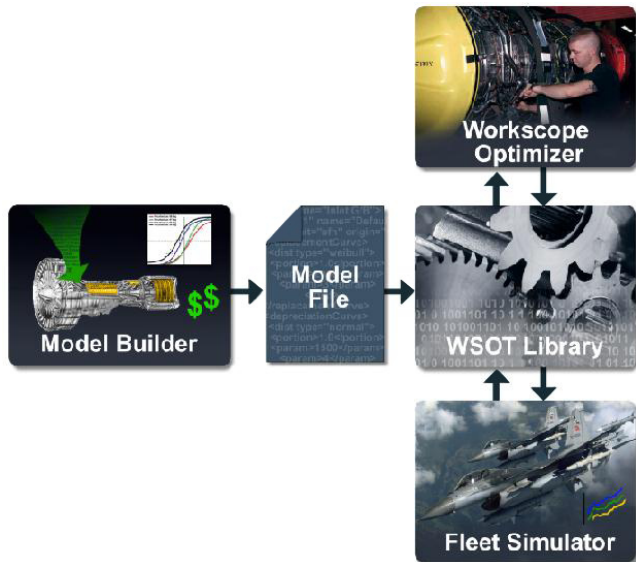
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Air Force Requirement

Reliability centered maintenance (RCM) practices attempt to optimize engine maintenance costs per flight hour. To correctly make RCM decisions, two estimates must be accurate: (1) expected time on wing (TOW), and (2) component costs. The Air Force needed an innovative solution to use reliability data and established cost estimates to determine a statistically rigorous method to allocate maintenance costs in the RCM decision-making process.

SBIR Technology

Since May 2005, Impact Technologies, in collaboration with Standard Aero, has been developing a methodology to enhance the Air Force's ability to predict and manage maintenance costs for gas turbine engines across multiple builds. The SBIR-developed Work Scope Optimization Tool (WSOT) is capable of predicting TOW and cost for a specific work scope. By utilizing this estimation capability, the tool can help manage operating costs by optimizing the maintenance work scope to help reduce long term Cost per Engine Flying Hour (CPEFH) and extend the Average Time on Wing (ATOW).



The tool is driven by a model based on reliability data, maintenance manuals, and parts costs – data and information that are readily available within a Maintenance Repair and Overhaul organization. The optimization algorithm allows specification of any number of goals and constraints. For example, the tool could be employed in a busy shop to determine what work scope achieves the lowest long term cost per engine flying hour with the least amount of labor hours.

Transition Impact

This tool provides simple, practical, and valid advice on which module(s) to maintain during expensive and infrequent shop visits in order to minimize engine life cycle cost and simultaneously maximize an engine's time on wing. Major benefits are lower maintenance costs and higher reliability.

The Workscope Optimizer is currently being used at Dyess AFB, Little Rock AFB, and Hurlburt Field on the Rolls Royce T56 Engines used on the C-130 fleet. Moreover, this tool is positioned to be applied as the de facto standard for turbine engine work scope planning across the entire T56 community.

In addition, Impact Technologies executed a contract with the Air Force (Oklahoma City) through RJLee Group to have Impact Technologies transition the technologies developed under this SBIR program to the Engine Health Management Plus Data Repository Center (EHM+DRC). Initiation of this effort is scheduled to occur in San Antonio, Texas in September 2008.

Company Impact

This SBIR project provided Impact Technologies with the opportunity to expand its expertise in developing a product application that not only has application to aircraft engines, but potentially to such areas as cost effective management of company truck fleets and turbine generators in the power industry.

Impact Technologies is an engineering consulting and health management system development firm that is dedicated to supplying advanced machinery diagnostic and prognostic solutions and software tools in the aircraft, land-based equipment, power, and defense industries.

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SBIR/STTR

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