



## Test Cell correlation for PT6A-67F

United Turbine is in the process of correlation of its Test Cell to accept the powerful PT6A-67F engine, one of the latest in Pratt & Whitney Canada PT6A series of engines. This engine is used on board the Air Tractor 802, propelling this aircraft at 1700 SHP and 1700 propeller rpm. It is typically used in fire fighting operations. This aircraft, on floats, fills up its tank while riding over water to gain readiness during operation. Pratt & Whitney Canada will perform the correlation before the end of this year. United Turbine's dynamometer is capable of running up to 2200 SHP at speeds ranging from 1500 rpm to 6600 rpm.



PT6A Small

### Come to see us in 2011:

- NBAA Annual Convention, October 10<sup>th</sup>-12<sup>th</sup>, Las Vegas, NV
- NAAA Annual Convention, December 5<sup>th</sup>-8<sup>th</sup>, Las Vegas, NV

## United Turbine has become a member of the National Agricultural Aviation Association

We will be exhibiting at the NAAA 45th Annual Convention & Exposition, December 5th-8th, 2011 at the Las Vegas Hilton Convention Center in Las Vegas, NV

## Hot starts, the enemy of PT6 engines

Hot starts have been, and still are, one of the major problems related to PT6 engines, and of course, one of the biggest expenses. The P&WC manuals give us instruction on engine starts as follows: "Minimum Ng to obtain satisfactory light is 12%". If we analyze the events that develop at around 12% Ng we will understand that 12% is a magical number that is true only if all the engine accessories are performing at the rated performance. The main accessory that may fail is the fuel pump. Let's explain.



PT6T Turbo-Prop

The fuel pump is tested at low and high rpm. At high rpm there is not an obvious problem because the pump is designed to provide about 2x the fuel required for normal engine operation. The by-pass of the fuel control will divert to the fuel pump inlet any excess of fuel. The situation is very different at the low test point, which is 810 rpm, slightly over 12% Ng. At this rpm, the pump must supply a minimum fuel flow at a pressure of 75 psi. Pumps suffer normal wear and tear and may not supply the required flow at 75 psi. Minimum pressurizing valves open at 75 psi. If we do not have enough pressure along with low flow, opening the fuel to the engine could be at an uneven and unscheduled fuel rate that may lead to hot and/or hung starts.



PT6A Large

The recommended solution is: "Minimum stabilized Ng to obtain a satisfactory light is 18%, maintaining the starter until the engine reaches idle speed." This will reduce the amount of hot and hung starts and will increase the life of the engine while keeping repair costs down.