



Aircraft propulsion

Test bench for piston engines



A test bench is a really important facility in order to ensure the reliability and performance of small piston engines, which frequently are not developed under the aviation quality standard. A facility to test piston engines up to 100 HP is available, which virtually enables the performance verification of any suitable engine employed in unmanned aviation. The picture shows a ROTAX 911 engine under performance verification to be employed in the HADA vehicle from INTA, a convertible aircraft able to take off as a helicopter and later flight as an airplane.



The facility houses several sensors that are able to measure variables of interest, which typically include crankshaft torque and angular velocity, fuel consumption rates or temperatures and gas pressures at several locations.

Analysis, design and integration of propulsion systems in UAV's



Selecting the most adequate propulsion system is a critical task in any UAV project. Several aspects should be taken into account like engine requirements, limitations, accessories, integration issues, etc. The group has a probed experience in this field, having led the analysis, design and integration of the propulsion systems for several national UAS, including the SANCHO airship or the HADA vehicle.

Customisation of small propulsion systems



In some occasions, piston engine need relevant modifications before their installation. As an example, thrust vectorization systems can cause extreme operation conditions for the lubrication, which require a dry sump. Some other requires adaptation of auxiliary systems like alternators, gears, starters or ignition.

Currently, development of multi-fuel engines and the commanding electronics are the main activities in this field.