



WhirlTrak™

Helitune's focus on engineering support services includes adaptation of Tracking Systems for Rotor Towers to individual customer specifications, to help OEMs and operators make their Rotor Tower measurements more sophisticated and reliable. Helitune's WhirlTrak™ System provides OEMs with the capability to replicate the performance of onboard monitoring systems at the Rotor Tower.

Background

During rotor blade qualification, production and maintenance, whirl tower test stands are regularly used by OEMs and deep maintenance service centres in order to dynamically track rotor blades prior to aircraft installation. The accurate tracking measurements made at the whirl tower test stand are used to provide an input to initial blade weight and tab adjustments, allowing the blade to be optimised for consistent tracking operation at all blade pitch configurations.

The use of a whirl tower test stand for dynamic blade balancing greatly assists in reducing the number of subsequent Rotor Track and Balance test flights required upon the aircraft in order to balance the blade set, providing both an operational benefit and aircraft hours cost saving.

Helitune WhirlTrak System

The Helitune WhirlTrak system is a totally integrated solution for the measurement of rotor blade track upon whirl tower test stands. The system comprises Helitune's RT-TipTrak™ line scan tracking camera, a 1/Rev indexing sensor and a base station PC system running Helitune's WhirlTrak control software and results management database. The system is able



Helitune RT-TipTrak & CCTV Camera

to be integrated with discrete I/O logic from the rotor tower control system for precise rotor tower test condition identification. In addition, the system provides a real-time digital data stream output which can be integrated with additional third party control systems. Interfaces are provided for the integration of an optional CCTV camera and wind measurement system to supplement the WhirlTrak data if required.

If required, a background 'white board' can be used to provide consistent operational contrast, allowing the system to operate reliably in a wide range of weather and ambient light conditions. The background 'white board' can be optionally illuminated, providing the capability for 24-hour tracking operation.

System User Interface

The Helitune WhirlTrak controller software, which runs on the base station PC system, is responsible for all system control, measurement and data management functions. The system provides a continuous real-time interface, allowing both live and averaged track output readings. A single system installation is able to support multiple rotor blade types and test profiles, which are configured independently against the requirements of each



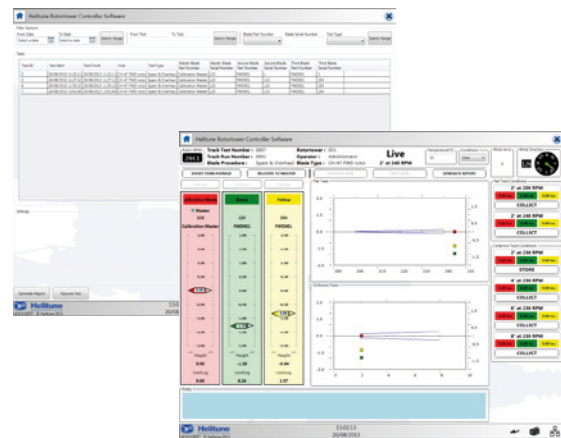
Whiteboard Target



Camera Installation

blade type. The system automatically configures the Helitune RT-TipTrak measurement camera, based upon the selected blade type and measurement procedure, providing for reliable and error-proof system operation. The Helitune WhirlTrak controller software supports access control for administrator and operator levels, allowing system configuration parameters to be available to the system administrator only.

All measurement results are stored into a Microsoft® SQL results database, which allows for reliable data archiving, data retrieval and output reporting. The user interface has full integration with Microsoft® Excel for results export, allowing operators the flexibility to generate unique output report template profiles.



WhirlTrak Software

Technical Specifications

Track Measurement Display	Continuous Real-Time
Averaged Rotor Track Resolution	Better Than ±0.254mm (±0.010 inch)*
Rotor RPM Measurement Range	60RPM to 1200RPM
I/O Interfaces	Digital I/O interface to Rotor Tower Control System for tower state recognition (collective pitch interface) Digital serial O/P broadcast interface for transmission of track results to third party systems
Operating temperature	-20°C to +60°C for all Rotor Tower mounted hardware

* Note: Stated accuracy achievable depends upon physical installation characteristics of the individual rotor tower.

Complete Rotor Solutions

Helitune is a market leader in the design and manufacture of Rotor Track & Balance (RTB) equipment, as well as vibration analysis equipment for all dynamic components. The WhirlTrak system is a derivative of Helitune’s established Ground Support Equipment (GSE) for RTB applications, and uses the same optical sensor

(RT-TipTrak) as used for permanently installed RTB systems. Compatibility is maintained with existing RT-2000, RT-5JS+, RT-TipTrak, RT-Vision™ and next generation Helitune GSE & on-board systems, enabling the provision of a complete RTB solution from blade manufacture through to in-service operations and support.

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Helitune’s Quality Management System is certified to BS EN ISO9001:2008 and AS9100

This document is not contractual. Helitune maintain a policy of continuous product development and improvement. This specification may change without notice.