

## Low speed wind tunnel gets new motor

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A new motor has been installed in the Oran W. Nicks Low Speed Wind Tunnel, replacing a 900RPM, 1,000-horsepower synchronous motor from Allis-Chalmers that was surplused by the U.S. Navy back in World War II.

The old motor was in service at the Low Speed Wind Tunnel for 70 years. The new motor is a 3,000-horsepower induction motor with a variable frequency drive that allows for spinning the motor anywhere from less than 100 RPM to 1,200 RPM. The motor and drive package were purchased from TECO/Westinghouse in Round Rock, Texas.

When the new motor speed control is combined with the variable pitch of the main propeller, it allows much finer control of dynamic pressure and air speed in the tunnel. The increased horsepower and speed control



not only give a higher top speed, it also gives a much less turbulent airflow at lower speeds. When the old motor was run at speeds slow enough to test bicycles, because of the way the propeller blades are made, part of the blade tips were still negative pitch, creating turbulence in the airstream. In addition, starting the new motor no longer draws a huge in-rush current that was common with the old motor. This should save electricity and provide less strain on the university's electrical supply system.

The first spin of the prop demonstrated a remarkable decrease in vibrations and noise, as well. Testers were able to stand in the tunnel at 30 mph and hold a normal conversation, something that would have been impossible with the old motor. While it may not seem incredibly important for <u>wind tunnel</u> aerodynamic testing, when you are testing bicycles and riders or downhill skiers in the tunnel at very low speeds, it is critical.

Provided by Texas A&M University

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