

Fan Performance Case Study

MARLEY® HP7000 VS. HUDSON TUF-LITE III*

The Marley® HP7000 Fan Performance Unsurpassed in Laboratory Tests

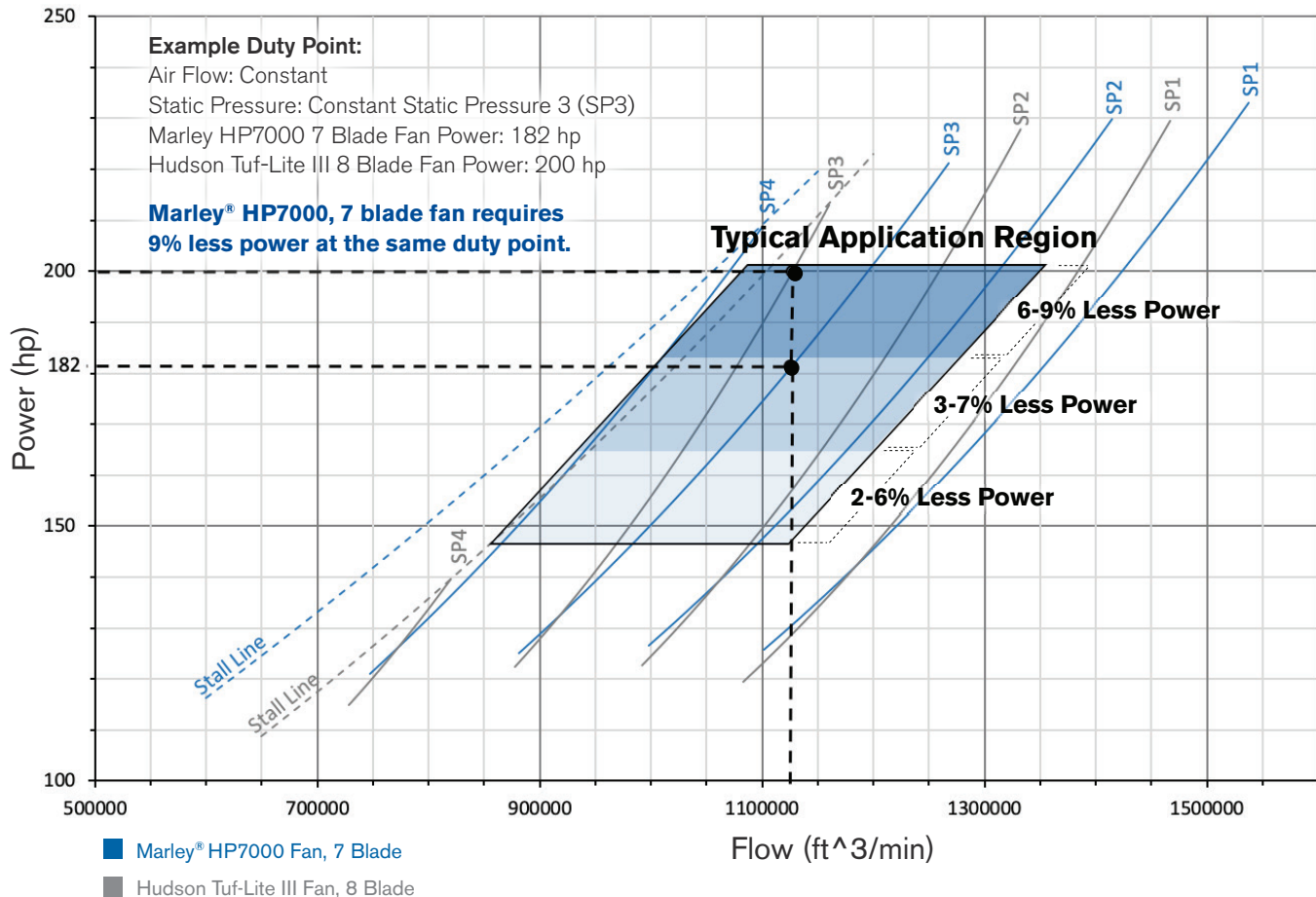
At typical static pressure and air flow operating conditions, the Marley HP7000 fan operates at higher efficiencies, lower power, and requires one fewer blade than the Hudson Tuf-lite III fan. This is shown on the fan comparison chart **Figure 1**.

Fan performance of the Marley HP7000 fan and Hudson

Tuf-Lite III fan was measured in a laboratory fan test cell under controlled conditions using precision instrumentation. Results of fan performance testing conducted at a university laboratory validate the results of equivalent tests conducted at the SPX Cooling Technologies, Inc. (SPX) Research and Development laboratory.

Figure 1: FAN COMPARISON

Marley® HP7000 Fan, 7 Blade vs. Hudson Tuf-Lite III Fan, 8 Blade (28' Diameter, 137rpm)



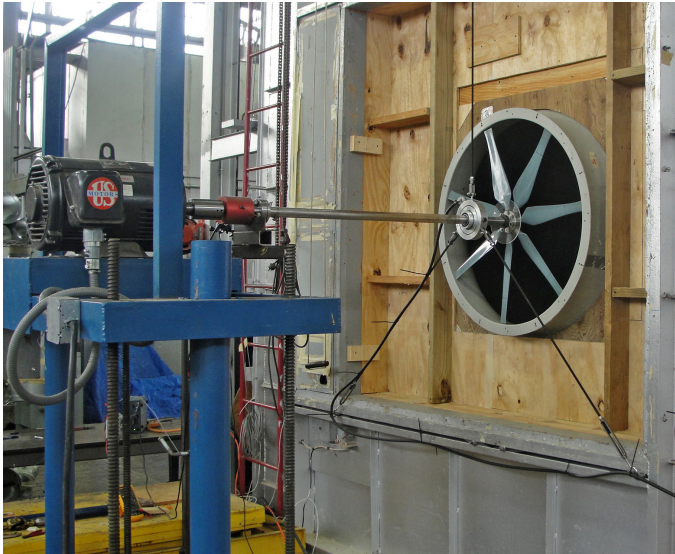
*Tuf-Lite III® is a registered trademark of Hudson Products, Beasley, TX

Field Fan Air Flow Tests Are Not a Reliable Method for Measuring Fan Performance

A fan performance test conducted in a laboratory fan test cell under controlled conditions and using precision instrumentation is the most reliable method for accurately measuring fan performance.

Field fan air flow tests result in less reliable measurements of fan performance. Field air flow tests rely on air velocity measurements across the inlet or outlet of the fan and static pressure measurements through the fan to measure fan performance.

- Inlet and outlet obstructions unique to each installation influence the air velocity readings at certain locations across the fan. It is difficult to determine where the high velocity and low velocity air streams will occur.
- If air velocity measurements are not taken at the correct locations and in sufficient number for the installation, velocity measurements will not average to the true air flow across the fan.
- It is difficult to accurately measure static pressure through the fan during a field air flow test because air flow distribution across the fan is not uniform in most field installations. Field static pressure measurements that are taken at different locations through the fan can produce very different results.



A Thermal Performance Test is a Better Indicator of Fan Performance in the Field

The primary goal of a tower is to reject heat. A thermal performance test measures the heat balance of the tower and determines if all the components of the tower perform as designed.

Measurement methods used during a thermal performance test are less prone to the measurement bias that can occur with field air flow test static pressure and air velocity measurements.

Fan Performance is Not Regulated

Performance of fans used in cooling towers and air-cooled heat exchangers is not regulated by an industry or government body. Consequently, fan performance data published in a fan manufacturer's data sheet is only as reliable as the testing and engineering methods the manufacturer uses to develop and prove the data.

Insights

Knowing the inaccuracies of a field fan air flow test, SPX Cooling Technologies, Inc. continues to measure cooling tower axial fan performance in a laboratory fan test cell under controlled conditions.

SPX Cooling Technologies, Inc. has over a decade of thermal performance test data to back up HP7000 fan performance in the field. Providing the customer with reliable data to make an informed decision is an SPX commitment.

Tests were conducted in a test cell at a university laboratory.

SPX COOLING TECHNOLOGIES, INC.

7401 WEST 129 STREET
OVERLAND PARK, KS 66213 USA
913 664 7400 | spxcooling@spx.com
spxcooling.com

TR-022 | ISSUED 01/2019
COPYRIGHT © 2019 SPX Cooling Technologies, Inc. All rights reserved.
In the interest of technological progress, all products are subject to design and/or material change without notice.

