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ENGINEERING BULLETIN-FAN LAWS

When balancing and/or trouble shooting a process air system, you must understand Basic Performance Laws. All of this is based on no changes in the system other than RPM. Assume that the main fan is handling 10,000 CFM @ 12" w.c. and the BHP is 40 and the RPM is 2000.

RPM to CFM is 1:1>>>>>>>>>>>If you increase the RPM by say 5%, then you increase the CFM by 5%. 2100 RPM gives 10,500 CFM.

RPM to Pressure is squared>>>>If you increase RPM by 5% then you increase the pressure by the square. 1.05 x 1.05 = 1.1025 factor x 12" w.c. = 13.23" w.c..

RPM to H.P. is cubed>>>>>>>>>If you increase RPM by 5% then you increase the H.P. by the cube. 1.05 x 1.05 x 1.05 = 1.157625 factor x 40 H.P. = 46.305 BHP.

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This is really a simple formula. Remember, you are ONLY changing the RPM. You can see that a 15% to 20% increase in RPM can get you into trouble real fast on overloading the motor.

Contact Ibis for specific information such as fan performance curves, tables, air duct calculators, flow measurement instruments, etc..

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