Guidelines For An Industrial Energy-Efficiency Feasibility Study - Fans And Blowers

Purpose

To provide more specific and additional guidelines for an Energy Efficiency Feasibility Study for Fan and/or Blower systems. The intent of these guidelines is to help develop innovative and implementable energy savings opportunities. It is not intended to be prescriptive in defining all study procedures and methods.

Scope

This document outlines modifications to the general "Guidelines for an Industrial Energy Efficiency Feasibility Study" for Fans and/or Blowers.

Guidelines

4. Mechanical and Process System Descriptions – Per Energy Conservation Measure

4.1 System and areas served including simplified process flow and general arrangement diagrams. Also include a P&ID (process and instrumentation diagram), where available. In the process diagram, define the physical boundary of the system being studied.

4.2 Description of all significant connected equipment within the system or process. Include the nameplate data and HP rating of all motors, fans, and other significant equipment within the system.

4.6 Equipment and system efficiencies. Include fan and system resistance curves and pressure changes in the system. Note any system effects.

4.7 Equipment data sheets for all equipment including fans, control dampers, motors and adjustable speed drives (ASD), if available.

4.8 Control system and operation strategy. Especially note the location of any dampers in the system and their typical operating position.

4.9 Any relevant operation and maintenance (O&M) issues, including noise and vibration.

5. Analysis

5.1a A "systems approach" should be employed (see the report "Improving Fan System Performance - a sourcebook for industry" [1] in the Suggested References).

5.1b Where fan performance tests are part of the study methods, any special conditions that may affect performance test results should be described, including conditions that might result in exceptional measurement errors (e.g. pitot tube plugging, non-ideal measurement plane). If testing is done, the average of two tests at each operating condition is generally recommended.

5.2 Describe the modifications that will achieve energy efficiency in the fan system including as applicable: improvements in the efficiency of the motor, fan (define the "fan" boundary), fan controls, and/or reduced system resistance.

5.7 Describe a possible method for implementing measurement and verification of the recommended energy conservation measure.

8. **Implementation Strategy and Schedule – Per Energy Conservation Measure**

8.3 Comment on any risks associated with the implementation of each energy conservation measure.

Suggested References

1. Improving Fan System Performance - a sourcebook for industry (1989) http://industrial-energy.lbl.gov/files/industrial-energy/active/0/LBNL-43985.pdf
2. Energy Savings in Fans and Fan Systems – Good Practice Guide (GPG383, 2004) http://www.carbontrust.co.uk/Publications/publicationdetail.htm?productid=GPG383&metaNoCache=1
3. 2008 ASHRAE Handbook – HVAC Systems and Equipment – Chapter 20 Fans
4. AMCA Publication 202-98 (R2007). "Troubleshooting" (www.amca.org)
5. AMCA Publication 201-02 (R2007), "Fans and Systems" (www.amca.org)
6. AMCA Publication 203-90 (R2007), "Field Performance Measurement of Fan Systems" (www.amca.org)
7. ASME Power Test Code for Fan (PTC 11) (www.asme.org)