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Guidelines for Selection of Energy Efficient Agricultural Ventilation Fans

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1 Purpose and Scope

Ventilation in many agricultural livestock and crop buildings and structures is crucial to maintain animal health or crop quality. Agricultural operations may have large numbers of ventilation fans operating for extended time periods making ventilation a large electrical consumption end use. Unlike other electrical energy–consuming equipment, there is little opportunity to manage operational schedules and electrical use of ventilation fans on a daily or seasonal basis without severely affecting operational management and having adverse effects. Improving the energy efficiency of an agricultural fan is the only practical way to reduce electrical energy use for ventilation. Energy efficient ventilation fans use less electrical power to move equivalent amounts of air, resulting in energy savings. This Engineering Practice is intended to provide information helpful in making decisions involving selection of energy efficient ventilation fans in agricultural operations.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies unless noted. For undated references, the latest approved edition of the referenced document (including any amendments) applies.

ANSI/ASHRAE 51 (ANSI/AMCA 210), Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating

ANSI/ASAE S493, Guarding for Agricultural Equipment

ANSI/AMCA 210 (ANSI/ASHRAE 51), Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating

ANSI/NFPA 70, National Electrical Code

ASAE EP 270, Design of Ventilation Systems for Poultry and Livestock Shelters

IEEE Std 112, IEEE Standard Test Procedure for Polyphase Induction Motors and Generators

NEMA MG 1.1, Tests and Performance of AC Fractional and Integral Horsepower Motors

OSHA 29CFR 1910.147, The control of hazardous energy (lockout/tagout)

ASABE S565, Agricultural Ventilation Constant Speed Fan Test Standard