**OPPORTUNITY**

How much energy is used for ventilation in U.S. office buildings?

**12% OF ELECTRICITY GOES TO FAN VENTILATION**

**ADDITIONAL SAVINGS POSSIBLE**

Belt-driven fans are also used in non-ventilation applications

**TECHNOLOGY**

How do synchronous and cogged fan belts save energy?

**REDUCE FRICTION AND BENDING RESISTANCE**

By notching the inner side of the belt

**SYNCHRONOUS BELTS ALSO REDUCE SLIPPAGE**

By integrating teeth with slots on the motor pulley

**M&V**

Where did Measurement and Verification occur?

**RESULTS**

How did synchronous and cogged fan belts perform in M&V?

**2-20% ENERGY SAVINGS**

For synchronous on VFD

2% at 60 Hz, 20% at 15 Hz

Cogged fan belts offered half the savings

**75% LOWER O&M**

For synchronous
cogged O&M equivalent to standard V-belts

**<4 YEARS PAYBACK FOR SYNCHRONOUS**

Repeat installations have immediate payback; cogged payback < 1 year

**DEPLOYMENT**

Where does M&V recommend using synchronous and cogged fan belts?

**REPLACE V-BELTS WITH SYNCHRONOUS DRIVE BELTS ON ALL VFD FANS**

Belts on fans with high operating hours should be replaced first

**ON CV FANS, REPLACE V-BELTS AT END-OF-LIFE WITH COGGED V-BELTS**

---

1Synchronous and Cogged Fan Belt Assessment. Dylan Cutler, Jesse Dean, Jason Acosta (NREL), March 2014, p.1
2Ibid, p.2
3Ibid, p.3
4Ibid, p.5
5Ibid, p.4