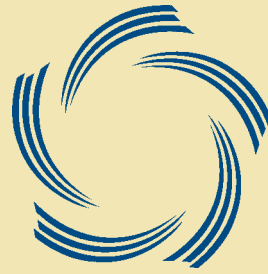


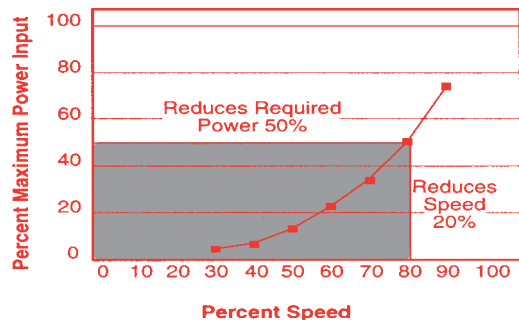
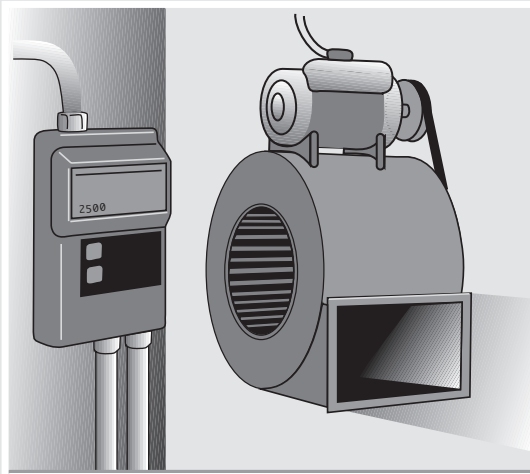
# REDUCING UNNECESSARY ENERGY CONSUMPTION



# MSD

## Variable Speed Drives

Variable speed drives (VSD) control the air-handling fan electronically and continually adjust fan speed to match the required load. Normal fan controls operate at 100% of fan speed when turned on. Variable speed controls usually lower fan speed to about 80% and also use much less power by soft-starting the motor over several minutes.



### Variable Speed Drive Features

- Power required is proportional to  $\text{rpm}^3$ . A 10% speed reduction results in a 27% drop in power consumption.
- On colder or warmer days, the system works harder. On milder days, it works less to satisfy building demands.
- Constant-speed motor controls operate at 100% speed full-time and lack load adjusting flexibility.
- A motor started at full voltage and frequency has a 600% power demand spike. Electronic soft-starts never require more than 150% of rated current.
- While conventional systems, such as damper or vane control, can also reduce the energy requirements at partial flow, the savings are much less than with VSDs.

### Anticipated Savings

A centrifugal fan, operated at 75% flow, uses only about 40% of full-load power. At 50% flow, the fan needs less than 15% of fullload power.

