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ORIGINATOR:	M. ZIRNHELD
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## SSRVS FAN APPLICATIONS

A common problem starting large fans, is that they frequently "Counter Rotate" (windmill in reverse) due to prevailing winds or pressure differential. Starting a counter rotating fan with a full voltage, or two step (i.e. Wye-Delta or Autotransformer), starter results in a severe torque surge caused by the application of uncontrolled starting torque to the counter rotating inertia. This causes electrical and mechanical problems ranging from overload trips and brownouts to worn belts and broken motor shafts.

In the past, a common solution was to add a DC Injection Brake to brake the motor to a stop before starting it with the existing Electro Mechanical Starter. This solution reduced the torque surge and associated problems somewhat, but still applied uncontrolled torque to accelerate the fan.

A better solution is to replace the existing Electro Mechanical Starter with a Solid State Reduced Voltage Starter (SSRVS). By using the SSRVS in a "Current Ramp" mode, the counter rotating fan is gently brought to a stop and then smoothly accelerated to full speed with controlled torque.

Replacing the Electro Mechanical Starter with an SSRVS solves the mechanical and electrical problems of the fan, as well as eliminating the mechanical wear and maintenance of the existing starter, without the complexity of added equipment and additional interlocks.

While the SSRVS may cost slightly more than the DC Injection Brake (approximately 20%), the investment will quickly be recouped by:

- Ease of Installation
  - Simply replace the existing starter with the SSRVS, no additional equipment, wiring or interlocks required.
- Reduction of Maintenance
  - No contacts to be replaced in the starter, and significantly reduced mechanical maintenance on the fan. Experience shows that drive belts and other mechanical components last 3-5 times longer with an SSRVS.
- Reduction of Downtime
  - Caused by scheduled or unscheduled maintenance
- Elimination of Electrical Problems
  - Brownouts and motor damage caused by uncontrolled starting current, and overload trips caused by extended acceleration times required to overcome counter rotating inertia.

Recommended setup for the SSRVS is to utilize the "Current Ramp" acceleration mode, and either a Class 20 (or 30) overload or an "Overload Bypass" circuit. Set the "Initial Current" for 200% of motor FLA (full load amps). Set the "Max Current" for 450% FLA, and the "Ramp Time" for 10 seconds longer than the previous acceleration time (from zero speed). This setup will give an excellent result with most installations, and can be "fine tuned" for specific applications.