SmartPurge™ System

SmartPurge™
Heater Blower System

Revolutionary Controls for Purge Air Systems!

SmartPurge adaptive controls maintain proper purge flow and temperature under most electrostatic precipitator operating conditions to prevent electrical tracking and dust migration. The SmartPurge airflow system:

- Reduces plant operating costs by at least 20% compared to conventional systems
- Reduces purge system and precipitator maintenance costs
- Improves precipitator and process availability
- Eliminates costly insulator failures and the resulting downtime for repairs
- Prevents dewpoint corrosion of exposed ESP components

Many electrostatic precipitators (ESPs) require a purging system to prevent migration of dust into enclosures that house the high-voltage insulators. Conventional purge systems are inefficient and costly to operate and maintain. The Neundorfer SmartPurge system efficiently maintains a specified velocity of heated purging airflow from the insulator enclosures into the ESP chamber.

Heated purge air provides two benefits. First, it ensures that high-voltage insulators are dry during ESP startup. This prevents electrical tracking on the insulator surfaces which can cause insulator failure. Second, by heating the purge air, the SmartPurge system prevents "dew-point" corrosion of ESP components exposed to both purge air and flue gas within the ESP.

C O M P A R I S O N

SmartPurge System vs. Conventional Purge Systems

Conventional purge systems are either on or off. They consist of only a filter, electrical heaters and a blower. A simple control provides only on/off fan control and on/off heater control through a temperature sensor. Such systems often lack flow and temperature capacity needed during unusual operating conditions and operate at levels that waste energy during normal conditions. Consequently, they have high operating costs – at least 20% higher than the SmartPurge – primarily for electric heater power.

The greatest potential cost of a sub-optimal conventional purge system can be failure of portions of the ESP through electrical tracking/ insulator failure, causing increased emissions and reduced boiler availability.

NEUNDORFER

Common Sense Adaptive Control

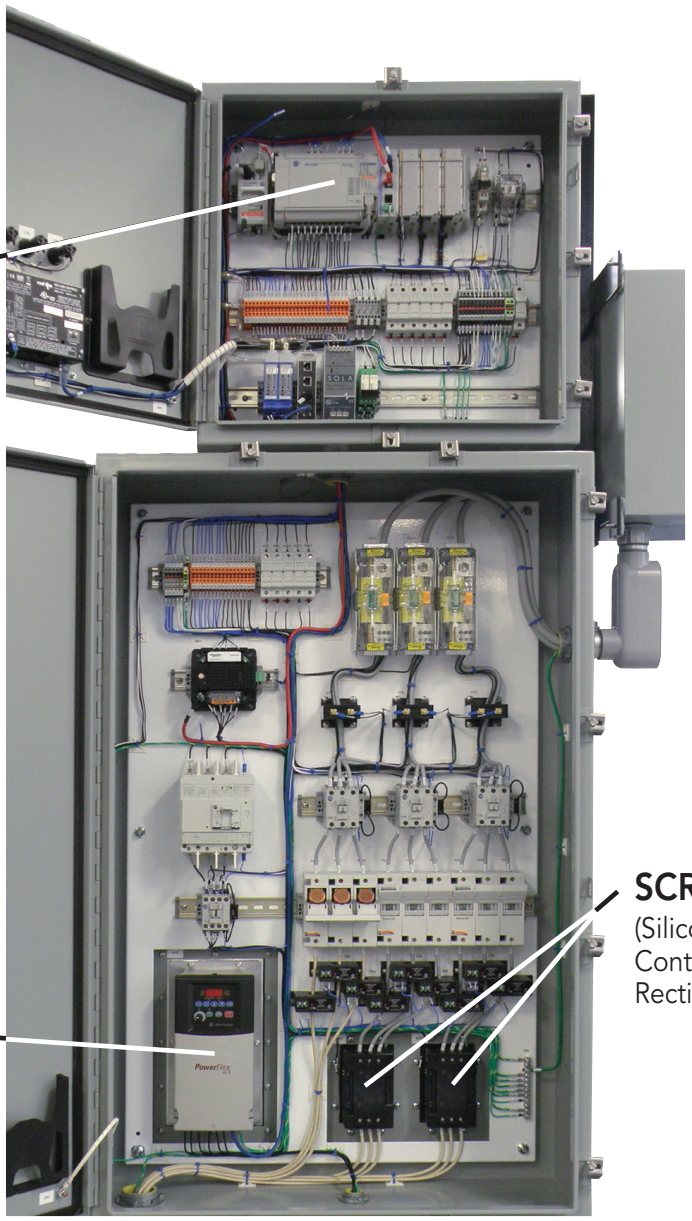
The Neundorfer SmartPurge system incorporates a common-sense control scheme that economically accommodates varying conditions.

No other standard purge-air control system has the ability to maintain specified purge-air volume and temperature requirements for varying ambient temperatures and ESP chamber pressures.

- SmartPurge will accommodate increasing system pressure drop due to progressive fouling of the inlet-air filter.
- SmartPurge manages changes in ambient air density. For example, air density increases 28% between 110°F and -15°F air temperature. Other systems will either deliver excess purge air at inadequate temperature, or insufficient purge volume at excess temperature.
- Using a variable frequency drive (VFD)-controlled blower and SCR-controlled heating banks, SmartPurge economically provides sufficient airflow and temperature.
- Also available, the Neundorfer POS SmartPurge Module allows for remote monitoring, trending and control of the SmartPurge.

SmartPurge with Adaptive Control is designed and built at our Cleveland facility to assure the quality, quick response and high value you have come to expect from Neundorfer.

What Makes the SmartPurge Smart?



Standard SmartPurge Design Criteria

- **Minimum ambient air temperature** 15°F above the area record cold for a system located outdoors or drawing ambient purge air.
- **Maximum ambient air temperature** – 15°F below the area record high for a system located outdoors or drawing ambient air.
- **Required purge air temperature** Typically a function of the percentage of sulfur compounds in the flue gas; and not less than 180°F.
- **Required purge air velocity** – Design air velocity through the chamber penetration is 45 to 60 feet per minute. The trend toward wide plate spacing in ESPs has brought with it higher secondary voltages. Consequently, these precipitators may have large openings for high-voltage penetrations, which require large volumes of purge air to maintain minimum velocities.
- **Operating static pressure** – Static pressure within the ESP chamber into which the purge system discharges is often not constant, and for boiler ESPs, the pressure may vary widely with boiler load. For example, at full boiler load, the ESP chamber may be at -20" WG, while at half load it may be only -5" WG. This will be most apparent in boilers with modern variable-speed ID fans instead of louvers for boiler draft control.

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Specifications

- Local disconnect switch included
- Power requirements: 100 Amp, 480 VAC, 3-phase, 60 Hz
- Direct drive blower, 1400 SCFM with 7-1/2 HP, 3500 RPM motor
- Staged heaters, 72 KW total, INCOLOY sheaths, 26 W / in^2
- Separate high voltage and control voltage NEMA 4 cabinets
- Washable metal mesh inlet air filter
- Baked-on powder coat enamel paint
- Local and remote starting and stopping
- Optional remote trending and alarm history module
- Shop tested and setup for specific installations
- Size: 68"H x 56"W x 32"D
- Approx. shipping weight: 1,500 lbs

Neundorfer strives to create strong, long-term collaborative relationships with our customer partners to achieve the lowest cost per unit of pollutant removal. We seek to understand the root cause of your issues and the process variables influencing your operations and maintenance. We use this knowledge and our experience to develop the most cost-effective solutions for your systems' reliability, flexibility and emissions compliance.

NEUNDORFER

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