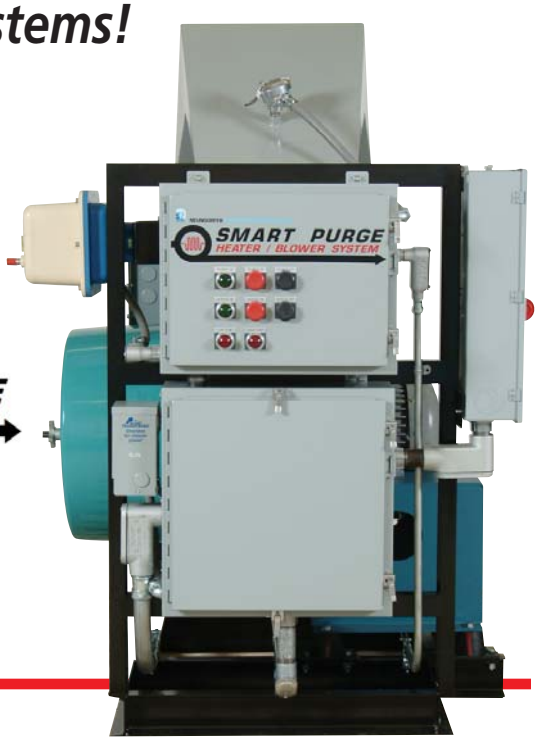
Smart Purge™ System

Revolutionary Controls for Purge Air Systems!

Smart Purge adaptive controls maintain proper purge flow and temperature under most electrostatic precipitator operating conditions to prevent electrical tracking and dust migration. The Smart Purge 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 the enclosures that house the high-voltage insulators. Conventional purge systems are inefficient and costly to operate and maintain. The new Neundorfer Smart Purge 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 Smart Purge prevents "dew-point" corrosion of ESP components exposed to both purge air and the flue gas within the ESP.

The Smart Purge System vs. Conventional Purge Systems

Conventional purge systems are either on or off. They consist of only a filter, electrical heaters and a blower, with a simple control having 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 operation. Consequently, they have high operating costs—at least 20% higher than the Smart Purge—primarily for electric heater power.

When conventional purge systems don't deliver adequate flow or temperature purge air, they impact precipitator maintenance—with potentially very high costs for high-voltage insulator replacement and repair of ESP components damaged by "dew-point" corrosion.

However, the greatest potential cost of a sub-optimal conventional purge system can be failure of portions of the ESP causing increased emissions and reduction in boiler availability.

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Smart Purge™ System

Model Shown: ESP Penthouse (68''H x 56''W x 32''D)

Standard Smart Purge 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** – Generally 100°F.
- **Required purge air temperature** – Typically a function of the percentage of sulfur compounds in the flue gas, and not less than 160°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 widely vary 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.

Common Sense Adaptive Control

The Neundorfer Smart Purge System incorporates a common-sense control scheme that economically accommodates varying conditions.

- Smart Purge will accommodate increasing system pressure drop due to progressive fouling of the inlet-air filter, and indicate when filter cleaning or replacement is necessary.
- Smart Purge 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.
- Smart Purge adjusts to gross changes in ESP chamber static pressure into which the system ultimately discharges.
- Energy savings provide a payback period of less than 2 months for the additional controls to implement the Smart Purge Control.
- Also available, PLC control with the Neundorfer POS Smart Purge Module allows for remote, off-site system monitoring and trending.

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.

Smart Purge with Adaptive Control is designed and built by Neundorfer at its Cleveland facility to assure the quality, quick response, and high value you have come to expect from Neundorfer, Inc.

Specifications for Standard 100 Amp Model

- Local Disconnect switch included
- Power Requirements: 100 AMP, 480 VAC, 3 PH, 60 HZ
- Direct drive blower, 1400SCFM with 7 ½ HP, 3600 RPM Motor
- Staged heaters, 72 KW total, INCOLOY sheaths, 26 W / in²
- Washable metal mesh inlet air filter
- Separate high voltage and control voltage NEMA 4 cabinets
- Baked-on powder coat enamel paint
- Local and Remote Starting and Stopping
- Local and Remote LOW FLOW and UNDERTEMP alarms
- Shop tested and setup for specific installations
- Approximate shipping weight - 1,000 pounds

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