Precipitator Optimization System (POS)

The Neundorfer Precipitator Optimization System (POS) is an intuitive, graphically oriented software control system for optimizing electrostatic precipitator performance, while reducing operating costs and improving efficiency and environmental impact.

Precipitator Optimization System
VERSION 7.0

POS 7.0 is loaded with features that deliver powerful functionality:

- ***Optimized precipitator performance***
- ***Reduced emissions***
- ***Improved efficiency***
- ***Reduced operating costs***
- ***Strong supervisory system***
- ***Robust data anaylsis and reporting***
- ***Easy-to-use, intuitive interface, including programming Wizards***
- ***Unlimited connectivity***
- ***Compatibility with all Neundorfer controls (MVC-3, MVC-4, MicroRap)***

Enhanced Reporting Functionality

■ Customizable reports and displays – deliver customer-specific information and enable better control

- Easier-to-use, more flexible trending capabilities – add notes to trend graphs, scroll forward and back, view 3-D historical data and more
- Commonly used operating displays – now with live data – can be "docked" or added to control screen for up-to-date information and improved management
- Information from different data sources can now be combined into a single report and exported directly to an Excel spreadsheet – no need to convert to a CSV file first

MVC-4 and MicroRap Compatible

The POS 7.0 software control system is fully compatible with all Neundorfer controls, including MVC-3, the new MVC-4 voltage controls and MicroRap rapper controls, working together to easily and efficiently monitor precipitator operation and provide enhanced connectivity and information-sharing – even remotely.

Improved User Interface

■ Easier access to live data and desired programs and reports – better, more timely and accurate information for safe, effective precipitator operation

- Cleaner, more visually appealing screens – no more icon definitions to remember
- More intuitive screen navigation – clicking on images for Precipitators, T/R Sets, Rapper Controls and Voltage Controls results in dropdown menu access to complete range of functions, including whole system status

■ Step-by-step help with programming functions – saves time and aggravation

- New Wizard screens provide users with walkthrough instructions for programming, explaining each function and process

Efficient Plug-in Operation

The POS 7.0 software is loaded on the PC, fully configured and tested with a simulator prior to shipment. All graphics are configured with customer input, including customer-specified tags for rappers and T/R sets. Neundorfer's customer-friendly "plug-and-play" approach means POS 7.0 is ready for operation upon receipt at your plant.

NEUNDORFER
PARTICULATE KNOWLEDGE

Precipitator Optimization System (POS)

Precipitator Optimization System
VERSION 7.0

For optimized precipitator performance and reduced emissions, the POS 7.0 consistently adjusts to maintain the lowest possible opacity at the lowest possible power consumption.

Features	Benefits
■ Operates the precipitator at the lowest point of particulate emissions and lowest operating costs	■ Reduced emissions and operating costs
■ Automatic and user-configurable custom reports for CAM and permit compliance	■ Easier compliance
■ Delivers quicker, more accurate problem identification and resolution using built-in diagnostic tools	■ Faster problem-solving
■ Troubleshooting capabilities enable plant personnel to safely diagnose problems without exposure to high-voltage hazards or dirty environments	■ Improved safety
■ Integrates precipitator voltage controls, rapper controls, hopper evacuation systems, gas conditioning and purge air systems into one central system to enhance precipitator performance and troubleshooting	■ Full system integration
■ Provides intuitive guide to programming	■ Easy-to-use Wizard tools

NEUNDORFER
PARTICULATE KNOWLEDGE

Precipitator Optimization System
VERSION 7.0

Superior Precipitator Performance Control!

POS 7.0 features sophisticated behind-the-scenes algorithms to improve precipitator efficiency and reduce emissions, reliably and continuously maintaining the lowest possible opacity at the lowest possible power consumption. It also anticipates the need for increased power when changing load, soot blowing and in other specific conditions, and adjusts precipitator power accordingly.

POS 7.0 Features

Supervisory System

POS 7.0 operates in a supervisory role, interfacing with Neundorfer precipitator voltage and rapper controls and other auxiliary control systems that use PLCs, such as hopper evacuation controls and gas conditioning systems. Individual control systems do not depend on POS 7.0 for control functions.

New POS 7.0 Wizard!

The POS 7.0 Wizard provides users with a step-by-step guide for programming any of the following functions:

- Rapper control programming
- Rapper control configuration
- Power off rapping
- Backup utility
- Reporting modules
- Performance optimization programming
- Performance optimization configuration
- Startup/Shutdown

Without a lot of technical jargon or elaborate settings, the instructions provided with the POS 7.0 Wizard makes it easier to understand the setup and function of each operation.

Communications

POS 7.0 communicates with Neundorfer precipitator voltage and rapper controls via an RS-485 or fiber optic data highway. POS 7.0 can communicate with auxiliary control systems via standard data highways and serial communications.

Customizable Interface

POS 7.0 can connect to any DCS system including (but not limited to):

- Bailey/ABB Automation
- Honeywell
- Foxboro
- Westinghouse
- P.I.
- Interlussion
- Emerson

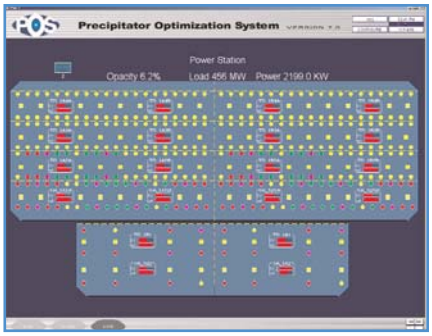
The POS features designed-in connectivity with your choice of DCS or PLC.

The POS can also connect to any PLC including (but not limited to):

- Allen Bradley
- Modicon
- Fanuc/GE

Remote Monitoring

POS 7.0 has remote client capability allowing remote PCs access to the POS using a local area network. Each Neundorfer precipitator voltage and rapper control is remotely monitored by the POS computer which can be remotely accessed on a local area network or by phone/modem connection.



Status Monitor

NEUNDORFER
PARTICULATE KNOWLEDGE

Precipitator Optimization System (POS)

Remote Control Functions

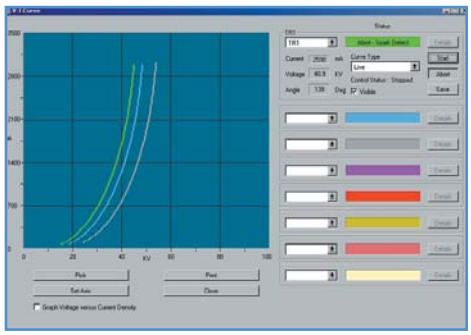
- On, off and alarm reset for each voltage and rapper control
- Remote display of local indicators for each control
- Complete local functionality available on the POS computer
- Rapper control status display using icons, with color changes indicating control operating, rapping stopped, not communicating or communications disabled
- Real-time plan-view display for each rapper control, showing the rappers as arranged on the precipitator. Rapper status is indicated by color change: ready, rapped properly, open coil or shorted coil
- Remote control of selected voltage controls allows changing setpoints
- T/R status display using icons with color changes indicating control off, on, tripped, not communicating or communications disabled. Icons are arranged in a plan view of the T/R sets.
- Real-time monitor and display of multiple load, opacity and auxiliary analog and digital I/O signals

More Powerful Data Logging and Reporting

- Remote alarm indication and annunciation – plus alarms can be e-mailed according to priority
- Data logging at user selectable intervals with numerical and trend review
- User-configurable trend display of all data including auxiliary analog inputs with time axis zoom from two minutes to four weeks
- Error log with time stamp of all operational errors, including control trips, communication errors, etc.
- User-configurable report generator with selectable time frame, data sources, automatic output and selectable output to printer, file or e-mail
- 3-D graphing of data either live or over time – plus the capabilitty to scroll through data

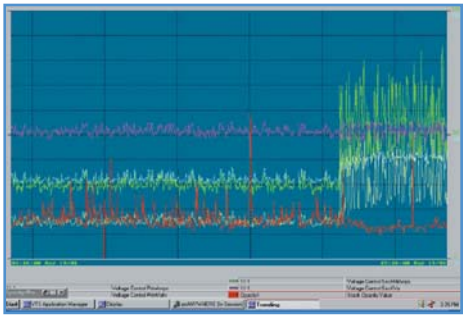
More Flexible Troubleshooting & Diagnostics

- 3-D T/R Plan View graphical data-display showing two selected T/R parameters for the entire precipitator or box in a grid layout resembling the T/R arrangement on the precipitator



V-I Curves

- Enhanced V-I curve function to sequentially gather and plot up to eight V-I curves on a common graph. Ability to store V-I curves on hard drive for later display or export for off-line analysis
- Real-time and historical plotting of rapper operation and opacity, user-configurable time delay and data point plotting
- Visually enhanced Digital Storage Oscilloscope (DSO) allows user to select up to four channels on any voltage control and analyze real waveforms – scope traces can be stored
- X-Y scattergram plot of any two selected system parameters over the user-selected interval encompassing precipitator summary data and opacity/load analog inputs



Trend Graph

- User-configurable trend screens for real-time or historical precipitator and process data analysis, including the ability to add notation to screens
- User-configurable alarm logging and reporting
- Real-time and historical correlation of rapping and instantaneous opacity

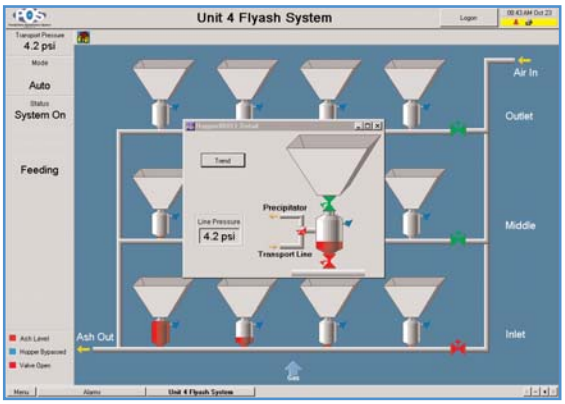
NEUNDORFER
PARTICULATE KNOWLEDGE

Precipitator Optimization System (POS)

Developed based on ongoing end-user feedback, POS 7.0 builds on the proven functionality of previous POS software platforms, providing an enhanced user interface for ease of use as well as customizable reporting.

Optimization

- Sophisticated power optimization algorithm maintains best performance at reduced power consumption
- Rapping optimization automatically adjusts rapping based on user-defined conditions
- Patented Flue Gas Conditioning system optimization to automatically adjust SO_3 injection rates based on precipitator feedback



Hopper System Display

Hopper Evacuation Control Integration & Optimization

- Interface ash hopper evacuation control system with precipitator controls
- Remote system status showing ash-evacuation operation, level sensors and alarms
- Improve utilization and troubleshooting of hopper-evacuation system
- Optimize ash excavation systems with patented Smart Ash software interface

Soot Blower Integration

- Interface soot-blower control system with precipitator controls
- Remote status indication of soot blowers
- Correlate real-time and historical soot-blower operation with rapping and instantaneous opacity
- Reduce opacity spiking

Recommended Minimum PC Specifications for Good Performance

- Operating System: Windows NT, 2000 or XP
- CPU: 700Mhz or higher
- RAM: 256MB
- Graphics Card: 1280 x 1024 True Color
- Monitor: Super VGA, 17'' or larger

Customer may supply own PC if desired

Remote Technical Service and Support

POS 7.0 can be remotely accessed by Neundorfer engineers to assist in troubleshooting problem sections, evaluate precipitator performance and reduce costly service visits. Remote access is also available via phone modem, VPN or internet.

Customer-directed development of POS capabilities occurs at regular POS User's Group meetings. Call us or visit the Neundorfer website for details and dates of the next scheduled meeting.

POS Users' Group meeting.

NEUNDORFER
PARTICULATE KNOWLEDGE

Neundorfer, Inc. • 4590 Hamann Parkway
Willoughby, Ohio 44094 • Phone: 440-942-8990
Fax: 440-942-6824 • E-mail: solutions@neundorfer.com
www.neundorfer.com