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**NEUNDORFER PRECIPITATOR KNOWLEDGE**

# Programming the Neundorfer MicroRap and MVCIII Controls Using the POS (Precipitator Optimization System)

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# NEUNDORFER PRECIPITATOR KNOWLEDGE



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# NEUNDORFER PRECIPITATOR KNOWLEDGE

Display

PRECIPITATOR OPTIMIZATION SYSTEM-VER 6

## POS 6.05 Demo

Logon 11:32 AM Nov 3

Opacity  
4.1 %

Load  
493.7 MW

Cost Savings  
\$ 0.0

Power  
321.4 KW

Legend:

- Rapper Ready (Green square)
- Rapper Rapped (Red square)
- Rapper Fail Open (Yellow square)
- Rapper Fail Short (Pink square)
- Rapper Com. Err. (White square)
- Rapper Com. Dis. (Black square)
- MVC Stopped (Green circle)
- MVC Running (Red circle)
- MVC Tripped (Yellow circle)
- MVC Comm Err. (White circle)
- MVC Comm Dis. (Black circle)

Menu | Alarms | POS 6.05 | Flue Gas Conditioning



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Display** POS 6.05 Demo Logon 11:36 AM Nov 3

PRECIPITATOR OPTIMIZATION SYSTEM-VER 6

Opacity 4.0 %  
Load 474.9 MW  
Cost Savings \$ 0.0  
Power 321.9 KW

TR1

T-R Primary	118.4 Amps	OverLine	363 Volts	OverLine
T-R Secondary	0.68 Amps	OverLine	42.8 KV	OverLine
Spark Monitor	0 Sparks/Minute	Spark	T-R On	Over/Stop
Auxiliary Functions	1	Core Angle	Dis. On	Over/Stop

Optimize Setpoint 100 %

Gas

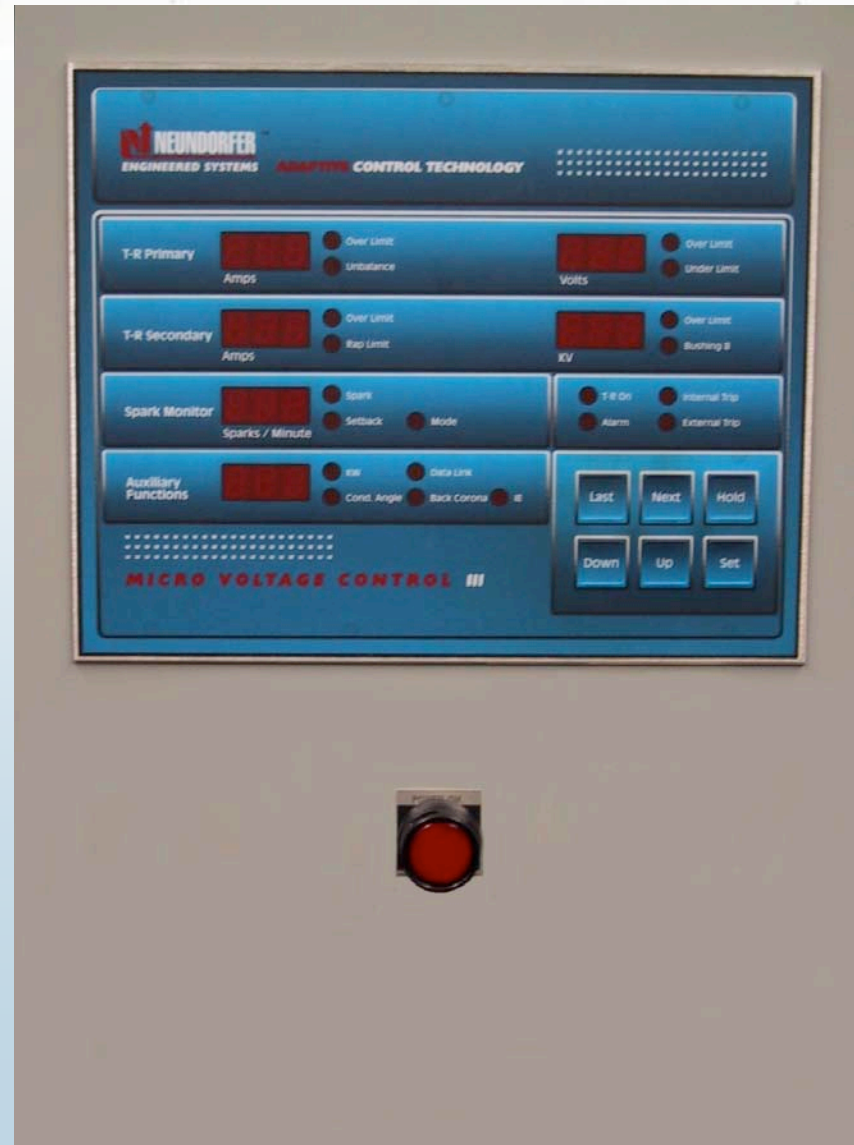
- Rapper Ready
- Rapper Rapped
- Rapper Fail Open
- Rapper Fail Short
- Rapper Com. Err.
- Rapper Com. Dis.
- MVC Stopped
- MVC Running
- MVC Tripped
- MVC Comm Err.
- MVC Comm Dis.

Menu Alarms POS 6.05 Flue Gas Conditioning



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# NEUNDORFER PRECIPITATOR KNOWLEDGE





# NEUNDORFER PRECIPITATOR KNOWLEDGE

DISPLAY / LOGIC BOARD

CABINET POWER SWITCH

INTERFACE BOARD

SILICON-CONTROLLED RECTIFIER

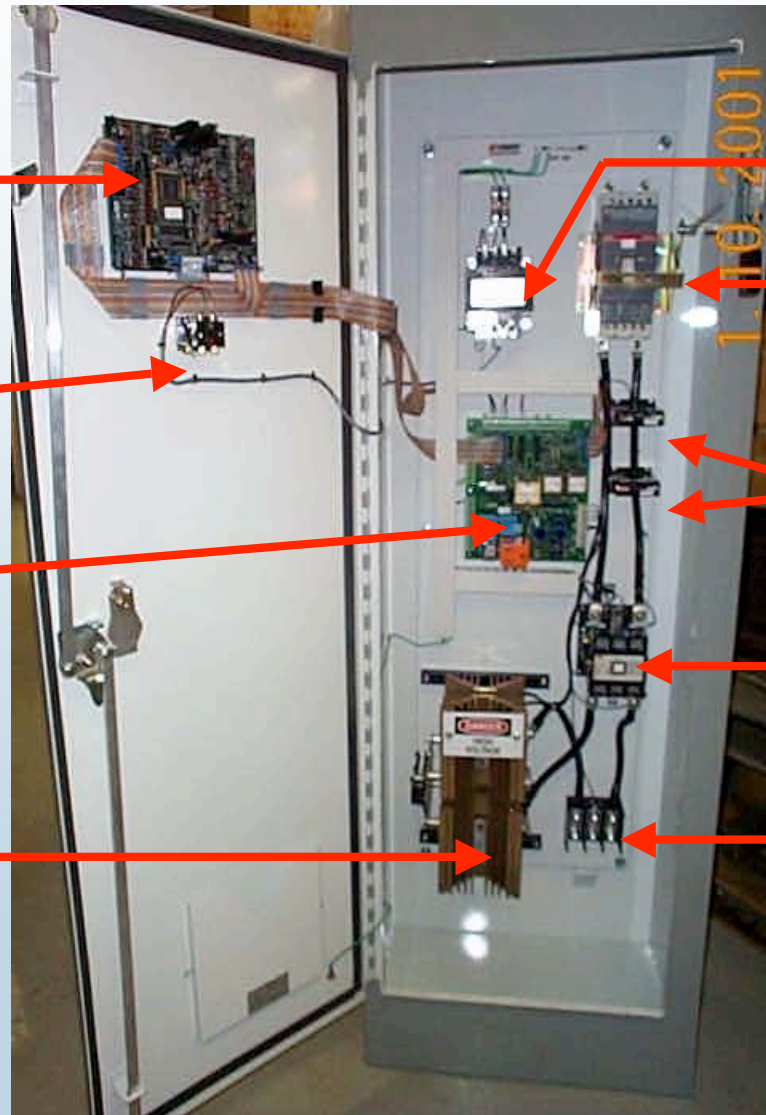
TRANSFORMER

CIRCUIT BREAKER

CURRENT TRANSFORMERS

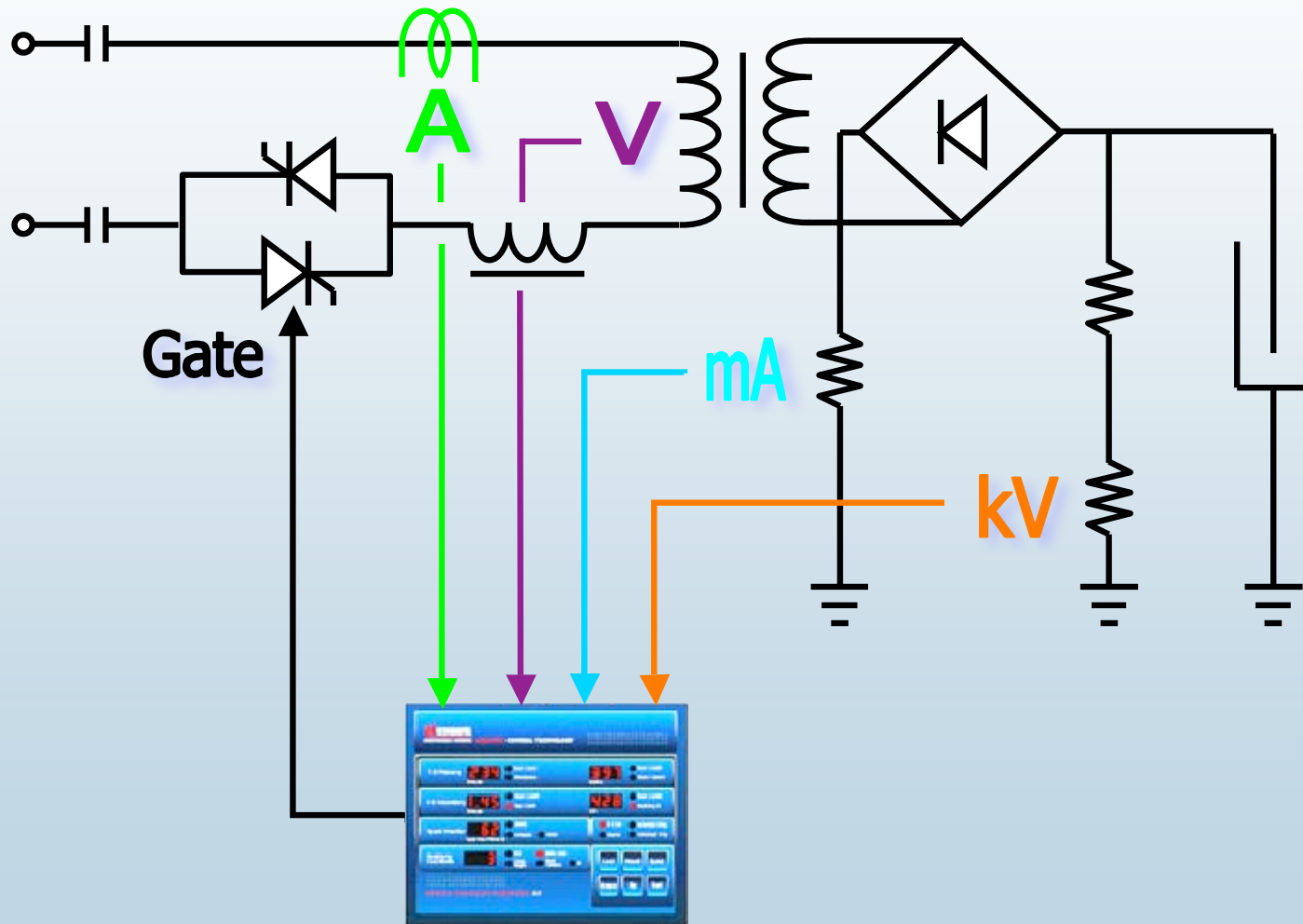
CONTACTOR

POWER BLOCK





# NEUNDORFER PRECIPITATOR KNOWLEDGE





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# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Display** POS 6.05 Demo 11:42 AM Nov 3

PRECIPITATOR OPTIMIZATION SYSTEM-VER 6

Opacity: 3.9 %

Load: 471.3 MW

Cost Savings: \$ 0.0

Power: 322.2 KW

1P11 Output 001 Impact

- Rapper Ready (Green square)
- Rapper Rapped (Red square)
- Rapper Fail Open (Yellow square)
- Rapper Fail Short (Purple square)
- Rapper Com. Err. (White square)
- Rapper Com. Dis. (Black square)
- MVC Stopped (Green square)
- MVC Running (Red square)
- MVC Tripped (Yellow square)
- MVC Comm Err. (White square)
- MVC Comm Dis. (Black square)

Gas

Menu Alarms POS 6.05 Flue Gas Conditioning



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# NEUNDORFER PRECIPITATOR KNOWLEDGE

Display

PRECIPITATOR OPTIMIZATION SYSTEM-VER 6

## POS 6.05 Demo

ip 11:46 AM Nov 3  
Configure

Opacity  
4.1 %

Load  
479.4 MW

Cost Savings  
\$ 0.0

Power  
322.0 KW

TR9

- Bar Graph
- Oscilloscope
- Remote View
- Trend
- V-I Curve
- Control
  - Start
  - Stop
  - Reset
- Close

- Rapper Ready
- Rapper Rapped
- Rapper Fail Open
- Rapper Fail Short
- Rapper Com. Err.
- Rapper Com. Dis.
- MVC Stopped
- MVC Running
- MVC Tripped
- MVC Comm Err.
- MVC Comm Dis.

Menu Alarms POS 6.05 Flue Gas Conditioning



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# NEUNDORFER PRECIPITATOR KNOWLEDGE

Display

PRECIPITATOR OPTIMIZATION SYSTEM-VER 6

## POS 6.05 Demo

ip 11:48 AM Nov 3  
Configure

Opacity  
4.2 %

Load  
497.8 MW

Cost Savings  
\$ 0.0

Power  
322.1 KW

TR9

A	V	mA	KV
169.52	386.8E	990	47.32

161.4 368.2 980.0 45.0

% 0.0

Close

Legend:

- Green: Rapper Ready
- Red: Rapper Rapped
- Yellow: Rapper Fail Open
- Pink: Rapper Fail Short
- White: Rapper Com. Err.
- Black: Rapper Com. Dis.
- Green: MVC Stopped
- Red: MVC Running
- Yellow: MVC Tripped
- White: MVC Comm Err.
- Black: MVC Comm Dis.

Gas

Menu Alarms POS 6.05 Flue Gas Conditioning



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# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Oscilloscope Function**

Dump to CSV file

Print      Start

Close      Done

Select MVC: TR9

Trace Type: High Speed Data

Primary Current

Secondary Current

Conduction Angle

Primary Voltage

Trigger: Spark

Sweep Speeds: 20 ms



# NEUNDORFER PRECIPITATOR KNOWLEDGE

Display POS PRECIPITATOR OPTIMIZATION SYSTEM-VER 6 POS 6.05 Demo ip 11:55 AM Nov 3 Configure

Opacity 3.9 %  
Load 461.3 MW  
Cost Savings \$ 0.0  
Power 321.9 KW

TR9 Remote View

NEUNDORFER ENGINEERED SYSTEMS ADAPTIVE CONTROL TECHNOLOGY

T-R Primary	162.8 Amps	OverLimit Unbalance	371 Volts	OverLimit Under Limit
T-R Secondary	0.99 Amps	OverLimit Rap Limit	45.4 KV	OverLimit Bushing B
Spark Monitor	0 Sparks/Minute	Spark Setback Mode	T-R On Alarm	Internal Trip External Trip
Auxiliary Functions	45.44	KV Cond Angle	Data Link Back Corona IE	Last Next Hold Down Up Set

NEED VOLTAGE CONTROL III

- Rapper Ready
- Rapper Rapped
- Rapper Fail Open
- Rapper Fail Short
- Rapper Com. Err.
- Rapper Com. Dis.
- MVC Stopped
- MVC Running
- MVC Tripped
- MVC Comm Err.
- MVC Comm Dis.

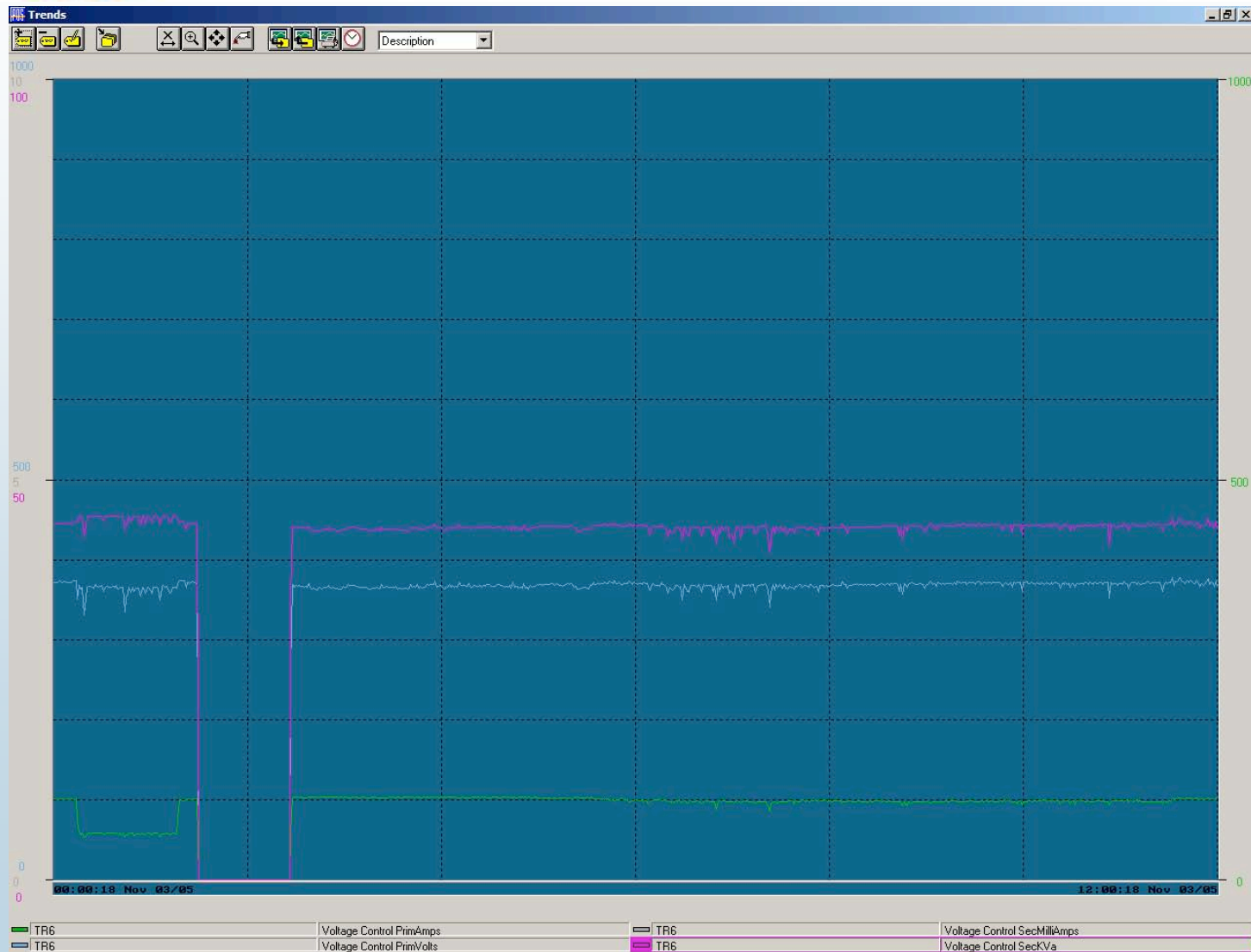
Gas

Menu Alarms POS 6.05 Flue Gas Conditioning



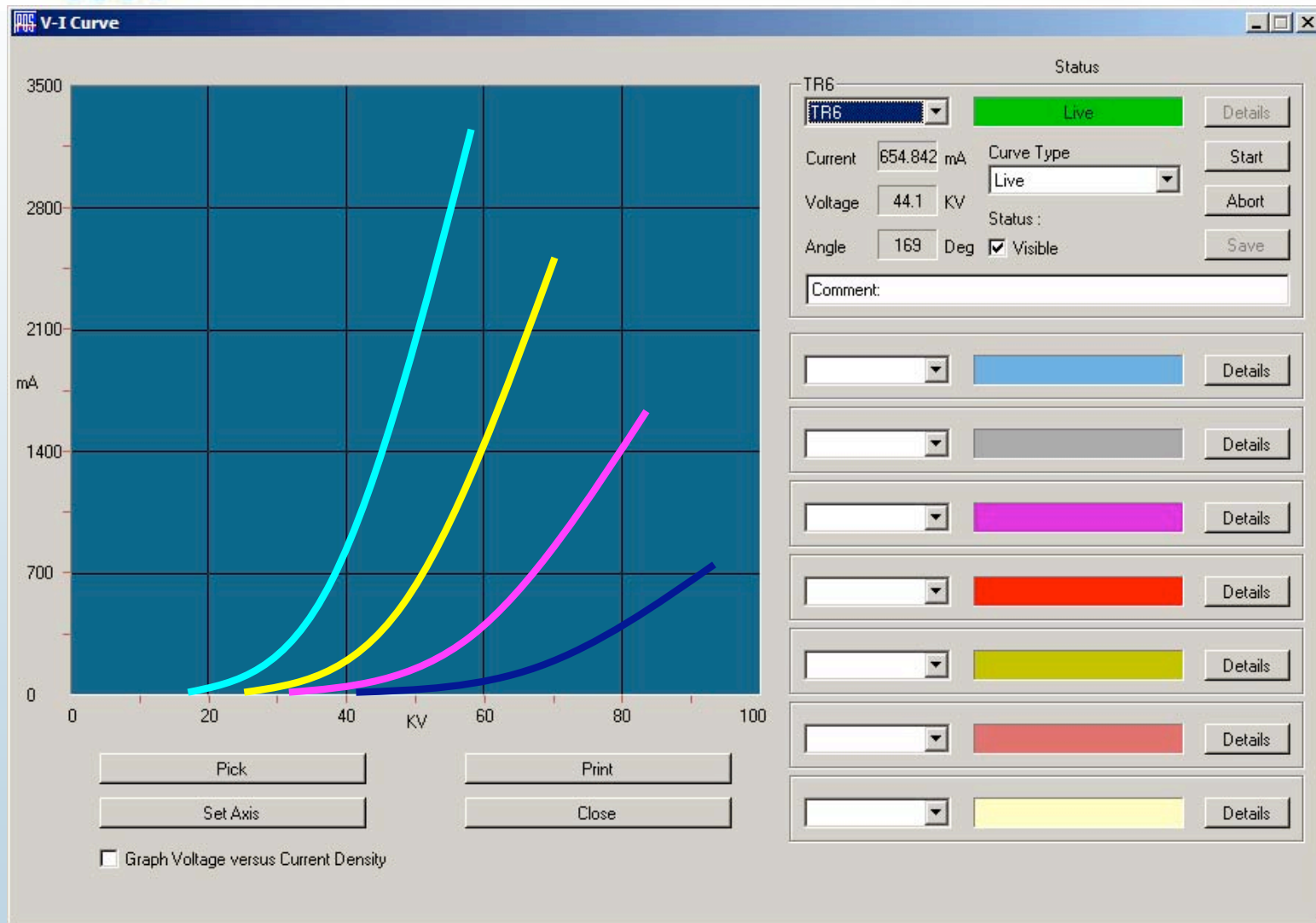
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# NEUNDORFER PRECIPITATOR KNOWLEDGE





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# NEUNDORFER PRECIPITATOR KNOWLEDGE

POS Display

**POS** PRECIPITATOR OPTIMIZATION SYSTEM-VER 6

POS 6.05 Demo

ip 12:02 PM Nov 3  
Configure

Opacity 3.9 %  
Load 457.5 MW  
Cost Savings \$ 0.0  
Power 322.3 KW

■ Rapper Ready  
■ Rapper Rapped  
■ Rapper Fail Open  
■ Rapper Fail Short  
■ Rapper Com. Err.  
■ Rapper Com. Dis.

■ MVC Stopped  
■ MVC Running  
■ MVC Tripped  
■ MVC Comm Err.  
■ MVC Comm Dis.

**Custom Report Generator**

Select/Run Report	Report Period	Data Source/Type	Output/Trigger
Select Report			

Current Report

Run Report Cancel Report

Idle

0 % 100 %

New Report Name

Delete Report New Report

< Back Next > Close

Menu Alarms POS 6.05 Flue Gas Conditioning



# NEUNDORFER PRECIPITATOR KNOWLEDGE

Precipitator			MVCs						MVC Set-up				
Time Stamp	Load MW	Opacity %	Primary		Secondary				Total KW	Avg. Angle	Avg. Sparks	Opt %	Step
			Avg. Volts	Total Amps	Total KW	Total Amps	Avg. KV <sub>a</sub>	Avg. KV <sub>b</sub>					
Nov 3, 2005 12:05:04 PM	483.9	3.8	367.7	1185.9	404.7	7.1	44.1	0.0	321.9	146	3		
Nov 3, 2005 12:05:00 PM	493.6	4.2	366.2	1180.5	402.8	7.1	44.0	0.0	320.5	146	3		
Nov 3, 2005 12:04:30 PM	490.1	4.0	366.0	1182.0	403.0	7.1	44.0	0.0	321.0	146	3		
Nov 3, 2005 12:04:00 PM	467.5	3.9	367.0	1186.0	404.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 12:03:30 PM	497.7	4.1	368.0	1189.0	405.0	7.1	44.3	0.0	323.0	146	3		
Nov 3, 2005 12:03:00 PM	469.3	3.8	368.0	1188.0	405.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 12:02:30 PM	459.9	4.0	367.0	1184.0	404.0	7.1	44.1	0.0	321.0	146	3		
Nov 3, 2005 12:02:00 PM	496.0	4.0	365.0	1182.0	403.0	7.1	43.9	0.0	321.0	145	3		
Nov 3, 2005 12:01:30 PM	489.5	3.9	368.0	1187.0	405.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 12:01:00 PM	490.1	3.9	365.0	1179.0	402.0	7.1	43.9	0.0	320.0	145	3		
Nov 3, 2005 12:00:30 PM	479.3	3.9	367.0	1184.0	404.0	7.1	44.1	0.0	321.0	146	3		
Nov 3, 2005 12:00:00 PM	483.0	4.0	369.0	1191.0	406.0	7.1	44.3	0.0	323.0	146	3		
Nov 3, 2005 11:59:30 AM	479.7	4.1	368.0	1186.0	404.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 11:59:00 AM	475.2	4.0	367.0	1184.0	404.0	7.1	44.1	0.0	321.0	146	3		
Nov 3, 2005 11:58:30 AM	472.1	3.9	368.0	1189.0	405.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 11:58:00 AM	456.5	4.1	367.0	1186.0	404.0	7.1	44.1	0.0	322.0	146	3		
Nov 3, 2005 11:57:30 AM	477.3	4.1	369.0	1191.0	406.0	7.1	44.4	0.0	323.0	147	3		
Nov 3, 2005 11:57:00 AM	481.7	4.2	367.0	1188.0	405.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 11:56:30 AM	468.2	4.2	369.0	1191.0	406.0	7.1	44.3	0.0	323.0	146	3		
Nov 3, 2005 11:56:00 AM	481.0	4.1	368.0	1187.0	405.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 11:55:30 AM	462.3	3.8	367.0	1185.0	404.0	7.1	44.1	0.0	322.0	146	3		
Nov 3, 2005 11:55:00 AM	471.5	4.1	368.0	1185.0	404.0	7.1	44.2	0.0	322.0	146	3		

Print

Now Thu Nov 3, 2005 12:05:04 PM

Close



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# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Burlington** Precipitator MVCs MVC Set-up

Nov 3, 2005 12:06:41 PM Load: 472.0 MW Opacity: 3.9% TotalKW: 320.6 KW

TR Set	Primary			Secondary			Sparks	Mode	IE Ratio	Angle	Opt %	Status
	Amps	Volts	KW	mAmps	KVa	KVb						
TR1	120.3	369.0	40.1	693.1	43.5	0.0	29.9	0.0	1.0	140	100	Running
TR2	102.2	355.6	34.6	599.2	41.5	0.0	26.4	27.5	1.0	129	100	Running
TR3	106.0	386.3	37.0	631.9	46.3	0.0	28.8	5.1	1.0	150	100	Running
TR4	116.7	355.1	38.9	712.2	42.8	0.0	31.0	0.0	1.0	137	100	Running
TR5	98.6	371.4	34.3	637.2	44.7	0.0	29.0	0.0	1.0	169	100	Running
TR6	99.8	366.6	34.6	652.2	43.9	0.0	29.0	0.0	1.0	168	100	Running
TR7	102.6	352.1	32.3	503.0	42.8	0.0	22.8	0.0	1.0	128	100	Running
TR8	102.7	374.8	35.4	638.0	45.0	0.0	29.1	0.0	1.0	153	100	Running
TR9	161.3	368.1	55.8	979.7	45.0	0.0	45.0	0.0	1.0	142	100	Running
TR10	171.1	368.7	60.0	1012.8	44.7	0.0	49.6	0.0	1.0	144	100	Running

Print Trip Log Report Live Thu Nov 3, 2005 12:06:41 PM

Close



# NEUNDORFER PRECIPITATOR KNOWLEDGE

PMI Burlington

Time Stamp	Precipitator		MVCs						MVC Set-up				
	Load MW	Opacity %	Primary		Secondary				Total KW	Avg. Angle	Avg. Sparks	Opt %	Step
			Avg. Volts	Total Amps	Total KW	Total Amps	Avg. KV <sub>a</sub>	Avg. KV <sub>b</sub>					
Nov 3, 2005 01:49:18 PM	490.5	4.2	369.3	1189.3	405.8	7.1	44.3	0.0	322.9	147	3		
Nov 3, 2005 01:49:00 PM	455.4	4.0	366.0	1184.0	404.0	7.1	44.0	0.0	321.0	145	3		
Nov 3, 2005 01:48:30 PM	469.7	4.1	368.0	1186.0	404.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 01:48:00 PM	469.0	4.0	368.0	1186.0	405.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 01:47:30 PM	458.9	3.8	368.0	1186.0	404.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 01:47:00 PM	490.8	4.0	369.0	1192.0	407.0	7.1	44.4	0.0	323.0	146	3		
Nov 3, 2005 01:46:30 PM	490.0	4.1	367.0	1184.0	404.0	7.1	44.1	0.0	321.0	146	3		
Nov 3, 2005 01:46:00 PM	462.9	3.9	366.0	1184.0	404.0	7.1	44.0	0.0	321.0	145	3		
Nov 3, 2005 01:45:30 PM	469.5	4.2	368.0	1186.0	404.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 01:45:00 PM	486.2	4.1	366.0	1182.0	403.0	7.1	44.0	0.0	321.0	146	3		
Nov 3, 2005 01:44:30 PM	470.6	4.1	368.0	1188.0	405.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 01:44:00 PM	467.1	4.0	367.0	1182.0	403.0	7.1	44.1	0.0	321.0	146	3		
Nov 3, 2005 01:43:30 PM	463.2	4.0	368.0	1186.0	405.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 01:43:00 PM	461.5	4.0	365.0	1180.0	402.0	7.1	43.9	0.0	320.0	145	3		
Nov 3, 2005 01:42:30 PM	454.9	4.0	369.0	1190.0	406.0	7.1	44.3	0.0	323.0	146	3		
Nov 3, 2005 01:42:00 PM	486.2	4.0	368.0	1190.0	406.0	7.1	44.3	0.0	323.0	146	3		
Nov 3, 2005 01:41:30 PM	473.5	4.0	368.0	1187.0	405.0	7.1	44.2	0.0	322.0	146	3		
Nov 3, 2005 01:41:00 PM	452.8	3.8	368.0	1190.0	406.0	7.1	44.3	0.0	323.0	146	3		
Nov 3, 2005 01:40:30 PM	463.7	3.8	368.0	1188.0	405.0	7.1	44.3	0.0	322.0	146	3		
Nov 3, 2005 01:40:00 PM	494.4	3.9	368.0	1188.0	405.0	7.1	44.3	0.0	322.0	146	3		
Nov 3, 2005 01:39:30 PM	457.8	4.2	366.0	1181.0	403.0	7.1	44.0	0.0	320.0	145	3		
Nov 3, 2005 01:39:00 PM	455.9	3.9	366.0	1183.0	403.0	7.1	44.0	0.0	321.0	145	3		

Print

Now Thu Nov 3, 2005 01:49:18 PM

Close



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# NEUNDORFER PRECIPITATOR KNOWLEDGE

**POS Display**      **POS 6.05 Demo**      ip      01:51 PM Nov 3  
Configure     

Opacity  
**4.1 %**

Load  
**489.8 MW**

Cost Savings  
**\$ 0.0**

Power  
**321.6 KW**

**Control All**  
Start  
Stop  
Reset  
Close

Rapper Ready  
 Rapper Rapped  
 Rapper Fail Open  
 Rapper Fail Short  
 Rapper Com. Err.  
 Rapper Com. Dis.

MVC Stopped  
 MVC Running  
 MVC Tripped  
 MVC Comm Err.  
 MVC Comm Dis.

Menu      Alarms      POS 6.05      Flue Gas Conditioning



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# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Display** POS 6.05 Demo

PRECIPITATOR OPTIMIZATION SYSTEM-VER 6

ip 01:53 PM Nov 3  
Configure

Opacity 4.0 %

Load 456.3 MW

Cost Savings \$ 0.0

Power 321.9 KW

**Scattergram** Load vs Opacity For Precip

Select Precipitator: Precip

Y Axis Parameter: Load

X Axis Parameter: Opacity

Start Time: Wed Nov 2, 2005 01:52:53 PM

End Time: Thu Nov 3, 2005 01:52:53 PM

Retrieve

300 Points Plotted

Print Close

- Rapper Ready
- Rapper Rapped
- Rapper Fail Open
- Rapper Fail Short
- Rapper Com. Err.
- Rapper Com. Dis.
- MVC Stopped
- MVC Running
- MVC Tripped
- MVC Comm Err.
- MVC Comm Dis.

Menu Alarms POS 6.05 Flue Gas Conditioning



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Display**  
**PRECIPITATOR OPTIMIZATION SYSTEM-VER 6**

## POS 6.05 Demo

**User Options**

Opacity  
**3.8 %**

Load  
**452.6 MW**

Cost Savings  
**\$ 0.0**

Power  
**321.8 KW**

Rapper Ready  
 Rapper Rapped  
 Rapper Fail Open  
 Rapper Fail Short  
 Rapper Com. Err.  
 Rapper Com. Dis.

MVC Stopped  
 MVC Running  
 MVC Tripped  
 MVC Comm Err.  
 MVC Comm Dis.

Field Data		Precipitator Alarms	Global TR Set Alarms	Individual TR Set Alarms	Rapper/Control Alarms					
Edit	Field Name	No of Gas Passages	Plate Spacing (inches)	Plate Height (feet)	Plate Length (feet)	Centerline to Outlet (feet)	Cross Sec Area (sq feet)	Gas Velocity (feet/sec)	Field Plate Area (sq feet)	Field Treatment Time (seconds)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										

Common Precipitator Data

Total Gas Flow	Opacity Meter Delay Time (seconds)	SCA (sq feet / 1000 ACFM)	Precipitator Treatment Time (seconds)
>			

Erase Field    Accept    Cancel

Database Status

Close

Menu
Alarms
POS 6.05
Flue Gas Conditioning



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Display** POS PRECIPITATOR OPTIMIZATION SYSTEM-VER 6 POS 6.05 Demo

ip 01:57 PM Nov 3  
Configure

Opacity 3.9 %  
Load 497.8 MW  
Cost Savings \$ 0.0  
Power 322.2 KW

Burlington

### Primary Current

Category	Value
East	113.10
West	90.48
TR1	135.72
TR2	158.34
TR3	180.96
Field	180.96

### Secondary Current

Category	Value
East	643.75
West	515.00
TR1	772.50
TR2	901.25
TR3	1030.00
Field	1030.00

Data Select: Primary Current

Data Select: Secondary Current

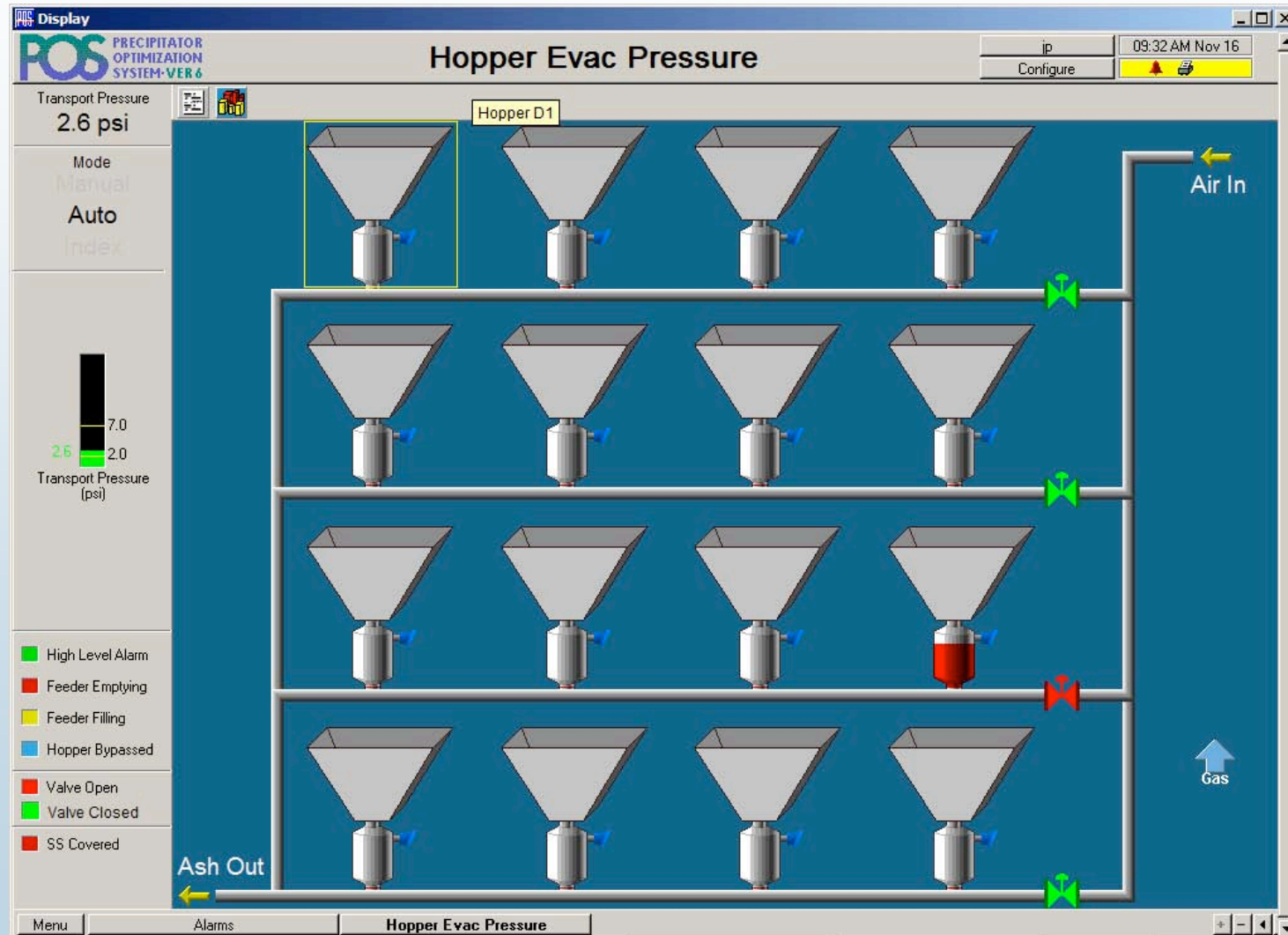
Close

- Rapper Ready
- Rapper Rapped
- Rapper Fail Open
- Rapper Fail Short
- Rapper Com. Err.
- Rapper Com. Dis.
- MVC Stopped
- MVC Running
- MVC Tripped
- MVC Comm Err.
- MVC Comm Dis.

Menu Alarms POS 6.05 Flue Gas Conditioning



# NEUNDORFER PRECIPITATOR KNOWLEDGE





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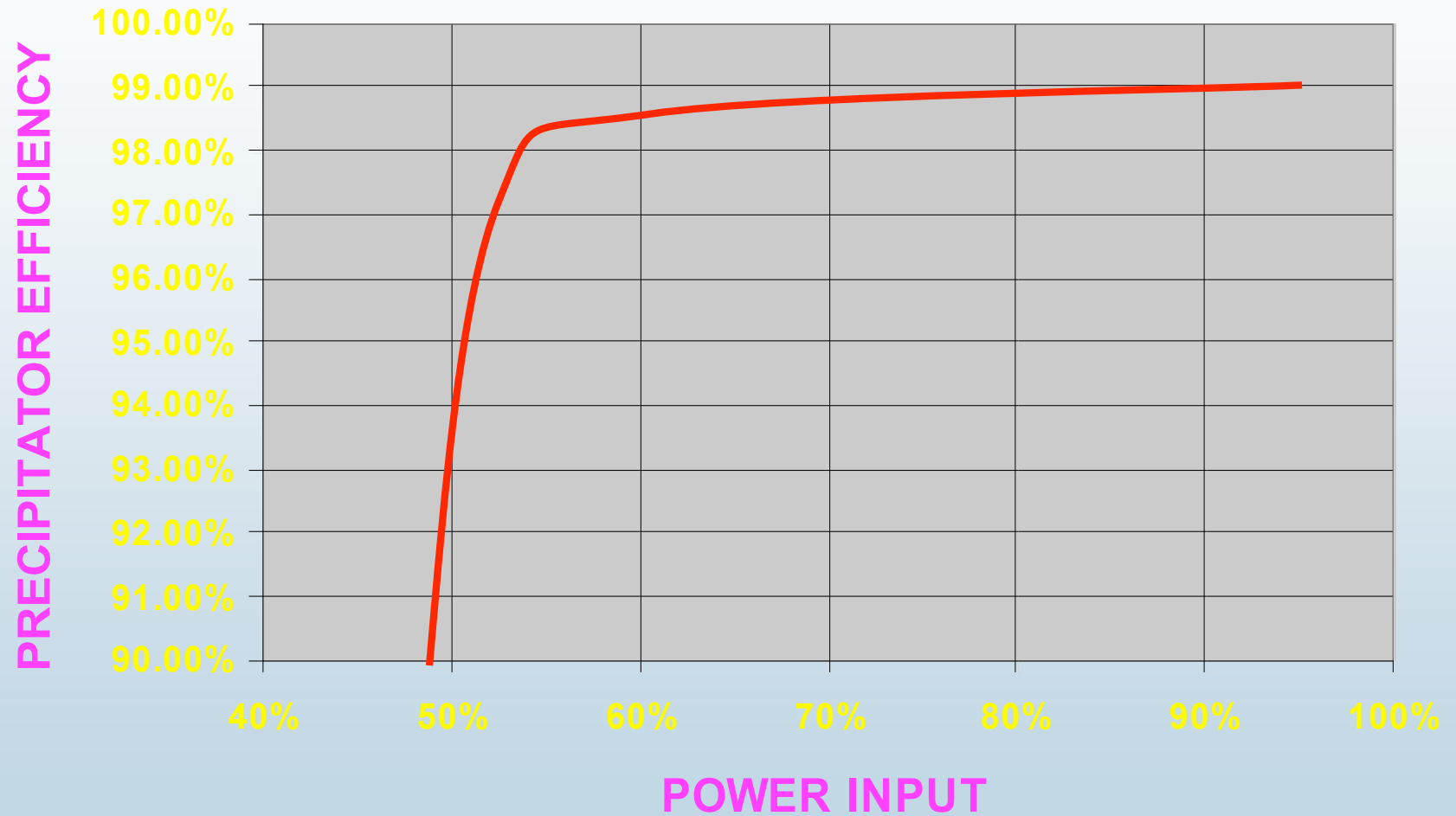
**NEUNDORFER PRECIPITATOR KNOWLEDGE**

# Precipitator Power Optimization

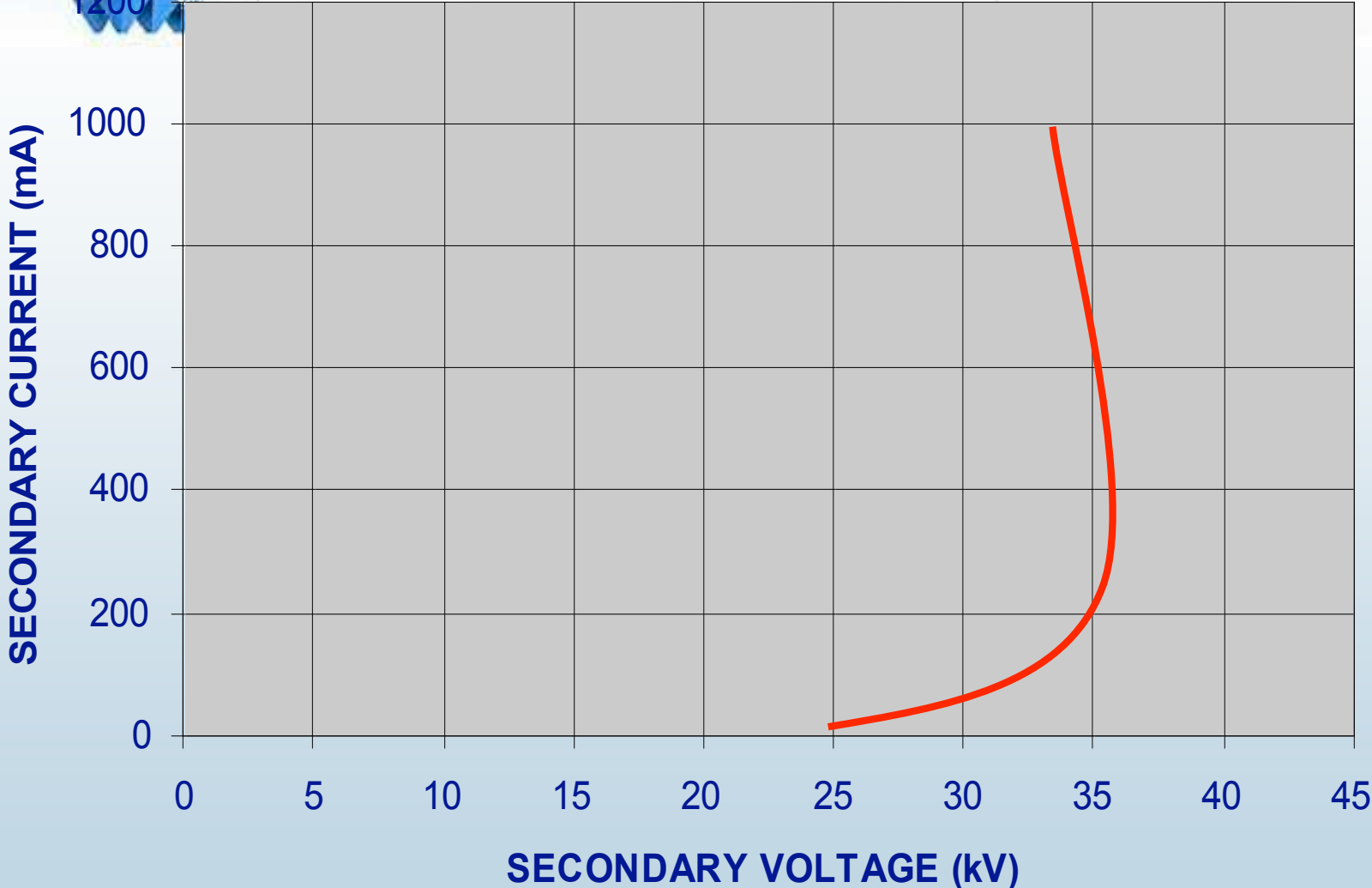


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## NEUNDORFER PRECIPITATOR KNOWLEDGE



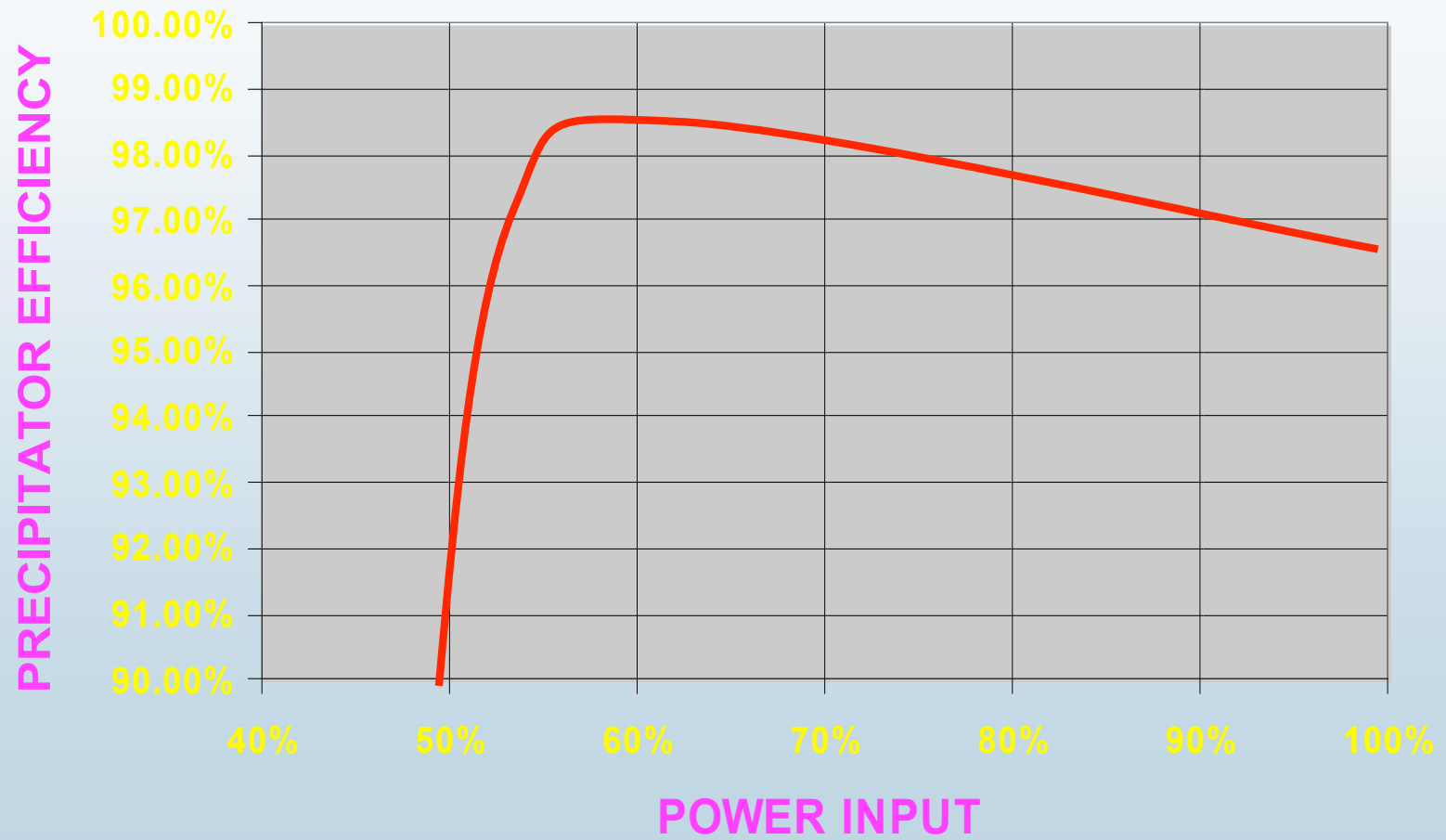
# NEUNDORFER PRECIPITATOR KNOWLEDGE





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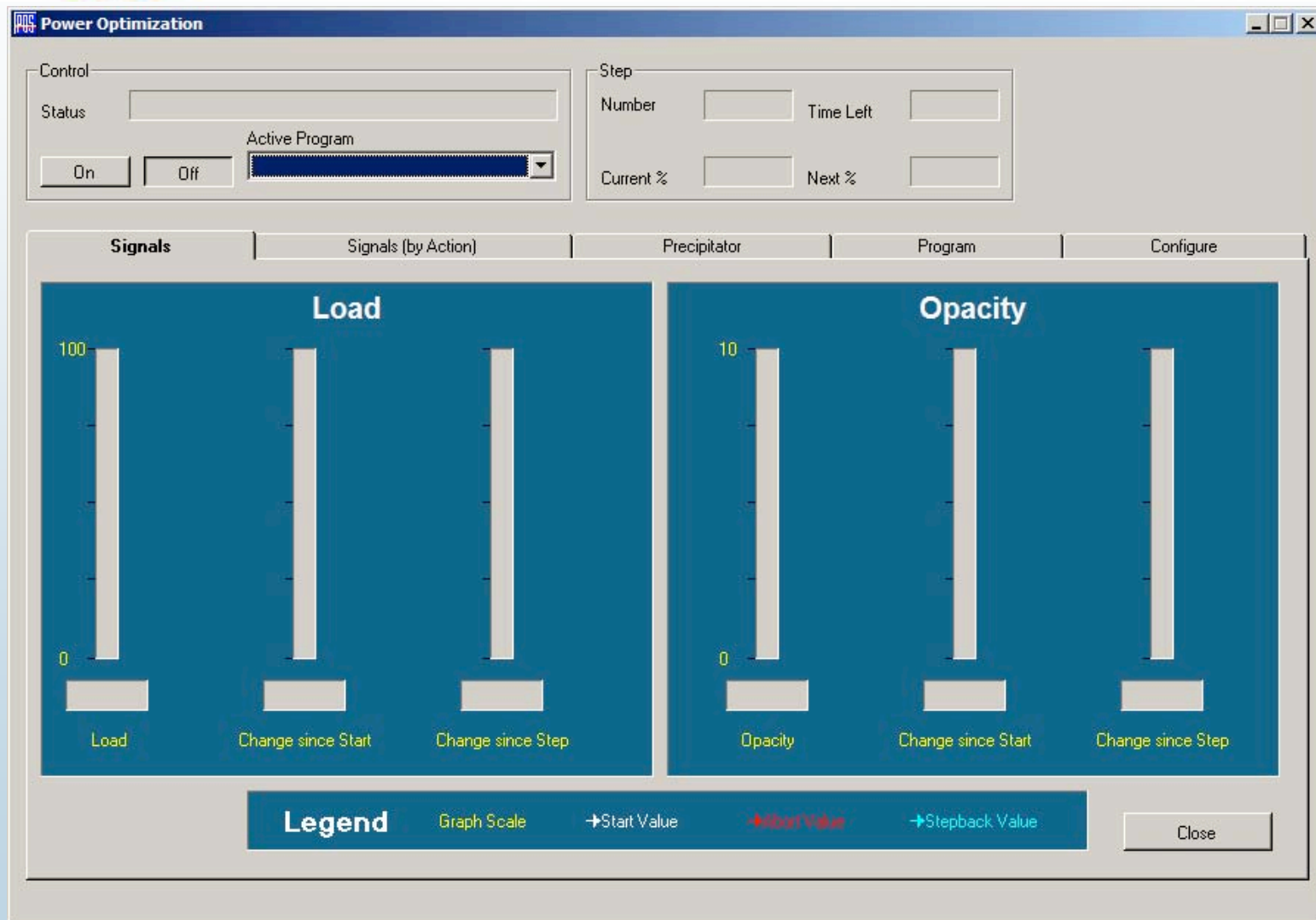
## NEUNDORFER PRECIPITATOR KNOWLEDGE





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# NEUNDORFER PRECIPITATOR KNOWLEDGE





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# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Power Optimization**

Control

Status

On  Off  Active Program

Step

Number  Time Left

Current %  Next %

Signals	Signals (by Action)	Precipitator	Program	Configure
	TR9 100 %		TR10 100 %	
	TR6 100 %		TR8 100 %	
	TR5 100 %		TR7 100 %	
	TR2 100 %		TR4 100 %	
	TR1 100 %		TR3 100 %	

Close



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Power Optimization**

Control: Status  Active Program

Step: Number  Time Left  Current %  Next %

Signals | Signals (by Action) | Precipitator | **Program** | Configure

Select Program:

Step 0 Program Switch: If Load  % then switch to

Percent

Step	%	TR Set's
Step1	0%	0 TR Set's

TR Set Selection (Step 1): Available (10)  In Step (0)

- TR1
- TR2
- TR3
- TR4
- TR5
- TR6
- TR7
- TR8
- TR9
- TR10



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Power Optimization**

Control

Status

Active Program

Step

Number  Time Left

Current %  Next %

Signals | Signals (by Action) | Precipitator | Program | **Configure**

Precipitator Data Log Interval: 0.50 minutes

Step Time  Accelerated StepTime  Abort Delay Time

Daily Log Print Time  Disabled

KW-Hr Cost(\$/KW-Hr)  Maximum Load Change (%)  Maximum Step Load Change (%)

KW/KVA Optimization Minimum Power (Stepback)  Minimum Power (Abort)

Maximum Opacity  Maximum Step Opacity Change  Maximum Opacity Change

Full Scale Load (Load Units)  Full Scale Power (KW or KVA)  Full Scale Opacity (%)



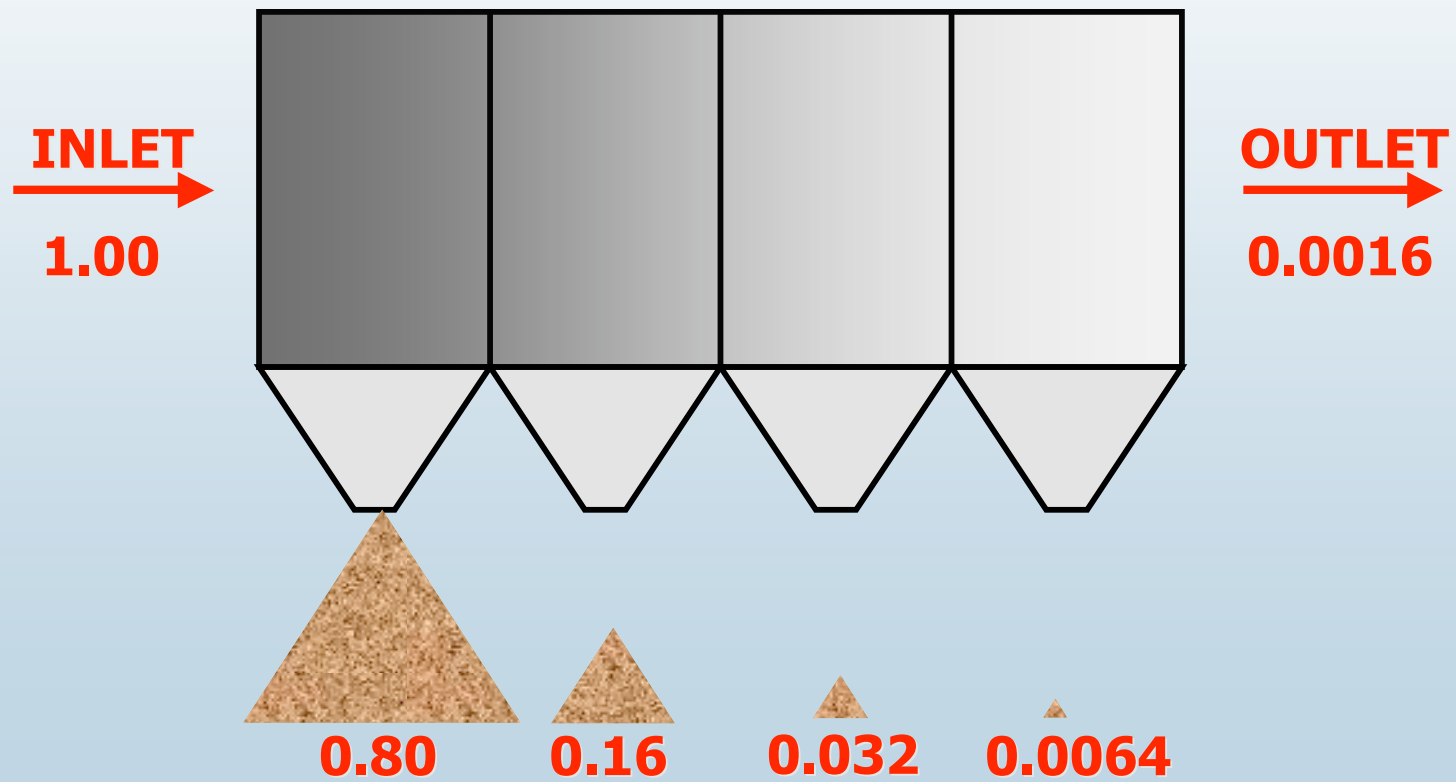
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# NEUNDORFER PRECIPITATOR KNOWLEDGE





## Rapping Program Guidelines





# NEUNDORFER PRECIPITATOR KNOWLEDGE

**MicroRap Control Dialog**

Select Control: RapCon      Current Program: 1

Status	Program Select	Program Edit
Control		
Rapper Controller	Command Accepted	Failed Rappers: 1
Suspend	External Suspend : n/a	Reset Alarms
Resume		Reset Failed

Program Control	
Rapper Optimization	Off
Power Off Rapping:	Off
Current Active POR Program	
Current Program	1
New Program	1
	Restart

Close



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**MicroRap Control Dialog**

Select Control  
RapCon Current Program 1

Status **Program Select** Program Edit

Blank Program in Buffer Buffer Empty

Rapper Program Transfer

Controller  
Upload  
Download  
Program 1

Disk  
Save  
Save as  
Retrieve  
Edit File

System  
Parameters  
Upload  
Download  
Firmware Rev

Print  
POS System Parameters  
Controller System Parameters  
POS Program Buffer  
Controller Program 1  
File Program

Edit Control  
Edit Buff Clear Buff Release Lock

Close



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**MicroRap Control Dialog**

Select Control: **RapCon** Current Program: **1**

Status	Program Select	Program Edit
<b>Field Data</b>		
Select Field: <b>1 PLT A&amp;</b>	<input type="checkbox"/> Field Enable	AG Group: <b>1</b>
Lane Wait: <b>Off</b>	POR Lead Time: <b>Off</b>	AG InterLeave: <b>Off</b>
<input checked="" type="checkbox"/> Minimum	Field Repeat Time: <b>0 D</b> <b>0 Hr</b> <b>0 M</b> <b>0.0 S</b>	Impact Control: No. <b>1</b>
<input type="checkbox"/> Average	Nominal Time: <b>0 Hr</b> <b>0 M</b> <b>0.0 S</b>	Frequency: <b>1</b>
Minimum: <b>Not Used</b>		

**Rapping Sequence**

	<b>Add</b>
	<b>Insert</b>
	<b>Delete</b>

**Rapper Data**

Dual Rapping

Edit All

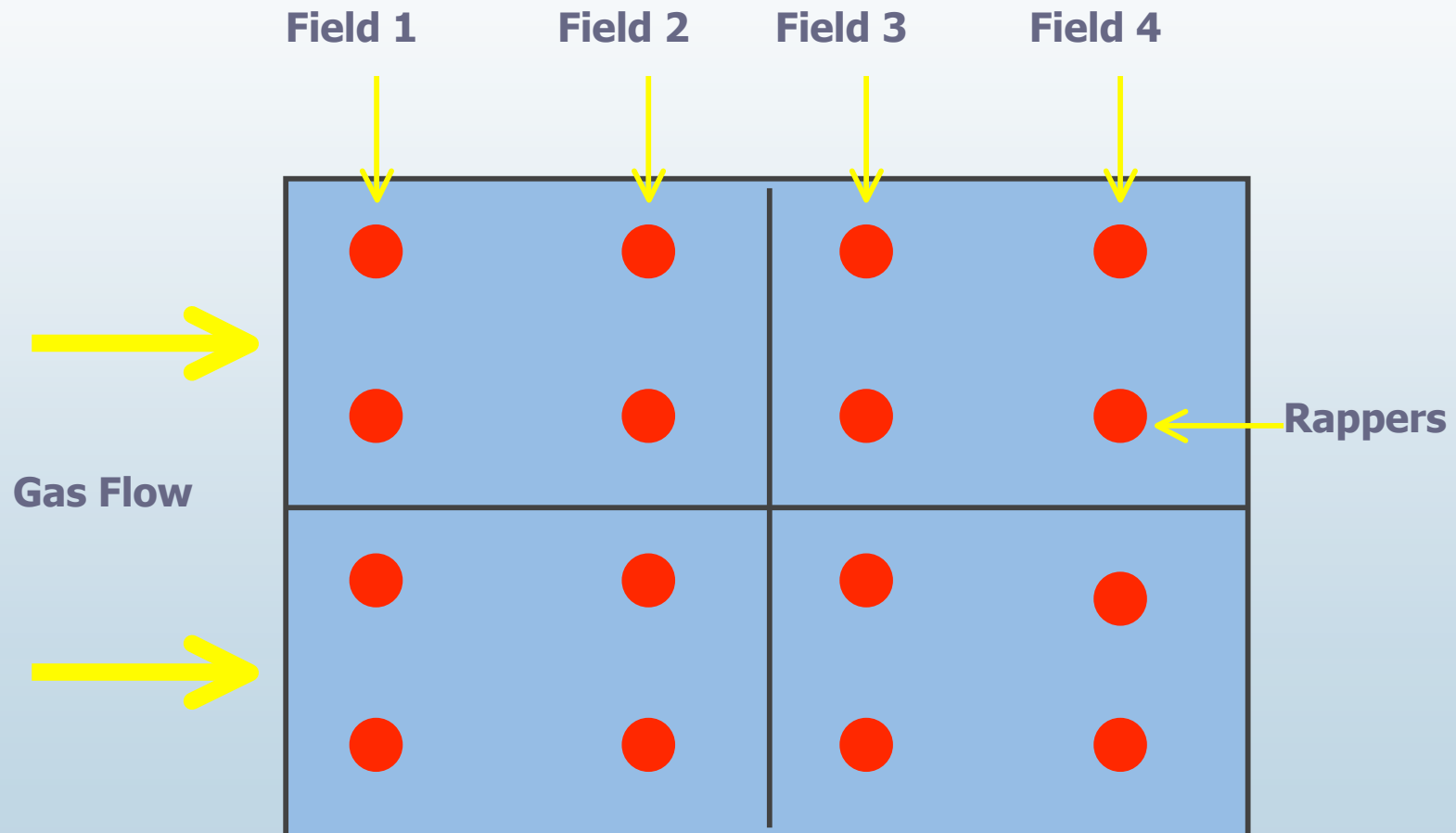
POR Enabled

Rapper On Time

**Close**



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# NEUNDORFER PRECIPITATOR KNOWLEDGE

**POS Display** POS PRECIPITATOR OPTIMIZATION SYSTEM-VER 6

## POS 6.05 Demo

ip 09:33 AM Nov 4  
Configure

Opacity: 3.9 %  
Load: 460.4 MW  
Cost Savings: \$ 0.0  
Power: 322.2 KW

- Rapper Ready
- Rapper Rapped
- Rapper Fail Open
- Rapper Fail Short
- Rapper Com. Err.
- Rapper Com. Dis.
- MVC Stopped
- MVC Running
- MVC Tripped
- MVC Comm Err.
- MVC Comm Dis.

### Edit Special Rapper Program Buffer

Select Control: RapCon Current Program: 1

Sequence	Repeat Time	Duration	Status
Rapper Sequence			
On Time			
On time sets the time in seconds a vibrator is active or the time in half cycles that an impact rapper is activated.			
Rapper On Time			
Waiting Firmware ...			

Add Delete New

< Back Next > Close

Menu Alarms POS 6.05 Flue Gas Conditioning



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Display** POS PRECIPITATOR OPTIMIZATION SYSTEM-VER 6 **POS 6.05 Demo** jp 09:47 AM Nov 4  
Configure

Opacity: 4.1 %  
Load: 489.5 MW  
Cost Savings: \$ 0.0  
Power: 322.3 KW

- Rapper Ready
- Rapper Rapped
- Rapper Fail Open
- Rapper Fail Short
- Rapper Com. Err.
- Rapper Com. Dis.
- MVC Stopped
- MVC Running
- MVC Tripped
- MVC Comm Err.
- MVC Comm Dis.

**Edit Special Rapper Program Buffer**

Select Control: RapCon Current Program: 1

Sequence	Repeat Time	Duration	Status
Repeat Time The elapsed time from the start of the first rapper in the sequence until the next time that rapper is activated. 0 Hr 0 M 0.0 S			
Rapping Interval The amount of time between the activation of a rapper in a sequence and the activation of the next rapper in the sequence. Based on the rapping sequence and the repeat time that you have selected, the rapper interval is: Invalid			

< Back Next > Close

Menu Alarms POS 6.05 Flue Gas Conditioning



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Display** POS 6.05 Demo

PRECIPITATOR OPTIMIZATION SYSTEM-VER 6

ip 09:48 AM Nov 4  
Configure

Opacity 3.8 %  
Load 461.5 MW  
Cost Savings \$ 0.0  
Power 322.1 KW

■ Rapper Ready  
■ Rapper Rapped  
■ Rapper Fail Open  
■ Rapper Fail Short  
■ Rapper Com. Err.  
■ Rapper Com. Dis.

■ MVC Stopped  
■ MVC Running  
■ MVC Tripped  
■ MVC Comm Err.  
■ MVC Comm Dis.

**Edit Special Rapper Program Buffer**

Select Control: RapCon Current Program 1

Sequence	Repeat Time	Duration	Status
Duration			
How long do you want this special rapping program to operate?			
0 Hr 0 M 0 S			

< Back Next > Close

Menu Alarms POS 6.05 Flue Gas Conditioning



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**POS Display**    **PRECIPITATOR OPTIMIZATION SYSTEM-VER 6**    **POS 6.05 Demo**    ip    09:50 AM Nov 4  
Configure    [Alarm Icon]    [Help Icon]

Opacity: 3.9 %  
Load: 466.1 MW  
Cost Savings: \$ 0.0  
Power: 322.1 KW

**Legend:**  
■ Rapper Ready (Green)  
■ Rapper Rapped (Red)  
■ Rapper Fail Open (Yellow)  
■ Rapper Fail Short (Magenta)  
■ Rapper Com. Err. (White)  
■ Rapper Com. Dis. (Black)  
■ MVC Stopped (Green)  
■ MVC Running (Red)  
■ MVC Tripped (Yellow)  
■ MVC Comm Err. (White)  
■ MVC Comm Dis. (Black)

**Edit: Special Rapper Program Buffer**

Select Control: RapCon    Current Program: 1

Sequence	Repeat Time	Duration	Status
			Ready
			User Selected Duration: Invalid
			Elapsed Time: Invalid

Execute    Save Program  
Abort    Retrieve Program

< Back    Next >    Close

Menu    Alarms    POS 6.05    Flue Gas Conditioning    [Navigation Icons]



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Display** POS 6.05 Demo

ip 09:51 AM Nov 4  
Configure

Opacity 4.1 %  
Load 479.8 MW  
Cost Savings \$ 0.0  
Power 321.4 KW

**MicroRap Optimization Conditions**

Control: RapCon [On] [Off] Program 1

Configure: [Configure] [Edit] [Accept] [Cancel] [Close]

**Condition 1**  
 Load  greater than  less than 0 MW  
 Opacity  greater than  less than 0 %  
 Precipitator Power  greater than  less than 0 KW  
 Time of day: Start 0:00:00 AM End 0:01:00 AM  
Logical:  And  Or Start Micrap program # 1

**Condition 2**  
 Load  greater than  less than 0 MW  
 Opacity  greater than  less than 0 %  
 Precipitator Power  greater than  less than 0 KW  
 Time of day: Start 0:00:00 AM End 0:01:00 AM  
Logical:  And  Or Start Micrap program # 1

**Condition 3**  
 Load  greater than  less than 0 MW  
 Opacity  greater than  less than 0 %  
 Precipitator Power  greater than  less than 0 KW  
 Time of day: Start 0:00:00 AM End 0:01:00 AM  
Logical:  And  Or Start Micrap program # 1

**Condition 4**  
 Load  greater than  less than 0 MW  
 Opacity  greater than  less than 0 %  
 Precipitator Power  greater than  less than 0 KW  
 Time of day: Start 0:00:00 AM End 0:01:00 AM  
Logical:  And  Or Start Micrap program # 1

**Condition 5**  
 Load  greater than  less than 0 MW  
 Opacity  greater than  less than 0 %  
 Precipitator Power  greater than  less than 0 KW  
 Time of day: Start 0:00:00 AM End 0:01:00 AM  
Logical:  And  Or Start Micrap program # 1

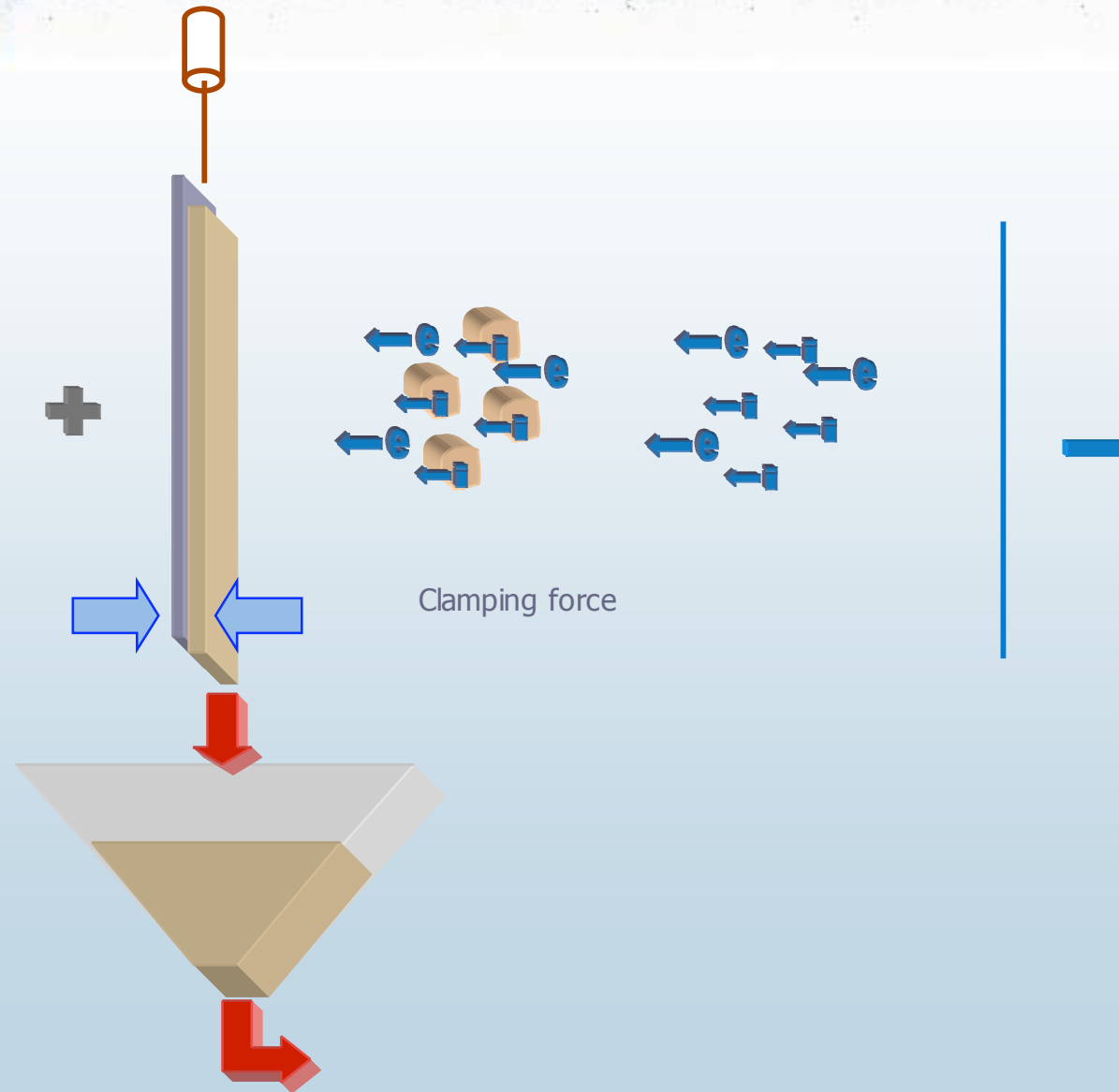
**Condition 6**  
 Load  greater than  less than 0 MW  
 Opacity  greater than  less than 0 %  
 Precipitator Power  greater than  less than 0 KW  
 Time of day: Start 0:00:00 AM End 0:01:00 AM  
Logical:  And  Or Start Micrap program # 1

**Legend:**  
Rapper Ready (Green)  
Rapper Rapped (Red)  
Rapper Fail Open (Yellow)  
Rapper Fail Short (Magenta)  
Rapper Com. Err. (White)  
Rapper Com. Dis. (Black)  
MVC Stopped (Green)  
MVC Running (Red)  
MVC Tripped (Yellow)  
MVC Comm Err. (White)  
MVC Comm Dis. (Black)

Menu Alarms POS 6.05 Flue Gas Conditioning



# NEUNDORFER PRECIPITATOR KNOWLEDGE





# NEUNDORFER PRECIPITATOR KNOWLEDGE

**Display** POS 6.05 Demo

PRECIPITATOR OPTIMIZATION SYSTEM-VER 6

ip 09:54 AM Nov 4  
Configure

Opacity 3.9 %

Load 473.2 MW

Cost Savings \$ 0.0

Power 322.0 KW

**Data Link POR**

POR Control: RapCon [On] [Off]

Current POR Program: [ ] [Abort]

Configure: [Configure] [Program] [Print]

POR Schedule

	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00
Nov 4																									
Nov 5																									
Nov 6																									
Nov 7																									
Nov 8																									
Nov 9																									
Nov 10																									

Selected Program

Name: [ ] [New Program] [Edit] [Launch Now]

Color Identifier: [ ] [Select]

TR Set: [ ]

Reduce Power to: 0 %

Program File Name: [ ]

Start Time: [ ]

Duration: 1 Min

Repeat Time: [ ]

Enable:

Database Status: [ ]

[Delete POR] [Accept] [Cancel] [Close]

Menu Alarms POS 6.05 Flue Gas Conditioning



# NEUNDORFER PRECIPITATOR KNOWLEDGE

**POS 6.05 Demo**

Opacity: 3.9 %  
Load: 453.1 MW  
Cost Savings: \$ 0.0  
Power: 321.9 KW

**POS PRECIPITATOR OPTIMIZATION SYSTEM-VER 6**

ip 09:55 AM Nov 4  
Configure

**Data Link POR**

**POR Common Parameters**

POR Control: RapCon

POR Configuration:

- Suspend power optimization during POR program execution
- Disable POR if opacity is greater than 0 %
- Disable POR if load is greater than 0 MW
- Disable POR if load changes 0 MW/Min

Abort Active POR Program:

- If opacity is greater than 0 %
- If load is greater than 0 MW
- If load changes 0 MW/Min

POR Alarm Configuration:

- Disabled
- Event
- Pop-up
- Medium
- High

Database Status:

POR Schedule:

	12:00	1:00	2:00	3:00	4:00
Nov 4					
Nov 5					
Nov 6					
Nov 7					
Nov 8					
Nov 9					
Nov 10					

Selected Program:

Name: \_\_\_\_\_

Color Identifier: \_\_\_\_\_

TR Set: \_\_\_\_\_

Reduce Power to: 0 %

Program File Name: \_\_\_\_\_

Start Time: \_\_\_\_\_

Duration: 1 Mi

Repeat Time: \_\_\_\_\_

Enable:

Program | Print

Launch Now

Accept | Cancel | Close

Close

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