

REINHOLD ENVIRONMENTAL Ltd.



**2017 APC & Wastewater Round Table
& Expo Presentation**

July 17 & 18, 2017 in Charlotte, NC / Hosted by Duke Energy

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Redkoh Industries
On-Line Retrofits
Jim Bridger Power Plant

On-Line Retrofits

8:18 AM

Existing control system.



On-Line Retrofits

8:18 AM

Existing CLR fans are re-used.



On-Line Retrofits

9:00 AM

All existing meters are removed and the door panel containing lights and switches are also removed.



On-Line Retrofits

9:33 AM

Cabinet is thoroughly
cleaned.

The Field Wiring is all
saved.



On-Line Retrofits

9:50 AM

Current Transformer
and power
distribution block are
mounted



On-Line Retrofits

10:22 AM

New kV and mA
Feedback Board and
Control Transformer
are mounted.



On-Line Retrofits

10:41 AM

New Door Mount
Meters and Keypad
and Display Installed



On-Line Retrofits

10:41 AM

A front view of the
Keypad & Display
panel.



On-Line Retrofits

11:15 AM

Pre-assembled panel is
lifted in place.



On-Line Retrofits

11:50 AM

Door Mount Meters
Connected.



On-Line Retrofits

11:50 AM

Field wiring from T/R
and Rapper motor
wiring is re-connected



On-Line Retrofits

12:23 PM

T/R power cabling is re-connected at the power distribution block.



On-Line Retrofits

12:52 PM

Control is now ready
to be powered on.



Retrofits By The Numbers

(30) Controls

(12) Switch Mode Power
Supplies

(18) 60 Hz Controls

(17) Days to Complete
Upgrade

(0) Days Lost Due to
Upgrade



Outage Work

Existing 60 Hz T/R Sets



400 Hz T/R Set Upgrade





CLR's Removed and Replaced



New External CLR



3 / 4 mH CLR at 60Hz



32E New CLR – 4 mH @60 Hz



33E New CLR – 3mH @60 Hz



3 mH CLR at 60Hz



34E Old CLR Above Cabinet – 3 mH @60Hz

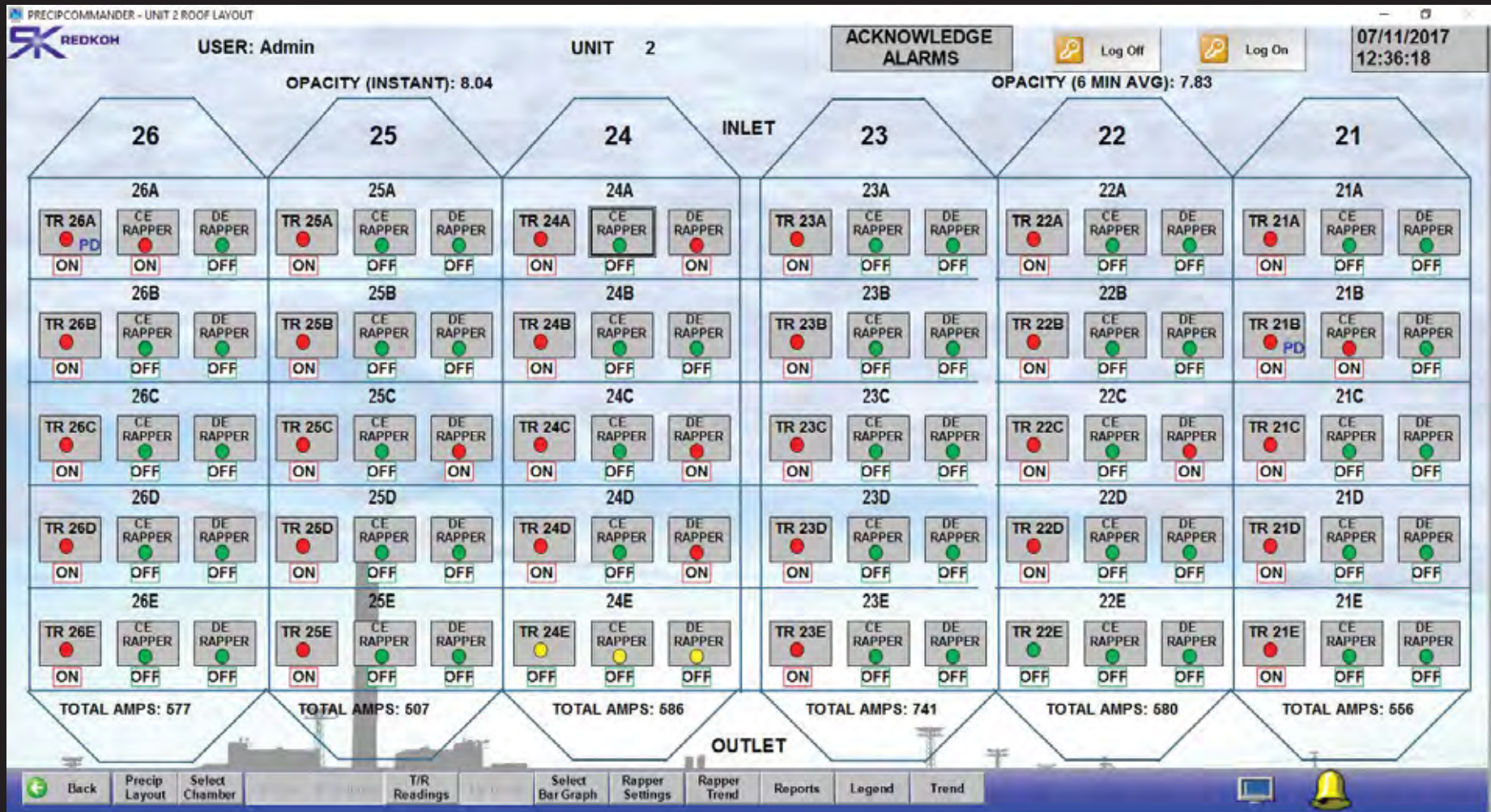


36E Old CLR Above Cabinet 3mH @ 60Hz

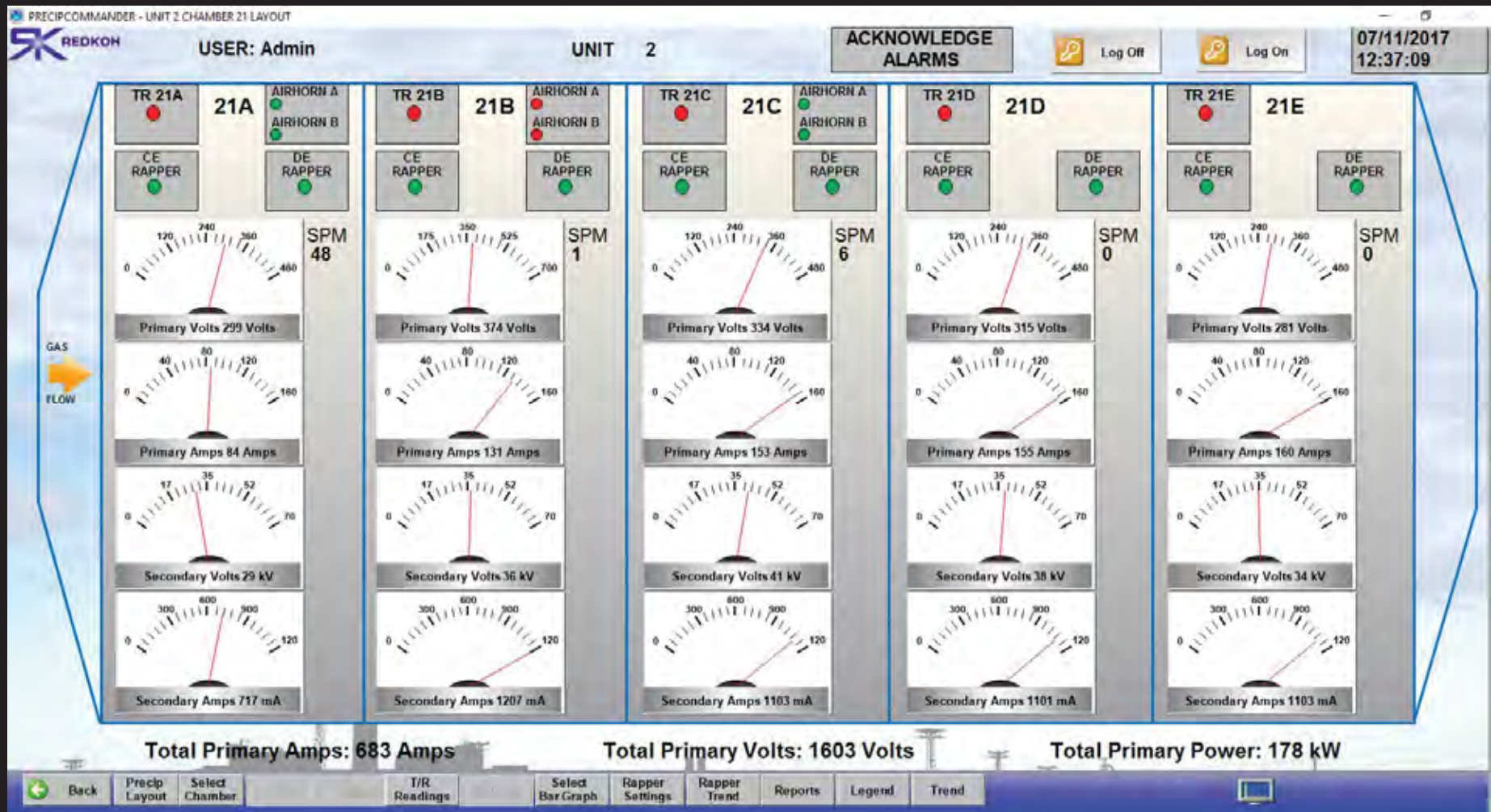


PrecipCommander Central Control System

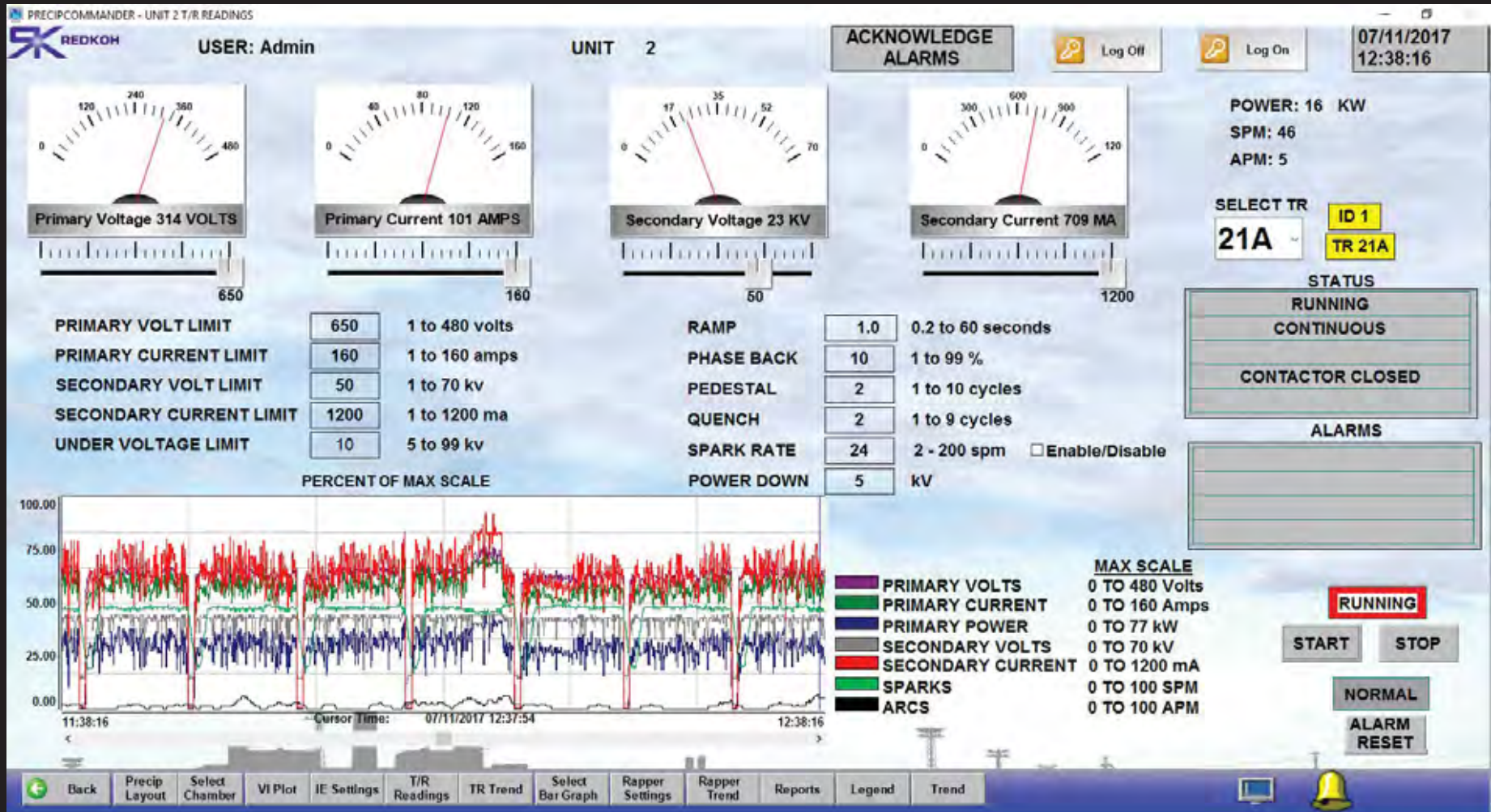
ESP Overview



Gas Path Overview



T/R Overview



PRIMARY VOLTS	0 TO 480 Volts
PRIMARY CURRENT	0 TO 160 Amps
PRIMARY POWER	0 TO 77 kw
SECONDARY VOLTS	0 TO 70 kv
SECONDARY CURRENT	0 TO 1200 mA
SPARKS	0 TO 100 SPM
ARC S	0 TO 100 APM

Back Precip Layout Select Chamber VI Plot IE Settings T/R Readings TR Trend Select Bar Graph Rapper Settings Rapper Trend Reports Legend Trend