

# Worldwide Pollution Control Association

**Ameren Seminar**  
**August 19–20, 2008**  
**Effingham, IL**



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Improving **ESP** Performance  
in a  
**SHORT TIME**

# **Kansas Power & Light Tecumseh Station – Unit #9**

Unit #9 is an 80 MW Combustion Engineering PC boiler built in the 1950's. In recent years, the boiler was converted to fire 8900 Btu/lb PRB coal. Early particulate removal consisted of a mechanical dust collector. In 1976 a single chamber, 3-field PC Walther, ESP was added downstream of the dust collector.

# Kansas Power & Light Tecumseh Station – Unit #9

The rebuilt Unit uses the **same casing** as the existing ESP, but with internals converted from **tumbling hammer to top-rapped** design. The other design changes are:

## Old

3 Mechanical fields

12" CE spacing

Conventional TR's

Opacity 15-20%

## New

6 mechanical fields

16" CE spacing

SMPS

Opacity <<10%

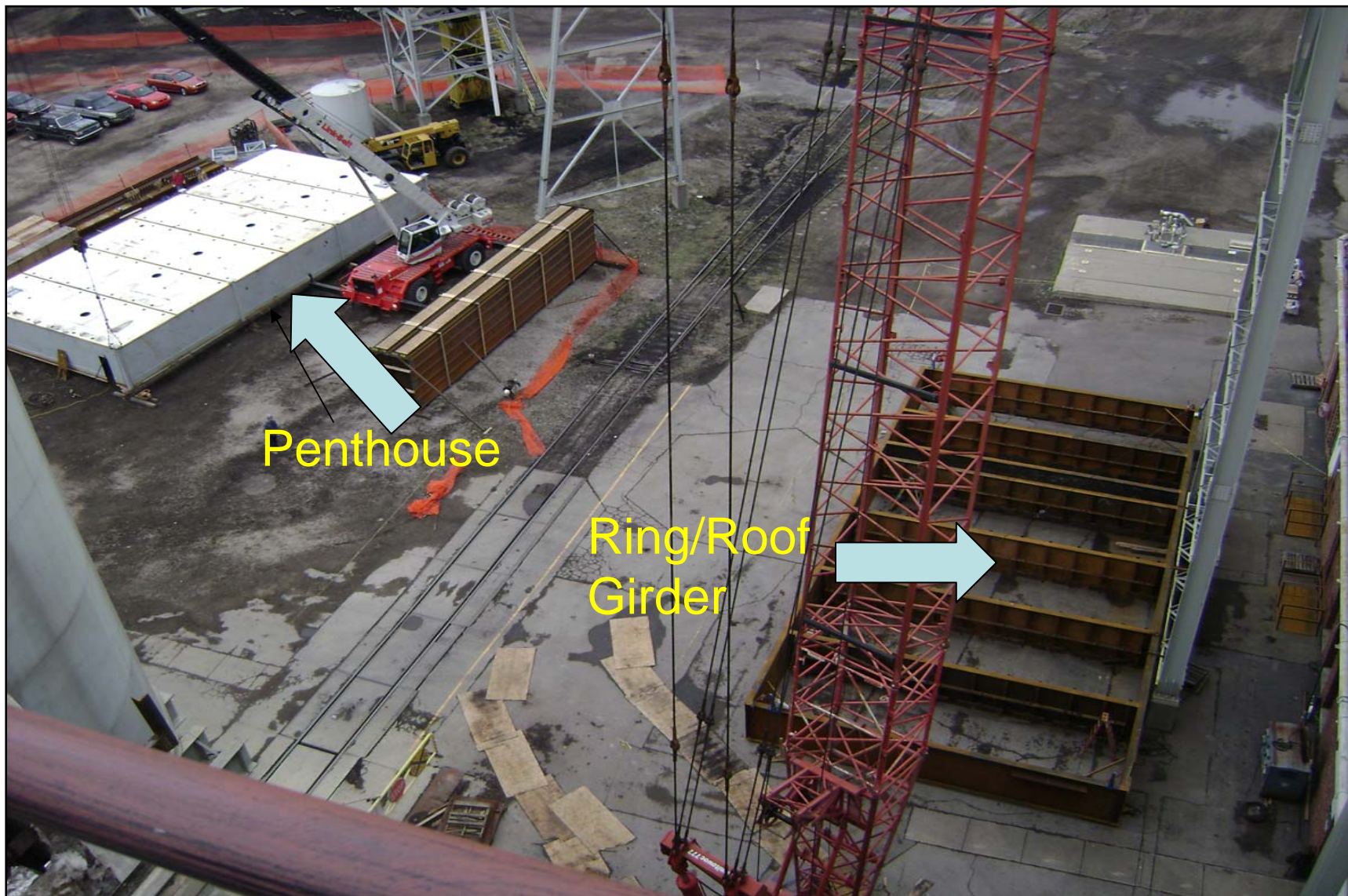
# **Kansas Power & Light Tecumseh Station – Unit #9**

**This is the first start-up of SEI's new ESP design concept, with **3 design improvements** combined into a single ESP installation:**

- **SEI/ELEX rigid discharge electrodes**
- **NWL Switchmode power supplies**
- **Wide (16") collecting plate spacing**

**Preliminary indications are that the effects of this combination are quite synergistic, and that this concept could be applied to a broad range of applications. Formal performance testing will take place the week of July 13.**

# Pre Outage work to pre-assemble the roof extension and penthouse



This shows that the unit was originally a tumbling hammer design



# Day 4

## Starting to remove the old collecting electrodes



# Day 7

## Internals removal complete



Day 7

Finishing the flanges to accept the roof girders and ring girders



# Day 8

## Lifting the pre-assembled ring/roof girder



Day 8  
Lowering the pre-assembled  
ring/roof girder onto the prepared flange



# Day 12

## Lifting a bundle of new Collecting electrodes



# Day 12

## Installing the new Collecting electrodes



# Day 20

## Pre-assembling the weather enclosure



# Day 20

## Starting to install the hot roof



Day 23  
Hot roof installation complete



# Day 24

## Installing the CE rapper sleeves



# Day 25

## Insulating the weather enclosure



Day 25  
Rappers, T/R sets installed, LV wiring started



Day 27  
Nighttime lifting of weather enclosure



Day 28

Weather enclosure in place - finish LV wiring





Day 29  
Rebuild  
complete  
Ready for  
Startup



Startup  
Successful  
After  
4 week  
outage