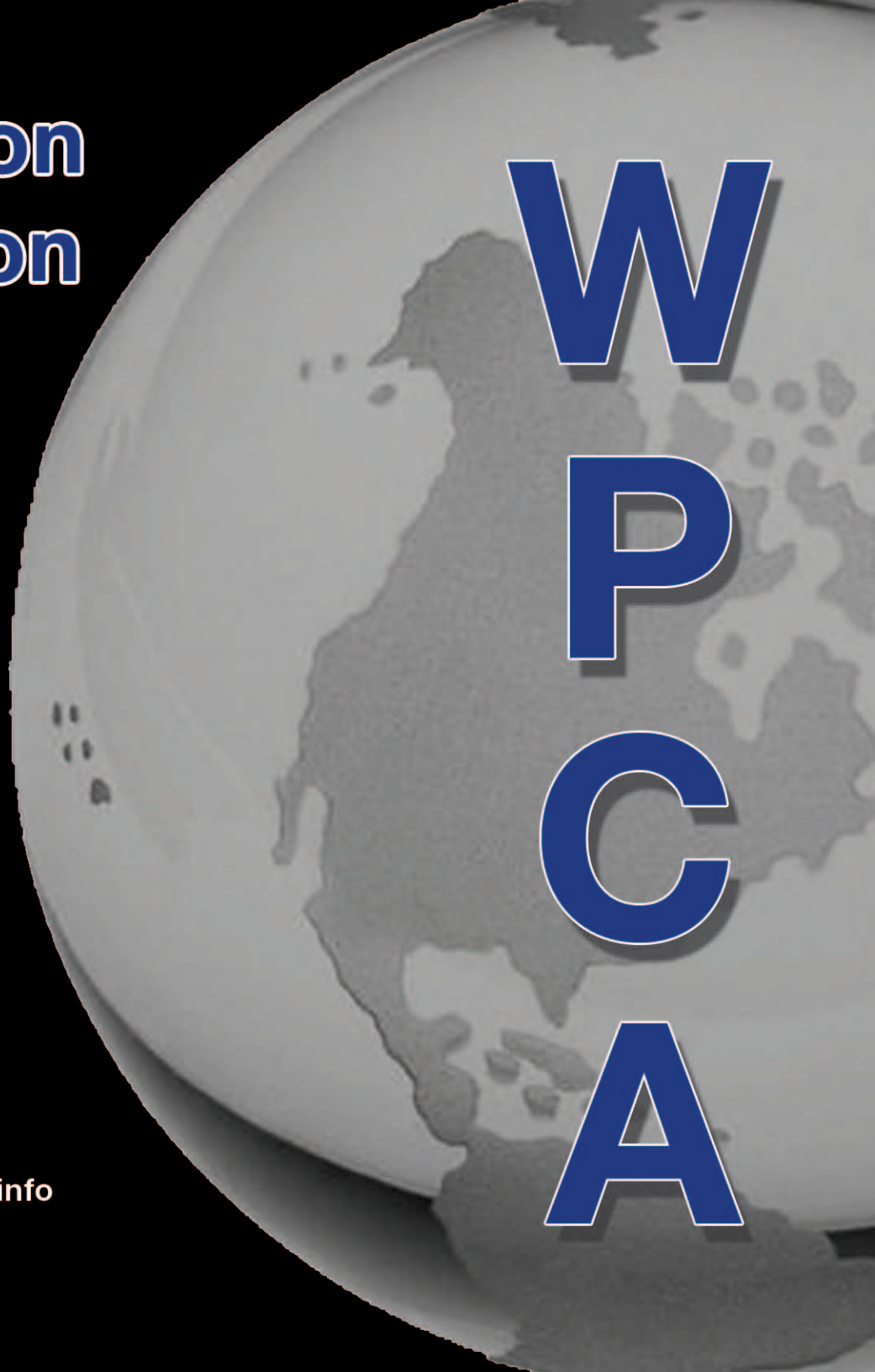
Worldwide Pollution Control Association



Duke Energy Seminar

September 3 – 5, 2008

Concord, NC

WPCA

Vist our website at www.wpca.info

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	New
3 Mechanical fields	6 mechanical fields
12” CE spacing	16” CE spacing
Conventional TR’s	SMPS
Opacity 15-20%	Opacity <<10%

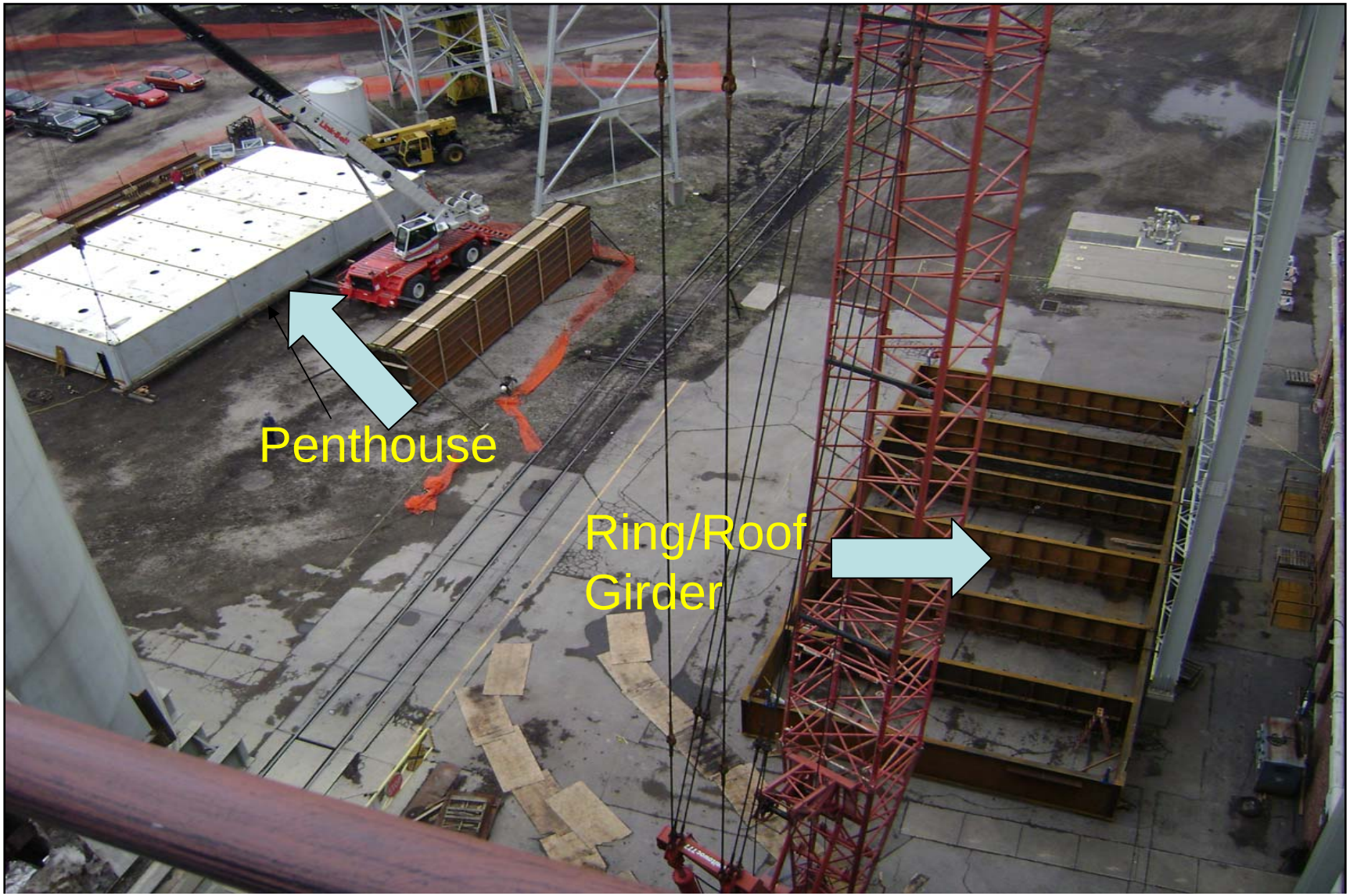
Kansas Power & Light
Tecumseh Station – Unit #9

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