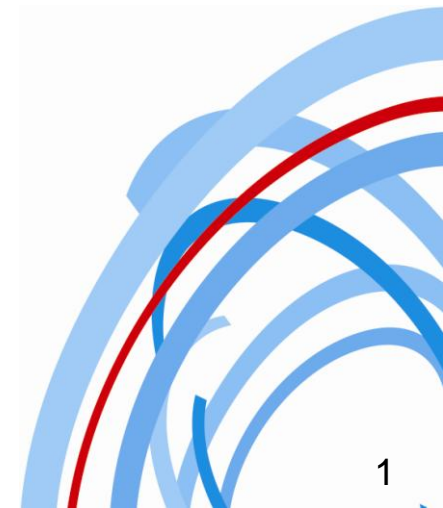


Technologies Available for Wet to Dry Bottom Ash Conversions

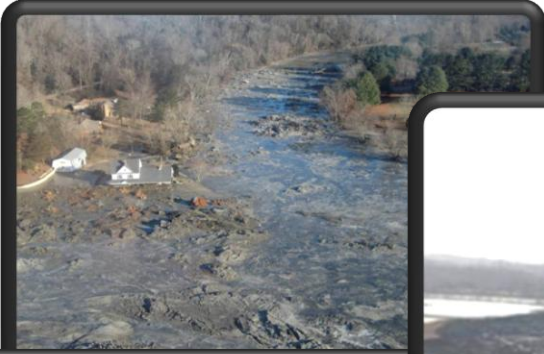
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www.cbpg.com



McIlvaine Company Hot Topic Hour

“Update on Coal Ash and CCR Issues, Standards and Solutions”

Bottom Ash in the News

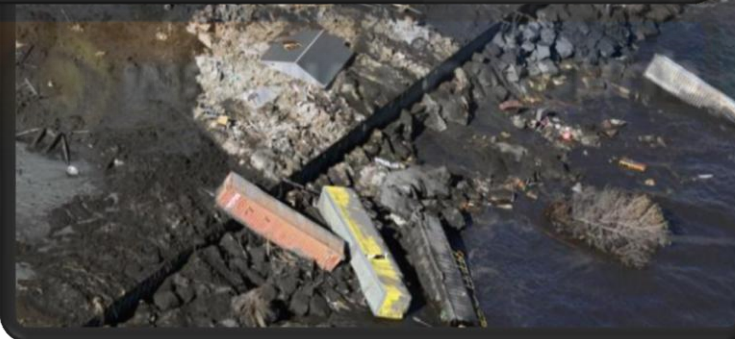


 **Massive Cleanup**



SLUDGE DEVOURS NEIGHBORHOOD
300 MILLION GALLONS OF ASH & WATER
RELEASED AFTER DAM BURST AT PLANT

WATCHING THE DOW
37.19
8505.67
MSNBC



“...indicates concentrations (of arsenic) that are very high...”

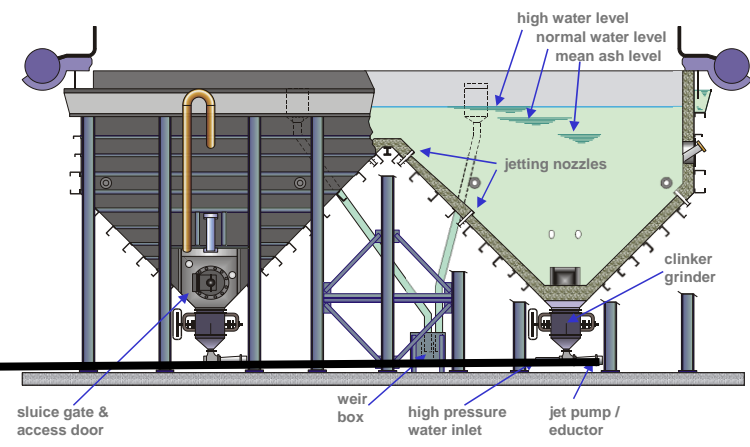
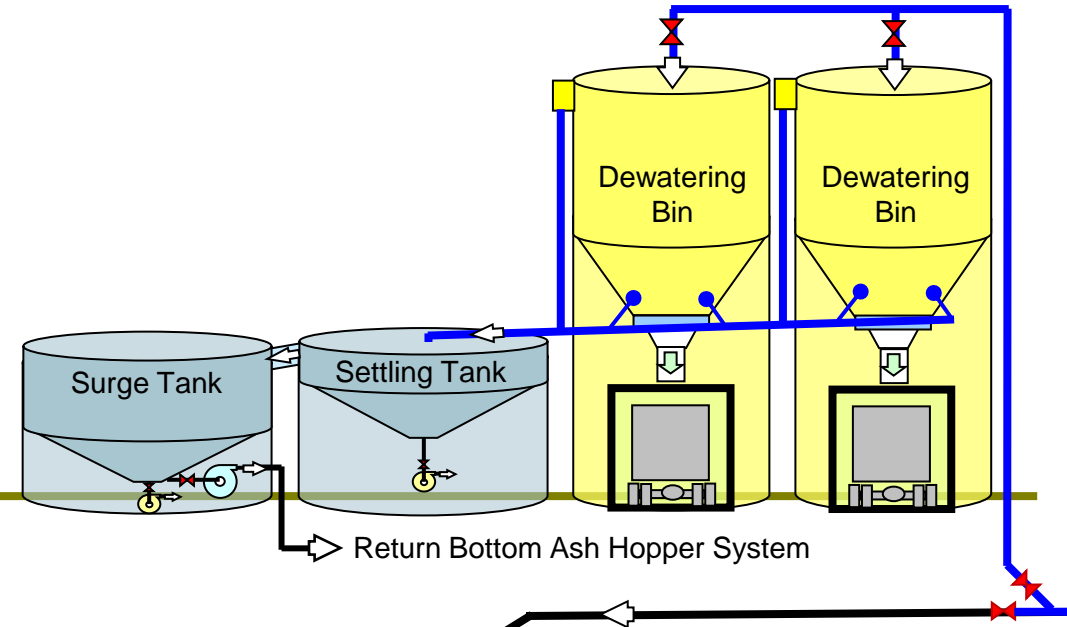
cbsnews.com



Plants that are considering a wet to dry bottom ash conversion (or ash pond elimination) have the following options:

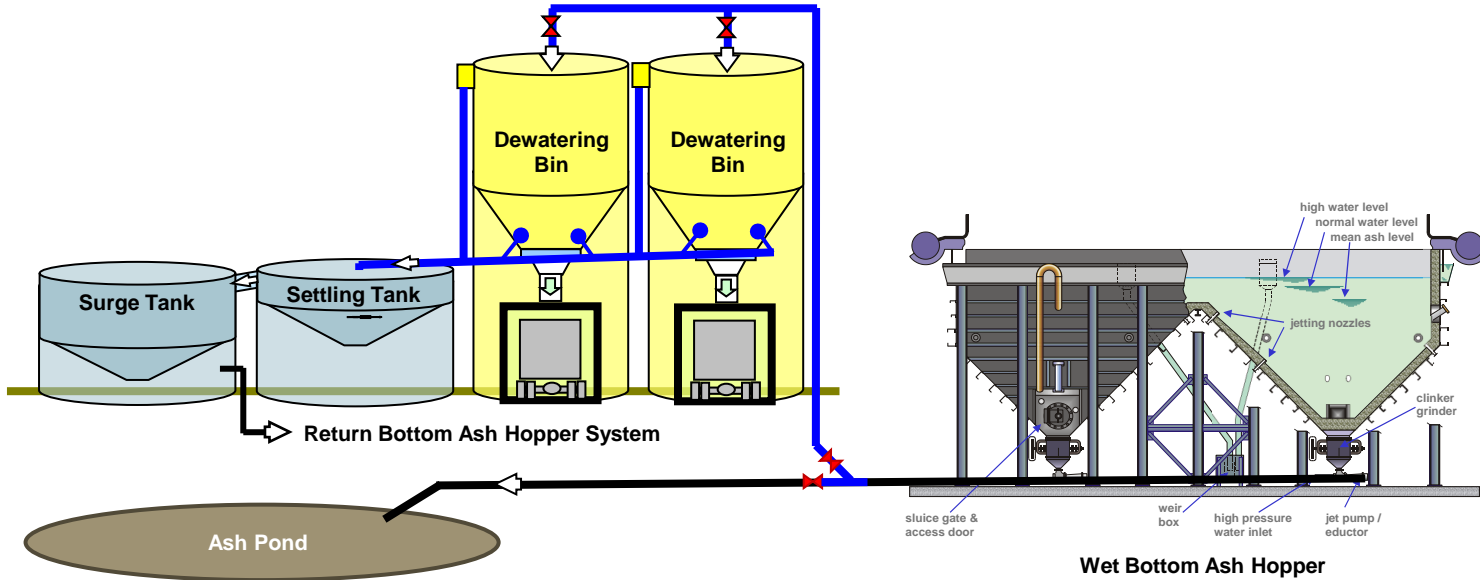
- **1) Divert the flow of the existing bottom ash slurry piping to new dewatering bins.**
- **2) Divert the flow of the existing bottom ash slurry piping to a remote submerged scraper conveyor (RSSC) system (ASHCON™).**
- **3) Replace the bottom ash hopper system with a submerged scraper conveyor (SSC).**
- **4) Replace the bottom ash hopper system with a dry ash conveyor (DRYCON™).**

- **Option-1 Divert the flow of the existing bottom ash slurry piping to new de-watering bins.**



Wet Bottom Ash Hopper





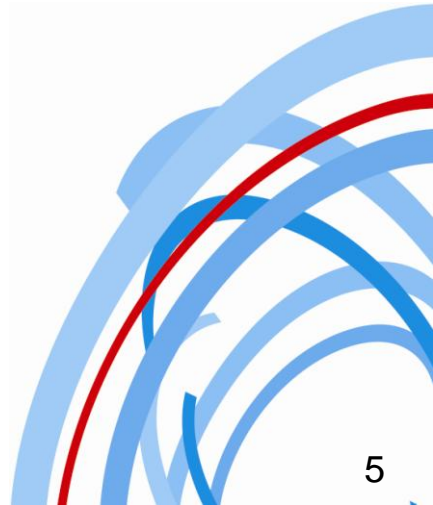
De-Watering Bin System

Advantages

- Little to NO outage
- Original Ash Hopper Remains 40 year old technology

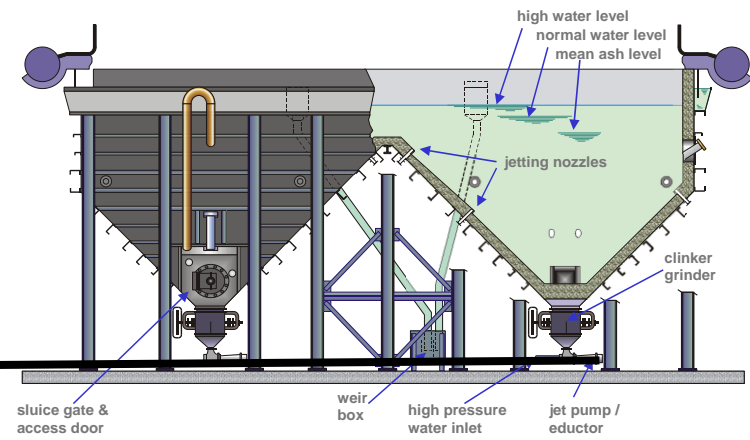
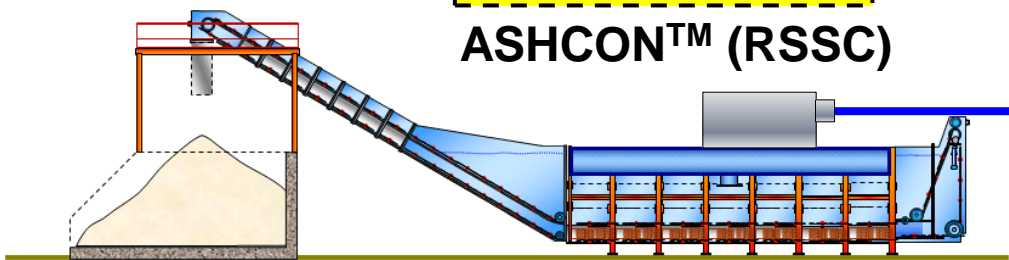
Disadvantages

- Not a dry system!
- Original Ash Hopper Remains 40 year old technology
- High Power Consumption
- Leaking Gates
- Plugged De-Watering Screens
- No Gain in Boiler Efficiency

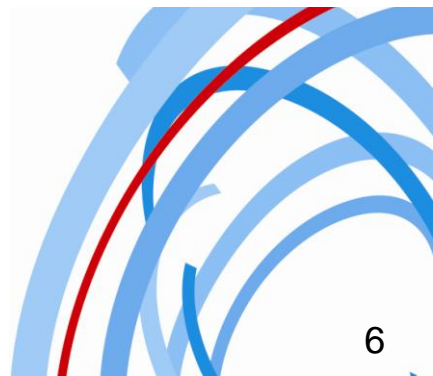


- **Option-2 Divert the flow of the existing bottom ash slurry piping to a remote submerged scraper conveyor (RSSC) system (ASHCON™).**

Patent Pending
ASHCON™ (RSSC)



Wet Bottom Ash Hopper



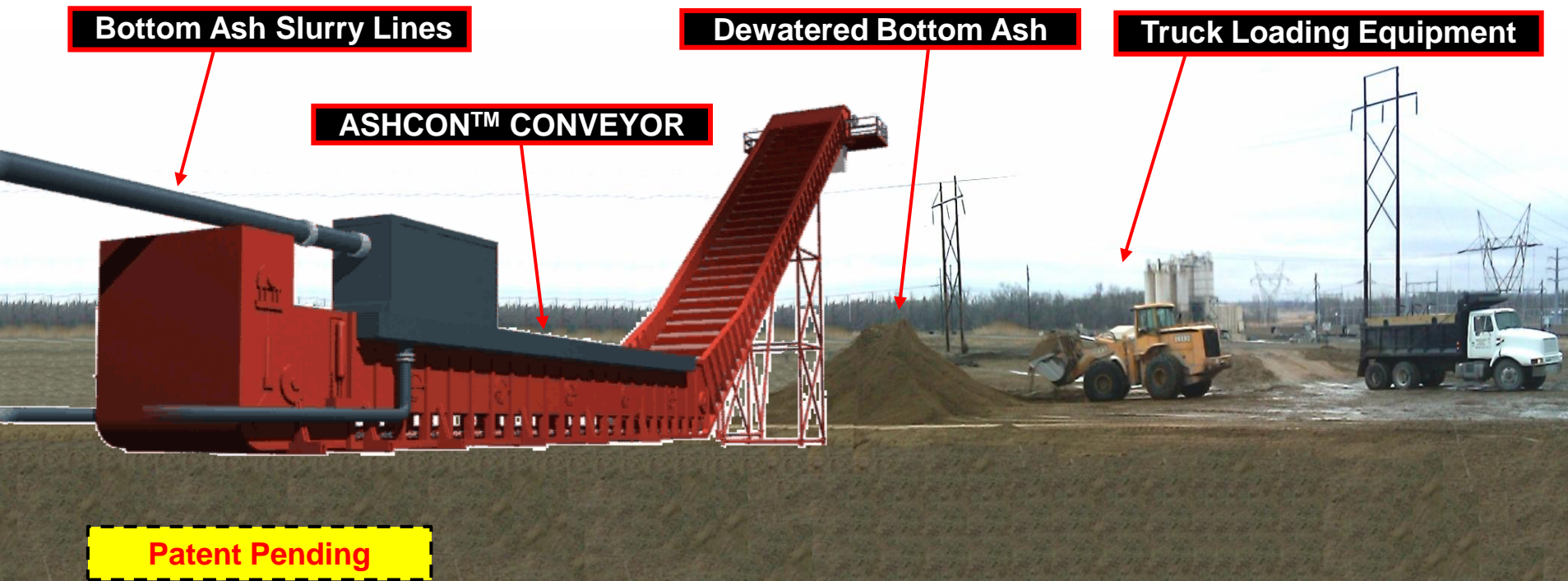
ASHCON (RSSC) Systems

Advantages

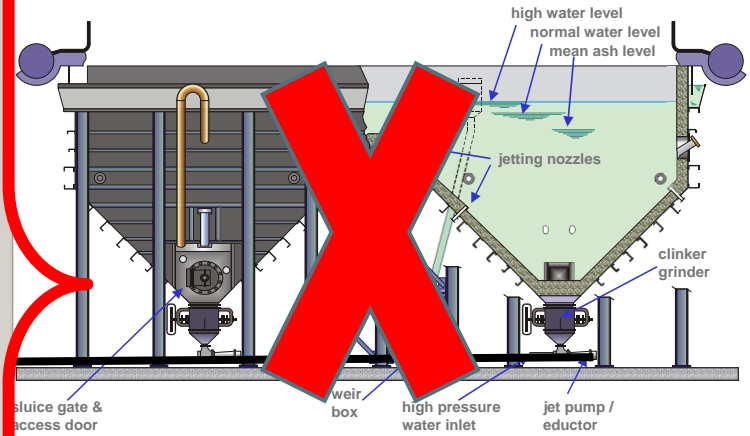
- Little to NO outage
- Original Ash Hopper Remains
- Small foot print

Disadvantages

- Not a dry system!
- Original Ash Hopper Remains
- High Power Consumption



- **Option-3 Replace the bottom ash hopper system with a submerged scraper conveyor (SSC).**



Wet Bottom Ash Hopper





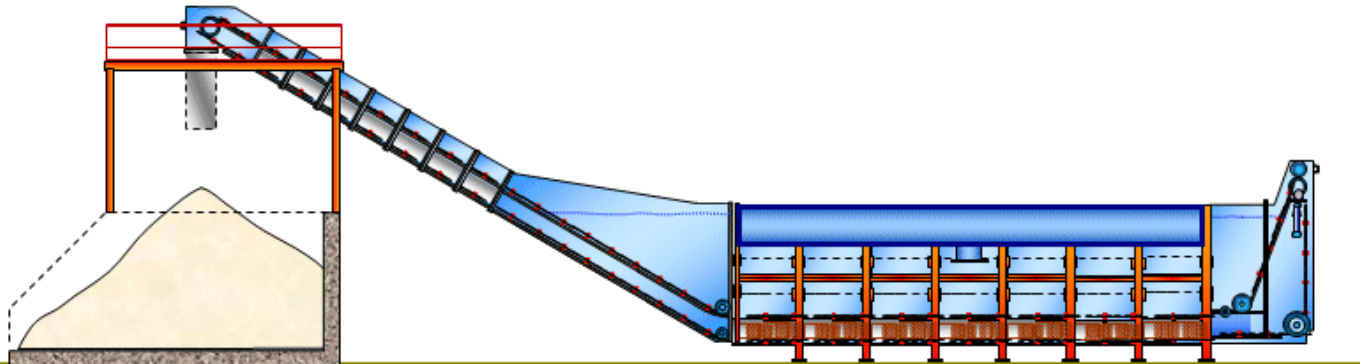
SSC Systems

Advantages

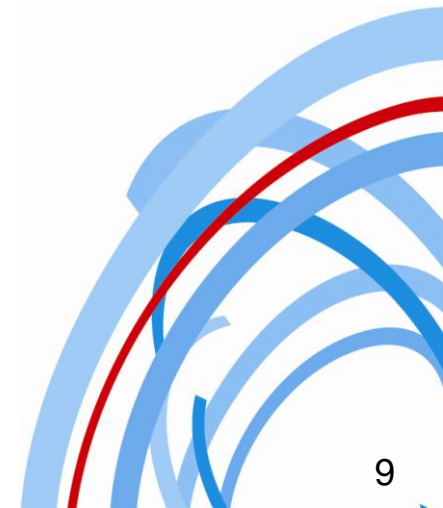
- Well established technology
- Minimal water usage
- No other de-watering required

Disadvantages

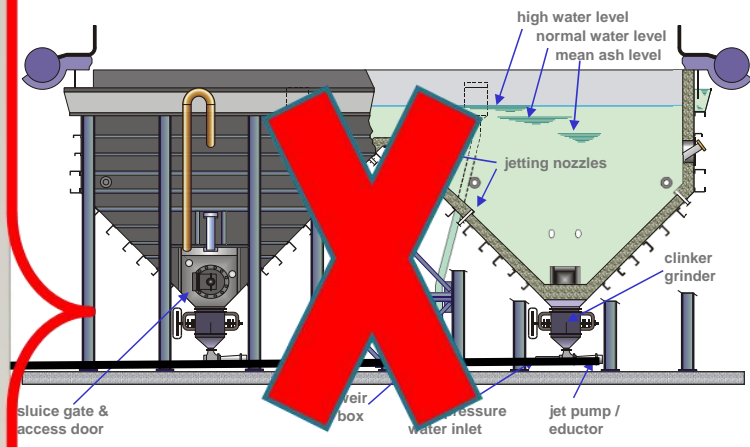
- Not a dry system
- Major outage required
- Can go 100% dry for same cost
- No Gain in Boiler Efficiency



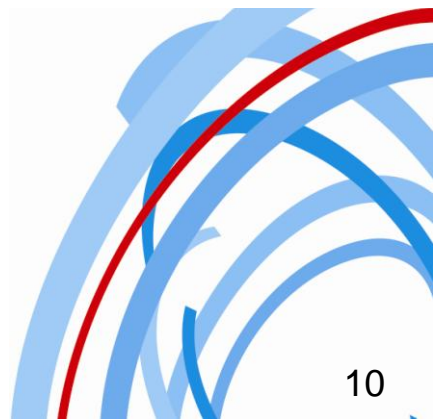
Submerged Scraper Conveyor (SSC)



- **Option-4 Replace the bottom ash hopper system with a dry ash bottom conveyor (DRYCON™).**



Wet Bottom Ash Hopper



Combustion Chamber -0.5 to -2.0" H₂O

Ambient Cooling Air
 Air Volume 45-70%

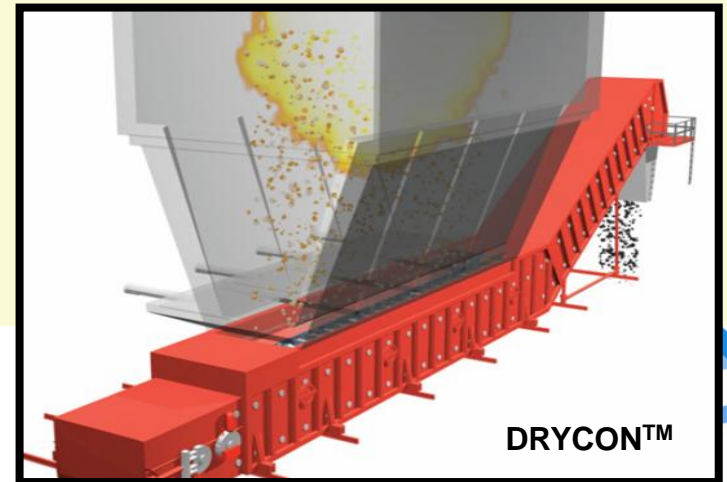
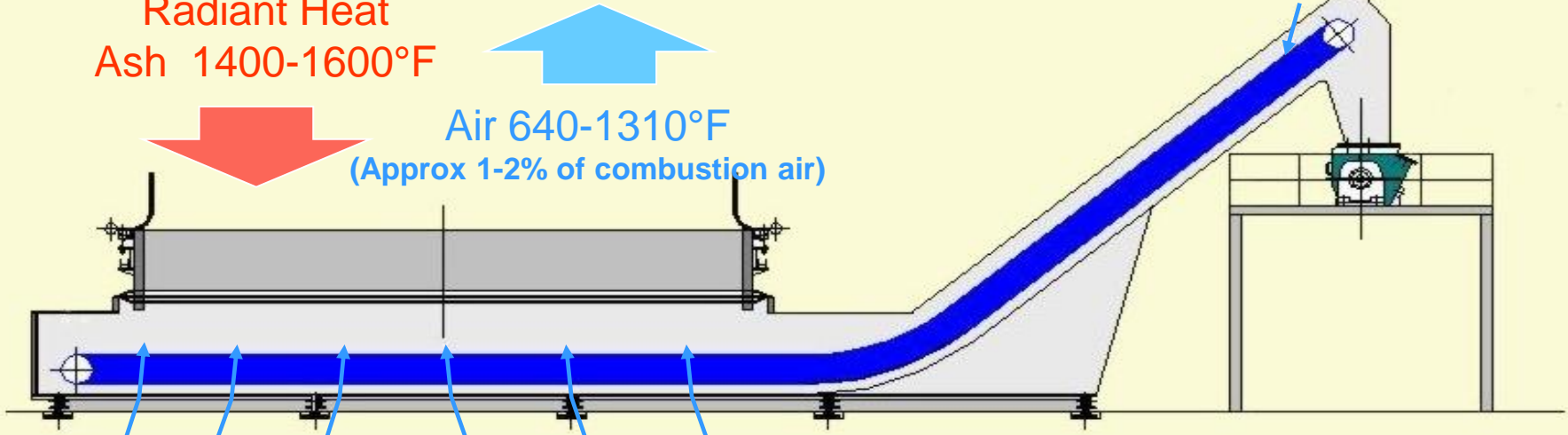
Radiant Heat
 Ash 1400-1600°F

Air 640-1310°F
 (Approx 1-2% of combustion air)

Ambient Cooling Air

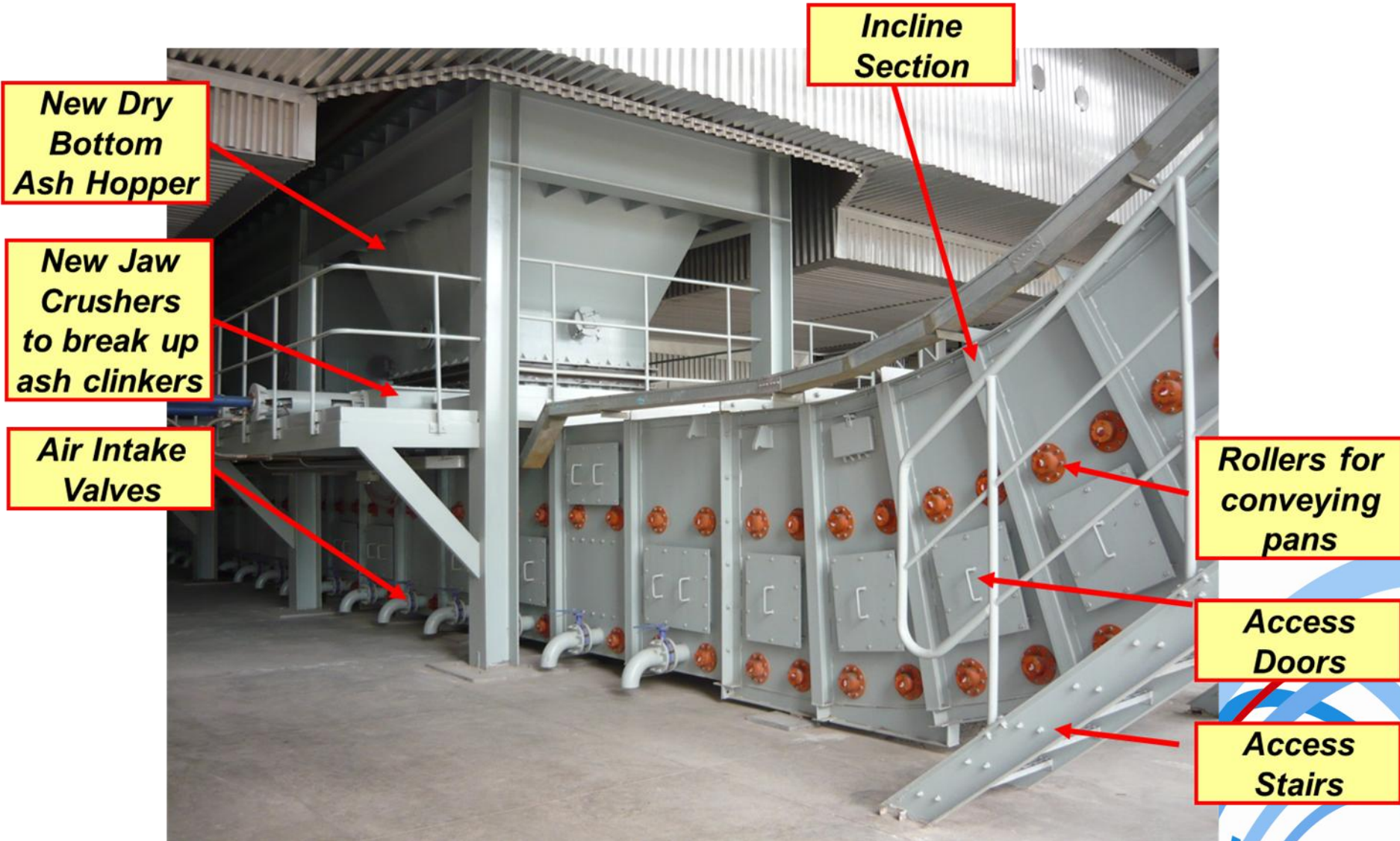
Air Volume 30-55%

Boiler Efficiency Can
 Increase ~ 0.02 to 0.07%



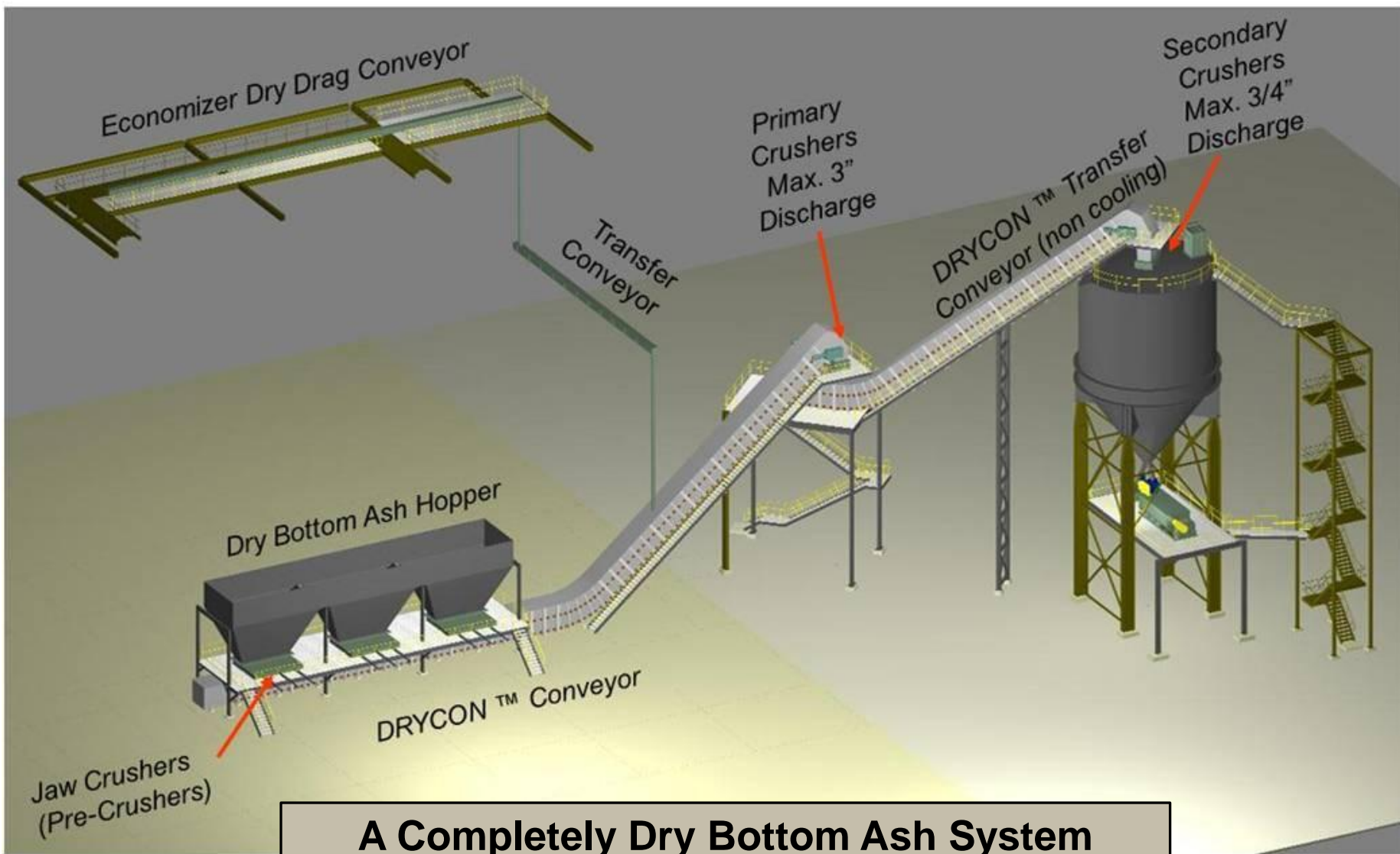
DRYCON™ is a registered trademark of Clyde Bergemann

McIlvaine Company Hot Topic Hour
"Update on Coal Ash and CCR Issues,
Standards and Solutions"

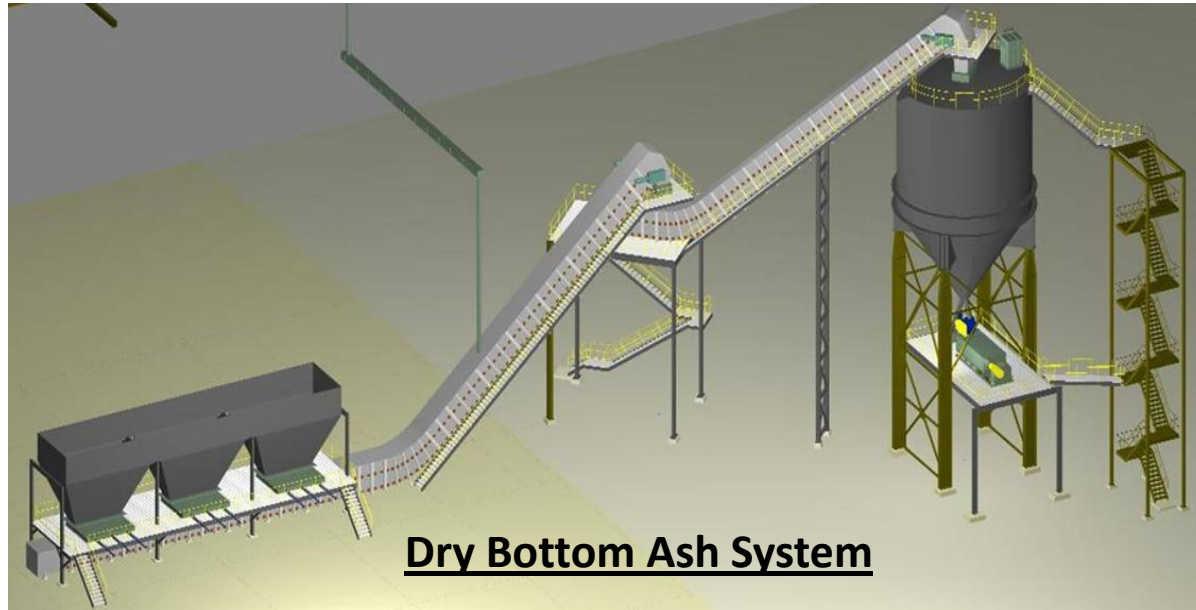


McIlvaine Company Hot Topic Hour

“Update on Coal Ash and CCR Issues, Standards and Solutions”



A Completely Dry Bottom Ash System

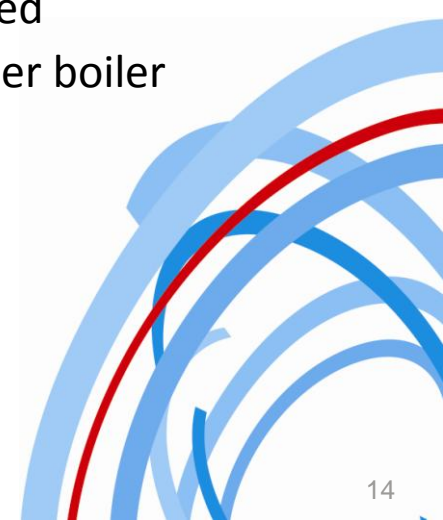


Advantages

- Established technology
- Zero water usage
- Reduced Maintenance
- Complete pond elimination
- Gain in Boiler Efficiency
- Reduce LOI in bottom ash
- Reduced power consumption

Disadvantages

- Major outage required
- Needs clear path from under boiler



Technologies Available for Wet to Dry Bottom Ash Conversions

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