SAVING ENERGY THROUGH PLANT EFFICIENCY

HMA ENERGY & RECYCLING SYMPOSIUM
sponsored by NAPA, FWA, with support from the AK, KS, MO, OK, & TX Asphalt Pavement Associations

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Respectively Submitted
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OUR GROWING INDUSTRY
Good Old Days

- Cheap Energy
- Less Regulation
- Lower Production
- Easier Binders
- Working Workers
- Fewer Mix Designs
- More Roads to Build
Aggregate Crushing

- Wear Changes Shape & Particle sizes
Aggregate Crushing & Stock Piling

- Wear changes particle shape & size
- Size & shape of piles, Segregation
- Pile dividers
- Loader & Material handling
Aggregate Crushing & Stock Piling

- Size & Shape of Piles
- Segregation
Aggregate Crushing & Stock Piling

- Stock Pile Dividers
Aggregate Crushing & Stock Piling

• Loader & Material Handling
Stock Piling at Asphalt Plant

- Pile Configuration
- Dozer Usage
- Testing
Stock Piling at Asphalt Plant

- Covered Piles
- Size of Piles
Stock Piling at Asphalt Plant

- Silos
- Dividers
- Covered
- Size of Piles
- Configuration
- Dozer usage
- Testing!!
Loader Operator

- Where to pick from on the pile
- Pile Maintained
- Drained properly
Transportation

- Truck
- Loaders
- Off Road Trucks
- Trains
Trains
Transportation

- Trains
- Off Road Trucks
COLD FEED SYSTEM

- Moisture Censors
- Covered Bins
- Moisture:
  - Drain it out
  - Keep it out
  - Evaporate it out
- Calibration
- Non Stick Liners
COLD FEED SYSTEM

- Covers, (1% moisture increase cost or reduces production 12%)
- VFD, increased torque, less energy
- Proper Bin Draw (3 to 5 % Taper)
- Tensions Maintained
Heat Recovery Bins

- Removes Aggregate Moisture
- Reduces Emissions
Conveyors

• Covered
• Tension Maintained
• Supports
• Truss framed for stability
• Elevated tail pulleys
DRUM

- Insulated
- Seals Maintained
- Inlet & Discharge Dampers in place & functional
- Trunnion Adjustment
- Dryer & Mixer RPM’s
Before Drum Insulation 600 tph Counter Flow, 650 deg F
After Drum Insulation Same
600 tph Counter Flow, 100 Deg F
Hot Trunnion Detected

5/16/07 7:10:51 e=0.91

5/16/07 7:16:31 e=0.90

5/16/07 7:15:49 e=0.90
FLIGHTING

• Combustion Flighting

• Dryer Flights

• RAP protection vale
HEAT BALANCE

• Know where the heat goes
• Equal breaching temperatures
• No opening in the veil
BURNERS

• **Clean** regularly; fuel delivery system: nozzles, strainers, traps, fans
• **Tune ups** often with monitoring
• **Pressures** monitored as equipment wears, especially with coal and recycled fuels
• **Total controlled** combustion systems, simultaneous combustion
RFO Filter and Heat
RFO
Filter and Heat
Exhaust Filtering & Handling

- No holes
  1. Ducts
  2. Bags
- Cleaning cycles
- Insulation
- Damper functioning
EXHAUST FAN

- VFD
- Dual vs. Single motor
- Dampers functional & controlled
- Impeller clean and balanced
- Backward Incline Fan
- Power Monitoring
Variable Frequency Drive on 600 tph Counterflow Drum Mixer
Mix Handling Conveyor & Equipment

- Lubricate
- Clean (Release agents)
- Proper chain tension
- Gates & Batchers sealed
Liquid Storage & Handling

- Insulate
- Low Temperatures
- Clean
- Level Instrumentation for Spill Quantification
Piping & Pumps

- Insulate, settling
- Safety
Asphalt & Fuel Heating Systems

- Time clocks
- Zone thermal fluid
- Temperatures set low
- Coking a NO NO

• WE DELIVER TOO
Controls

- Calibration
- Communication
- Information
100% Recycled Hot Mix Asphalt

IMPROVE:
- Gradation
- Durability
- PG Grade
# 100% Recycled Plants

<table>
<thead>
<tr>
<th>Company</th>
<th>Features</th>
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</thead>
<tbody>
<tr>
<td>Cyclean</td>
<td>170 tph and a decade of experience in Los Angeles</td>
</tr>
<tr>
<td>Speco Heavy Industries</td>
<td>Korean 90 TPH plant</td>
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<tr>
<td>Mendenhal</td>
<td>Portable 20 tph</td>
</tr>
<tr>
<td>RAP Master</td>
<td>35 tph indirect dryer</td>
</tr>
<tr>
<td>Alex-Sin Manufacturing</td>
<td>Indirect/direct dryer</td>
</tr>
<tr>
<td>Rotary Screw</td>
<td>Bracegirdle &amp; Reliable</td>
</tr>
</tbody>
</table>
Cyclean LA
Mendenhal Eagle
RAP Master
70-80% Recycle
Swiss Ammonn Plant
European Scanning Tour
• SCHEDULING

• TRANSPORTATION
Environmental Update

OTC and MRPO proposals to reduce NOx and other HMA plant emissions in certain states.

As you should be aware, both the Ozone Transport Commission ("OTC") and the Midwest Regional Planning Organization ("MRPO") have targeted HMA plants, in certain states, for reducing NOx and other emissions, by mandating the implementation of Low NOx Burners ("LNBs") on existing and future HMA plants. This is part of their process for meeting the new ozone, regional haze, and other air standards. NAPA provided comments, and in some cases verbal testimony, to these Commissions in an effort to encourage them to recognize reasonable approaches and alternatives to an LNB mandate. This effort has been successful in the OTC region as the OTC has recently amended the resolution, originally mandating LNBs within the OTC states, to include other alternatives to control NOx. NAPA is still in discussions with MRPO and no amended resolution, with that organization, has been made yet. The list of states targeted is provided in NAPA's guidance document (link below). Even if your state is not currently
Classification of 8-hour Nonattainment Ozone Areas

Beware of other state-specific initiatives
Regulatory Authority

- Regional Planning Organizations taking lead
  - Super state air “pacts” to help meet SIP requirements
  - OTC (13 states) / MRPO (5 states) most active re ozone (precursors) including NOx . . . for now
  - Central, Western, Southeastern RPOs
    - less active re ozone
    - More interest in pristine area visibility (Nat’l Parks)
  - Other standards will dictate interest level, e.g. PM2.5

- OTC / MRPO proposed LNB mandates
  - Existing and future HMA plants
WHY ASPHALT IS BETTER

• Most **recycled** product in the world
• Smoothest & long lasting
• Immediate traffic even for our Hero's
Questions

Thank -You

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