



# Metso Services Training 2009

[www.metso.com](http://www.metso.com)

Grinding Mills  
Pyro Processing  
Bulk Materials Handling  
Crushing / Screening



## Equipment Seminars



## Our Services Include...

### ● Replacement Parts Programs

- Original / O.E.M. Parts
- Consignment Spares
- Blanket & Long-Term Order Agreements

### ● Breakdown Assistance

- Accelerated Manufacture of Critical Parts
- Field Service Engineers on Call

### ● Existing or Used Equipment

- Control Upgrades
- Mechanical Upgrades
- Design Modifications
- Service Life Extension Projects
- Locate / Refurbish / Install Used Equipment

### ● Field Service Engineering Services

- Equipment Inspections  
(Structural, Mechanical, Electrical & Hydraulic)
- Installation & Erection Supervision  
Start-Up / Commissioning Assistance
- Outage Assistance
- Troubleshooting Services
- Laser Alignment Services
- Operations & Maintenance Training
- Annual Service Contracts

### ● Process Audits and Services

### ● Application Engineering

### ● Consulting Services

### ● Feasibility Studies

### ● Professional Engineering and Design Services

### ● Life Cycle Services

- Preventative, Predictive and Reliability Maintenance
- Inspections
- Asset Management and Logistics
- Wears Optimization
- Remote and Condition Monitoring

# Bulk Materials Handling

## Sample Agendas

2 Days  
Agenda Day 1

### ROTARY CAR DUMPER/ POSITIONER SYSTEMS

Latest Developments in Electrical Controls  
and Troubleshooting

Latest Developments in Mechanical Designs

Rotary Car Dumper Maintenance:

- Inspections
- Alignment
- Training

Case Study:

- Rotary Car Dumper  
Replacement Project

OPEN FORUM - (Open Question / Answer,  
Situational Sharing)

2 Days  
Agenda Day 2

### BUCKET WHEEL STACKER RECLAIMERS & SCRAPER RECLAIMERS

Latest Developments in Electrical Controls  
and Troubleshooting

Latest Developments in Mechanical Designs

Stacker Reclaimer Maintenance:

- Inspections
- Alignment
- Training

Case Study:

- Stacker Reclaimer Upgrade

OPEN FORUM - (Open Question / Answer,  
Situational Sharing)

Rotary Car Dumper Replacement



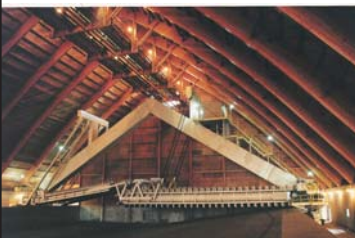
Rotary Car Dumper



Positioner System



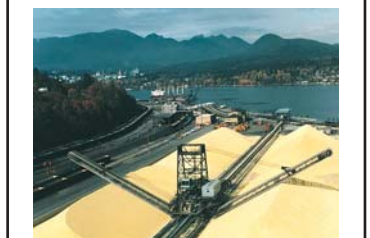
Enclosed Scraper Reclaimer



Bucket Wheel Stacker Reclaimer



Twin Boom Scraper Reclaimer



## 2009 Schedule

May 5-6, 2009

Vancouver, BC, Canada

**Bulk Materials Handling**

Four Points Sheraton Vancouver Airport

8368 Alexandra Road

Richmond, BC V6X 4A6 Canada

+1 888 281 8888/+1 604 214 0888

Tuition: Free

June 2-3, 2009

St. Louis, MO

**Bulk Materials Handling**

Drury Plaza Hotel

#2 South Fourth Street

St. Louis, MO 63102

+1 800 325 0720/+1 314 231 3003

Tuition: Free

**Registration:** (BMH)

Mail or fax registration form to:

Metso Minerals Industries, Inc.

Attn: Bonnie Gall

4000 Town Center Blvd., Ste. 400

Canonsburg, PA 15317

Tel: +1 412 269 5258

Fax: +1 412 269 5051

## Grinding Mills

### Sample Agendas

Seminar Schedule:  
Starts 8:00 AM      Lunch Noon-1:00 PM      Ends 4:30 PM  
Agenda Day 1      2 Days

### GRINDING MILLS

Discussion on Basic Grinding Theory

Discussion of Trunnion Bearings, highlighting the various types, their purposes, strengths and weaknesses

Trunnion Bearing Alignment, importance and various methods

Seals, their care and why they're important

Lubrication System Basics

Filtration - mechanics of filtration, importance and cleanliness requirements

Discussion on Gears, beginning of gear set up and its importance

OPEN FORUM - (Open Question / Answer, Situational Sharing)

Seminar Schedule:  
Starts 8:00 AM      Lunch Noon-1:00 PM      Ends 4:30 PM  
Agenda Day 2      2 Days

### GRINDING MILLS

Set-up of Gears (...continued)

Gear Failures - nomenclature, causes and ways to avoid

Pinion Bearings - various types, set up, failures, care, maintenance

Clutches - various types, maintenance

Open Gear Lubrication - various types, and importance

Bolting - importance of correct initial bolting, importance of maintaining pre-load

Mill Maintenance - what to do daily, weekly, monthly, semi-annually, and annually to keep your mill running in top shape

OPEN FORUM - (Open Question / Answer, Situational Sharing)

### 2009 Schedule

February 17-18, 2009

Irapuato, Gto., Mexico

### Grinding Mills

Holiday Inn - Irapuato

Av. Arboledas 2049

Irapuato, 36690 Mexico

+52 462 606 7999

Tuition: \$625 USD

March 24-25, 2009

San Antonio, TX

### Grinding Mills

El Tropicano Riverwalk Hotel

110 Lexington Avenue

San Antonio, TX 78205

+1 866 293 1842/+1 210 223 9461

Tuition: \$625 USD

April 21-22, 2009

Toronto, Ontario, Canada

### Grinding Mills

Holiday Inn Mississauga Toronto W.

100 Britannia Road E.

Mississauga, ON L4Z 2G1 Canada

+1 905 890 5700

Tuition: \$625 CAD

May 12-13, 2009

York, PA

### Grinding Mills

Metso Minerals Industries, Inc.

707 Loucks Road

York, PA 17404

+1 717 843 8671

Tuition: \$625 USD

Available Upgrades to Existing Grinding Mills  
**Feed End and Discharge End Modifications**

**Feed Chute Retrofit Cement Mill**

- Changed to stepped chute
- Benefit:
  - Improved Air Flow Through Mill

**New Feed End Sealing Arrangement**

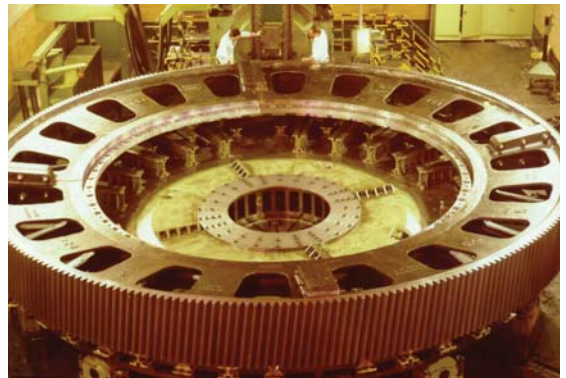
- Benefit: Better sealing effectiveness against process leakage

**Note Feed and Discharge Arrangement:**

- Mill suitable for constant or reduced process requirements.
- Components made of steel and brass and effective to replace

# Grinding Mills

- Set-up, Alignment, Lubrication & Maintenance



**Registration: (Grinding)**  
 Mail or fax registration form to:  
**Metso Minerals Industries, Inc.**  
 Attn: Hugh Benedict  
 240 Arch Street, York, PA 17403  
 Tel: +1 717 771 2532  
 Fax: +1 717 849 2685

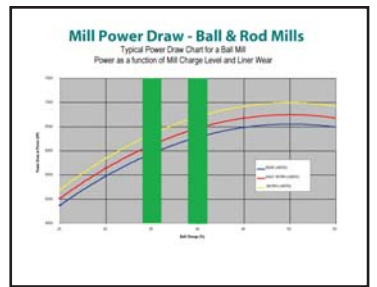
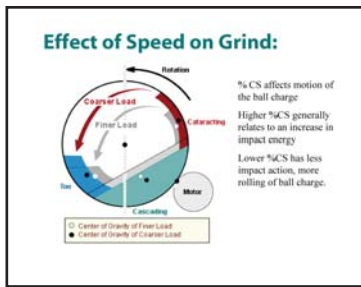
**CASE STUDIES**

- Rebuildings 110" Dia x 10' HL Ball Mill
- Size Control Drive Overhaul
- Rebuildings Comminution Mills due to severe wear
- Recharge Transition Journal
- Diagnostic Review of Feed Improvement (SIP)
- Rebuildings 4' 10" diameter open head covered by heavy mechanical cover to 11.5 diameters and headless to suit 400 tonnes

**Rebuildings 110" Dia x 10' Highspeed Mill**  
 Type: Carbon Carbonates  
 \*Highly severe erosion on treatment mounting flange

**Diagnosis**  
 \*Erosion affects inner loading coils on flange  
 \*Flange being held with only 1/4 of original loading brackets, one external ball roller

**Resolution**  
 \*Use new plates flange to add discharge end  
 \*Machine and drill for new mounting flange  
 \*Close up old mounting flange and it's used for new internal discharge end



June 2-3, 2009  
 Duluth, MN  
**Grinding Mills**

Radisson Hotel Duluth Harborview  
 505 W. Superior Street  
 Duluth, MN 55802  
 +1 888 201 1718/+1 218 727 8981  
 Tuition: \$625 USD

October 13-14, 2009  
 Kingsport, TN  
**Grinding Mills**

Marriott MeadowView Conf. Resort  
 1901 Meadowview Parkway  
 Kingsport, TN 37660  
 +1 800 820 5055/+1 423 578 6600  
 Tuition: \$625 USD

November 10-11, 2009  
 Hermosillo, Son., Mexico  
**Grinding Mills**

Hotel Colonial  
 Vado del Rio #9, Villa de Seris  
 Hermosillo, Son 83280 Mexico  
 +52 662 259 0000  
 Tuition: \$625 USD

## Pyro Processing

### Sample Agendas

Seminar A1, C1a & D1  
1 Day, First Day of a Set of 2

### LIME RECOVERY KILN SYSTEMS PROCESS & OPERATIONS

Discussion on Kiln System Design (Sizing & Performance)

Kiln Feed End Equipment Discussion

- Lime Mud Feed Conveying Systems (Belt & Screw Conveyors)
- Kiln Feed End Housing Design
- Mechanical Dry Dust Collection (Performance, Process Effects, Benefits to Operation)

Chain System Design Discussion

- Basic Design Concepts
- New Innovations in Hardware (Insulated Metallic Plate Systems, Combination Hanger / Shackles, Geometric Chain)

External Pre-Dryer Discussion

Refractory System Design Discussion

- Basic Lining Design & Lining Variations
- Bed Tumblers & Discharge End Dams

Combustion System Design Discussion

- Basic Burner Design
- Importance of Flame Shape / Location
- Foul Gas Incineration
- Alternative Fuels
- Effects on Overall Kiln Performance

Kiln Seals

- Design Features
- Effects on Overall Kiln Performance

Internal Kiln Mechanical Lump Breaker Systems

- Types & Design Features
- Benefits

Kiln Operation

- Complete Kiln System Process
- Operating Guidelines & Suggestions

OPEN FORUM - (Open Question / Answer, Situational Sharing)

Seminars A2, B2, C2 & D2  
1 Day, Second Day of a Set of 2

### ROTARY KILN, DRYER & COOLER SYSTEMS MAINTENANCE

Kiln & Rotary Equipment Maintenance

- Carrying Stations & Mechanisms
- Thrust Mechanisms
- Riding Rings (Tires)

Shell Ovality

- Definition, Description & Determination
- The Effects of Excessive Ovality
- Determining the Various Causes of Ovality
- Methods of Correcting Excessive Ovality Conditions

Drive Systems

- Basic Gears / Gearboxes
- Gears / Pinions
- Alignments

Lubrication

- Gear & Pinion
- Carrying Rollers & Thrust Mechanisms
- Riding Ring (Tire) Bore

Alignment

- Importance of Alignment
- Procedures / Discussion

Air Seals

- Types / Procedures
- Designs of Air Seals
- Monitoring / Maintenance

Monitoring & Inspection

- Daily
- Weekly
- Monthly
- Semi-Annually & Annually

Kiln & Rotary Equipment Troubleshooting

- Evaluations / Causes / Solutions

OPEN FORUM - (Open Question / Answer, Situational Sharing)

## Lime Recovery Kiln Systems Process and Operations



## Rotary Kiln, Dryer, and Cooler Systems Maintenance



**Registration: (Pyro)**

**Mail or fax registration form to:  
Metso Minerals Industries, Inc.  
Attn: Bethann Puderbaugh**

**355 Railroad Street, Danville, PA 17821  
Tel: +1 570 275 3050, Fax: +1 570 275 6076**

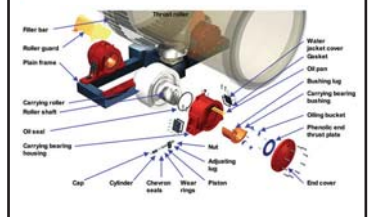
**Kiln Drive Components**



**Kiln Shell Ovality**



**Carrying Mechanism Components**



### 2009 Schedule

**February 17-18, 2009**

**Florence, SC**

### **Lime Recovery & Kiln Maintenance**

**Holiday Inn & Suites**

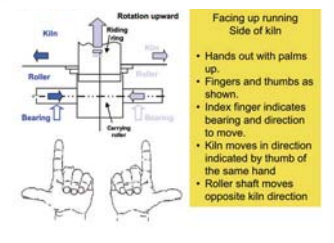
**1819 W. Lucas Street**

**Florence, SC 29501**

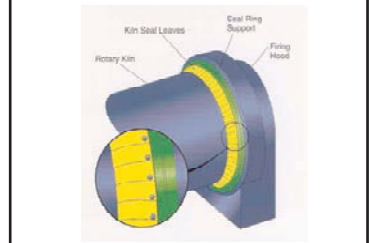
**+1 843 665 4555**

**Tuition: Free**

**Carrying Roller Adjustment**



**Goodeal Leaf Seal™**



**September 1-2, 2009**

**Green Bay, WI**

### **Rotary Kiln, Dryer & Cooler Maintenance**

**SEMINAR AT: LAMBEAU FIELD**

**Hotel: Hilton Garden Inn**

**1015 Lombardi Avenue**

**Green Bay, WI 54304**

**+1 843 665 4555**

**Tuition: Free**

**December 8-9, 2009**

**Richmond, VA**

### **Lime Recovery & Kiln Maintenance**

**DoubleTree Hotel - Richmond Airport**

**5501 Eubank Road**

**Sandston, VA 23150**

**+1 804 226 6400**

**Tuition: Free**

## Pyro Processing

### Sample Agendas

Seminar B1

1 Day, First Day of a Set of 2

### PREHEATER TYPE ROTARY KILN SYSTEMS

Basic Lime Burning Process Discussion

- Discussion of Process Flow for Preheater Lime Plants

Refractory Discussion

- Preheater, Kiln, & Cooler Refractory, a Look at the Inside of the Process Equipment

Preheater Lime Plant Equipment Discussion

- Preheater and Preheater Hydraulics
- Feed End & Firing Hood Seal Design
- Firing Hood & Cooler

Pebble Lime Process Instrumentation & Controls

- Instrumentation - Process Flow for Preheater Lime Plants
- Basics of PID Control
- Kiln Exit & Stack Analyzer Discussion
- Fuel-Air Flow Control
- Cooler Level Measurement & Control
- Basics of OCS Optimizing Control Systems

Lime Plant Equipment Maintenance

- Preheater Ram Drive System
- Preheater Hydraulics
- Firing Hood and Cooler Grate System
- Cooler Internals & Feeders

Baghouse System Discussion

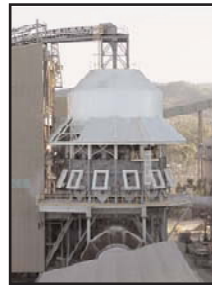
- Types of Baghouse Design
- Bag Cleaning Systems
- Types of Filter Bags

OPEN FORUM - (Open Question / Answer, Situational Sharing)

NOTE: Agenda for Day 2 follows the Rotary Kiln, Dryer & Cooler Maintenance agenda shown on Page 6.

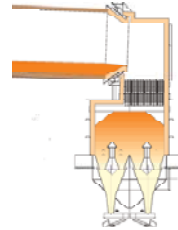
### Preheater Type Rotary Kiln Systems

Lime Plant Maintenance and Processes



Preheater Maintenance

Lime Cooler Design



- Uniform Product Cooling
- Efficient Heat Recovery
- Proven Design

### 2009 Schedule

May 19-20, 2009

State College, PA

Preheater Type Rotary Kiln Systems

Toftrees Golf Resort & Conference Center

One Country Club Lane

State College, PA 16803

+1 814 234 8000

Tuition: Free

Registration: (Pyro)

Mail or fax registration form to Metso Minerals Industries, Inc.

Attn: Bethann Puderbaugh

350 Railroad Street

Danville, PA 17821

Tel: +1 570 275 3050

Fax: +1 570 275 6076



# Pyro Processing

## Sample Agendas

### Seminar C1b

1 Day, Alternate Session, First Day of a Set of 2

NOTE: This Seminar occurs at the same time as Seminar C1a, agenda as listed on Page 6. Seminar C2 takes place the following day.

## GRATE-KILN SYSTEMS, GRATE PREHEATER & ANNULAR COOLER MAINTENANCE

### Introduction of Travelling Grate Machines

- Machine Process Function
- Machine Design Basics

### Machine Elements

- Frame Structure
- Grate Chain Support Assemblies
- Grate Chain Design & Assembly
- Drive Options
- Auxiliaries

### Machine Maintenance

- Rolling Elements - Bearings & Seals
- Chain Components - Inspections/Repairs
- Drives
- Wind Boxes & Dead Plates
- Side & End Strippers - Transfer Chute
- Stacks & Caps - Control Systems

### Lubrication

- Bearing Lubrication Systems
- Side Plate Lubrication System

### Introduction to Annular Coolers

- Machine Process Function
- Machine Design Basics

### Machine Elements

- Structure & Wind Box Assembly
- Carrying & Thrust Roller Arrangement
- Pallet Frame - Rotating Wall Assembly
- Drive Systems
- Guide Rail Assembly
- Upper Enclosure
- Feed Hopper & Discharge Zone
- Refractory Lining

### Machine Maintenance

- Carrying & Thrust Roller
- Pallets - Arms, Rollers & Bushings
- Guide Rail
- Air Seals - Wind Box & Rotating Walls
- Drive Systems
- Refractory - Precast Elements/ Standard Lining
- Lubrication Systems - Rotating Frame & Stationary Component

OPEN FORUM - (Open Question / Answer, Situational Sharing)

NOTE: Agenda for Day 2 follows the Rotary Kiln, Dryer & Cooler Maintenance agenda shown on Page 6.

## Grate-Kiln Systems, Grate Preheater & Annular Cooler Maintenance



### 2009 Schedule

September 1-2, 2009

Green Bay, WI

**Grate Kiln Systems, Grate Preheater & Annular Cooler Maintenance**

**SEMINAR AT: LAMBEAU FIELD**

Hotel: Hilton Garden Inn

1015 Lombardi Avenue

Green Bay, WI 54304

+1 843 665 4555

Tuition: Free

**Registration: (Pyro)**

**Mail or fax registration form to Metso Minerals Industries, Inc.**

**Attn: Bethann Puderbaugh**

**350 Railroad Street**

**Danville, PA 17821**

**Tel: +1 570 275 3050**

**Fax: +1 570 275 6076**

## Crushing

### Sample Agendas

Seminar - 2 Days  
Agenda Day 1

### SUPERIOR GYRATORY CRUSHER MAINTENANCE & OPERATIONS

#### Crusher Introduction

.. Identification of all major components that make up the SUPERIOR Gyratory Crusher along with a review on just how the crusher is designed to operate.

#### Top Shell & Spider Assembly

.. Here we will discuss maintenance as it pertains to the top shell and spider assembly including spider bushing maintenance and concave installation.

#### Mainshaft Assembly

.. Among other items, we will discuss mantle installation along with periodic maintenance as it pertains to the mainshaft assembly.

#### Bottom Shell & Eccentric Assembly

.. Step by step disassembly and assembly techniques, and periodic maintenance as it pertains to the bottom shell and eccentric assembly.

OPEN FORUM - (Open Question / Answer, Situational Sharing)

Seminar - 2 Days  
Agenda Day 2

### SUPERIOR GYRATORY CRUSHER MAINTENANCE & OPERATIONS

#### Crusher Safety Presentation

.. Here we will discuss safety issues as it pertains to the SUPERIOR Gyratory Crusher.

#### Pinionshaft Assembly

.. Assembly techniques and periodic maintenance as it pertains to the pinionshaft assembly.

#### MPS System

.. A complete review of the SUPERIOR Gyratory mainshaft positioning system.

#### Lubrication System

.. We will review the SUPERIOR Gyratory Crusher lubrication system including the oil tank, piping, valves, components, gauges, switches, and alarms.

#### Operating Guidelines

.. Operating the Crusher within its proper operating parameters is absolutely essential to efficient Crusher operation. This presentation will explain the proper operation of the Gyratory Crusher.

OPEN FORUM - (Open Question / Answer, Situational Sharing)

SUPERIOR Gyratory Crusher



Eccentric  
Assembly



Bottom  
Shell  
Lowered  
onto  
Eccentric



### 2009 Schedule

November 17-18, 2009

College Park, GA

Gyratory Crushers

Hilton Garden Inn

2301 Sullivan Road

College Park, GA 30337

+1 404 766 0303

Tuition: \$550.00 USD-30 days in advance

\$625.00 USD-under 30 days in advance

**Registration:** (Crushing)

Mail or fax registration form to:

Metso Minerals Industries, Inc.

Attn: Linda Pauer

20965 Crossroads Circle

Waukesha, WI 53186

Tel: +1 262 717 2724

Fax: +1 262 717 2568

## Learn the proper way to operate and maintain Metso equipment:

Our programs are geared toward the fundamentals for your maintenance personnel, operators, foremen, supervisors, management trainees, and others in the plant who are directly responsible for working with Metso equipment. This training goes right to your bottom line because it increases productivity and decreases downtime.

### Who should attend:

You, operations, maintenance, engineering management, safety personnel and trainees who own, operate, maintain or are responsible for minerals processing and/or materials handling equipment and its operation. Our programs discuss bearing and gear wear, the importance of proper alignment, and highlight upgrades that can be incorporated to improve existing equipment functionality and extend service life.

### A sharing of design, operating and maintenance experience:

We explain the basic concepts of the equipment design, what it does, how it works and procedures necessary for maintaining the equipment. This forum promotes other site operations/maintenance and engineering personnel to discuss their equipment problems, solutions and improvements.

Enjoy the opportunity to renew old acquaintances and establish new ones ...an opportunity to exchange ideas and share invaluable knowledge on how to improve the performance of equipment, site safety, etc., based on actual operating experience.

Seminars include continental breakfast, lunch and breaks each day.

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## How to Register

You can register for any of the Seminars by simply completing the registration form and returning it to the appropriate location. Please be sure to denote the name, location and date of the Seminar with your registration. Contact information for registering can be found on the appropriate pages.

Registration form must be accompanied by check payment or company purchase order number for invoicing, if applicable. Please make checks

payable to: Metso Minerals Industries, Inc. Tuition is due 30 days prior to Seminar. A 5% discount applies to (5) or more people from one company. Cancellation within (7) days prior to Seminar may incur a cancellation fee.

Please make a hotel reservation separately if you are staying at the hotel. Your Seminar registration does not reserve hotel accommodations. Room blocks are released 30 days prior to the event.

Name of Seminar: \_\_\_\_\_

Location of Seminar: \_\_\_\_\_

Date of Seminar: \_\_\_\_\_

Company P.O. #: \_\_\_\_\_ Fee: \_\_\_\_\_

This form may be photocopied if you are registering multiple personnel.

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Contact Name & Email: \_\_\_\_\_

**Metso Minerals Industries, Inc.**  
**4000 Town Center Boulevard, Suite 400**  
**Canonsburg, PA 15317**

**ADDRESS SERVICE REQUESTED**

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