Minutes
Manufacturing Technical Committee
Portland Cement Association
King Arthur Court, Intercontinental Chicago Hotel
Chicago, Illinois
September 10, 2007

The meeting of the Manufacturing Technical Committee of the Portland Cement Association was held on September 10, 2007 at the Intercontinental Chicago Hotel Chicago, Illinois.

A list of participants is attached (Attachment I).

Call to Order
Mr. Hans Steuch, Committee Vice Chairman, called the meeting to order and directed the attention of those present to the Antitrust and Competition Act Statements. The meeting agenda is an attachment to these minutes (Attachment II).

Mr. Steuch welcomed the committee members and guests attending the meeting.

The minutes of the April 30, 2007 meeting were approved as distributed as distributed.

Presentation by Dr. Volker Hoenig – VDZ
Dr. Volker Hoenig of VDZ presented information on carbon dioxide control technologies. He discussed a number of technologies including: conventional technologies, pre-combustion technologies, oxy-fuel technologies, post-combustion technologies, and hybrid systems. Along with a discussion of the technologies, Dr. Hoenig presented information on the current level of implementation for each technology, its applicability in the cement industry, and an assessment of its research and development needs.

Dr. Hoenig summarized that: CO₂ capture technologies are not technically available for the cement industry, pre-combustion technologies are not very promising as only carbon dioxide from fuel combustion would be captured, oxy-fuel technology is state-of-the-art in a few other industry sectors and seems to be promising for new kilns, post-combustion technologies are state-of-the-art in other industry sectors, but on a relatively small scale. He felt that carbon capture systems for the cement industry are currently cost-prohibitive and that significant research efforts would be necessary to develop capture technologies for the cement production process.

Presentation by Dr. Steve Benson – EERC
Dr. Steve Benson of EERC presented information on mercury and carbon dioxide reduction efforts. He provided an overview of carbon dioxide separation and capture technology along with a description of the Plains CO₂ Reduction Partnership (PCOR) and its application to the cement industry.
Dr. Benson also discussed mercury control technologies and the current status of mercury regulations along with the implementation of those regulations. His discussion of mercury regulations included the Clean Air Mercury Rule (CAMR) and a summary of emission reductions using the cap and trade approach. Dr. Benson also discussed mercury transformations and control options.

**Materials Preparation and Finishing Task Committee**

Mr. Jeff Bump, Task Committee Chairman, presided over the Materials Preparation and Finishing Task Committee portion of the meeting.

a. Approve April 30, 2007 Meeting Minutes - The minutes of the April 30, 2007, task committee meeting were approved as distributed.

b. M07-xx PSD Optimization for VRM Finish Grinding - Mr. Bohan noted that Lehigh Portland Cement Company’s Union Bridge facility agreed to conduct the research associated with particle size determination optimization of vertical roller mill finish grinding circuits.

c. General Kinematics Test Grind Report - The committee members were notified that the test grind performed by General Kinematics using vibratory grinding techniques was complete and available for review. Todd Danieleczyk of General Kinematics will also be presenting information on this grinding application at the Fall Technical Session.

**Pyroprocessing Task Committee**

Vice Chairman Hans Steuch introduced Mr. Andy Edwards, Ash Grove Cement, as the incoming Task Committee Chairman. Mr. Edwards presided over the Pyroprocessing Task Committee portion of the meeting.

a. Approve April 30, 2007 Meeting Minutes - The minutes of the April 30, 2007, task committee meeting were approved as distributed.

b. M07 01 Selective Non-Catalytic Reduction - Mr. Bob Schreiber, Schreiber Yonley and Associates, provided an overview of project M07 01 SNCR. Following his presentation, Mr. Doug Roark, GCC, Mr. Robert Shenk, FLSmidth, Mr. Andy Edwards, Ash Grove Cement, and Mr. Arron Heinerikson, Trinity Consulting, agreed to serve as technical reviewers of the draft report.

c. M07 02 AFR Permitting Manual - Mr. Arron Heinerikson, Trinity Consulting, updated the committee on project M07 02 AFR Permitting Manual. Following his presentation, Mr. Hans Steuch, Ash Grove Cement, Mr. Dan Nugent, Buzzi Unicem, Mr. Fran Streitman, Ash Grove Cement, and Mr. Tim Matz, Lehigh Portland Cement, were all suggested as potential technical reviewers for the draft report.

d. M07 03 Mercury CEMS - Mr. Ty Wilson, PCA, provided a brief overview of the M07 03 Mercury CEMS project. No further action was taken on this project.

e. M07 12 CO₂ Control Technology Effectiveness - Mr. Ty Wilson noted that a vendor had not yet been selected for this project.

f. F06 05 CKD for Reconstruction of Pavements - Mr. Jeremy Bough, University of Wisconsin - Madison, briefed the committee on his research related to *Use of Cement Kiln Dust for Reconstruction of Bituminous Roads.*
Auxiliary and Control Equipment Task Committee
Mr. Frank Benavides, Task Committee Chairman, presided over this portion of the meeting.

a. Approve April 30, 2007 Meeting Minutes – The minutes of the April 30, 2007, task committee meeting were approved as distributed.

Environment and Energy Committee Update
Mr. Tom Carter provided a brief overview of the Environment and Energy Committee activities. He described current activities related to the Ozone NAAQS, Mercury (NESHAP rule), CKD and climate legislation.

Occupational Health and Safety Committee Update
Mr. Tom Carter provided a brief overview of the Occupational Health and Safety Committee activities. He discussed current issues related to MSHA, fuel system safety, and hexavalent chromium.

Review Research Suggestions
No additional research suggestions were brought forward at this time.

Education Activities Update
Mr. Bohan briefly reviewed the PCA educational course programming for cement manufacturing courses including the Kiln Process, Mill Grinding, and Cement Manufacturing for Process Engineers programs. He also discussed the regional educational courses that PCA held including: Coal Mills, Clinker Coolers, Dust Collectors, Kiln Operations, Impact of Cement Characteristics, Raw Mix Chemistry, and Recommended Guidelines for Solid Fuel Use.

Fall Technical Session Preview
Mr. Bohan briefly reviewed the schedule for the September 11, 2007, Fall Technical Session. Scheduled presentations included:

Test of Mercury Vapor Emission from Fly Ash Bricks: Important Finding - Henry Liu

Processing carbon dioxide to carbon monoxide for conversion to Ethanol - Mark Maier

Vibratory Grinding Applications for Clinker Grinding - Todd Danielczyk

Sustainability Opportunities: The California Experience - Kristen Cooper-Carter

Schedule Next Meeting
The next meeting will be held in conjunction with the 50th annual IEEE-IAS/PCA Cement Industry Technical Conference, May 18th-22nd at the Doral Resort and hotel
just outside Miami, FL. Mr. Bohan noted that the MTC would meet on Monday, May 19, 2008.

**Adjourn**
There being no further business, the task committee adjourned at approximately 2:40 p.m.

R. P. Bohan
Secretary
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Arron Heinerikson
Connie Field
Scott Hunsucker
Kristin Cooper-Carter
Dave Hankins
Pat Brady
Kim Kurtis
Dave Czechowski
Steve Whitley
Steve Regis
Tyrone Wilson
Alan Gee
Lars Hansen
Alexandra Wayllace
Jeremy Baugh
Madison

Vezer’s PIC
Trinity Consulting
PCA
River
California State University-Chico
Siemens
Siemens
Georgia Tech.
Portland Cement Association
Arizona Portland Cement
California Portland Cement
Portland Cement Association
Lehigh Portland Cement
Solios
University of Missouri-Columbia
University of Wisconsin-
I. CALL TO ORDER

II. ANTITRUST/COMPETITION ACT STATEMENTS

III. APPROVE APRIL 30, 2007 MEETING MINUTES

IV. PRESENTATION BY DR. VOLKER HOENIG - VDZ

V. PRESENTATION BY ENERGY AND ENVIRONMENTAL RESEARCH CENTER – STEVE BENSON

VI. MATERIALS PREPARATION AND FINISHING TASK COMMITTEE ITEMS
   a. Approve April 30, 2007 Meeting Minutes
   b. M07-xx PSD Optimization for VRM Finish Grinding
   c. General Kinematics Test Grind Report

VII. PYROPROCESSING TASK COMMITTEE ITEMS
   a. Approve April 30, 2007 Meeting Minutes
   b. M07 01 Selective Non-Catalytic Reduction
   c. M07 02 AFR Permitting Manual
   d. M07 03 Mercury CEMS
   e. M07 12 CO2 Control Technology Effectiveness
   f. M06 04 CKD for Biological Wastewater Treatment
   g. F06 05 CKD for Reconstruction of Pavements
   h. F06 06 CKD for Artificial Soil

VIII. AUXILIARY AND CONTROL EQUIPMENT TASK COMMITTEE ITEMS
   a. Approve April 30, 2007 Meeting Minutes

IX. ENVIRONMENT AND ENERGY COMMITTEE UPDATE
X. OCCUPATIONAL HEALTH AND SAFETY COMMITTEE UPDATE

XI. REVIEW RESEARCH SUGGESTIONS

XII. EDUCATION ACTIVITIES UPDATE

XIII. FALL TECHNICAL SESSION PREVIEW

XIV. ESTABLISH DATE OF NEXT MEETING

XV. ADJOURN