

The Science of Coal Ash Utilization: A Short Course

8:00 to 9:00 Continental Breakfast and Registration in the Chicago and Atlanta Rooms in Mezzanine of Hyatt Hotel

Part I. Introduction: Materials Production, Chemistry, and Physical Characteristics of Coal Combustion Products (CCP's).

9:00 to 9:45 Introduction to Coal Combustion Ash

Tom Robl

Topics: relationship between coal type and coal ash; forms of ash (bottom ash, fly ash); chemistry, mineralogy and petrography of ash; world classification systems for ash (ASTM, EU, China etc.); world production and utilization of ash; overview of current quality trends

9:45 to 10:15 I. Introduction to Clean Coal Processes and Products

Ray Hemmings

Topics: technology for the production of clean coal products (wet scrubbers, spray driers, FBC); chemistry and mineralogy of clean coal products, hydration and etringite forming reactions, etc.

10:15 to 10:30 Coffee Break

Part II. Current Utilization Applications and Management Practices

10:30 to 10:45 Coal Combustion Ash Management Practices

Jack Groppo

Topics: ash collection systems; landfill and pond disposal practice

10:45 to 11:15 II. Introduction to Clean Coal Product Utilization

Ray Hemmings

Topics: disposal practices, synthetic gypsum and wallboard applications, synthetic aggregate production. utilization for structural fills, road base and mine backfilling, etc.

11:15 to 12:15 The Utilization of CCP's as a Pozzolan in Cement and Concrete Production

Russell Hill

Topics: introduction to chemistry and mineralogy of portland cement and ash as a pozzolan, fundamental reactions and benefits of use; effect of different ash types on concrete emplacement (e.g., water demand, bleed, finishing, cohesion, heat, air

entrainment); long term strength and durability (e.g. permeability ASR, sulfate, corrosion, thermal cracking, salt); quality control; marketing issues

12:15 to 12:30 General Question and Answer Session for Parts I and II.

12:30 to 1:30 Lunch

Part III. Beneficiation of Ash, New Materials and Future Trends

1:30 to 2:00 Ash Beneficiation Technologies

Jack Groppo

Topics: carbon reduction methods and practices (electrostatics, combustion, air classification); classification and recovery of bottom ash; recovery of ponded and landfilled ash materials

2:00 to 2:30 Advanced Beneficiated Materials and Non-Cement Uses of Ash

Richard Kruger

Topics: Discussion of fillers in polymers; advantage of spheres. Use in polyester, PVC, polypropylene, high-density polyethylene and rubber. Classified fly ash as an enhanced cement extender; comparison with silica fume

2:30 to 3:00 Clean Coal Technology and the Effects of SCR NO_x Reduction on Ash

Robert Rathbone

Topics: basics of SCR and ammonia injection; behavior of ammonia on fly ash and impact on concrete utilization; common sense guidelines for managing and handling ammoniated ash

3:00 to 3:15 Coffee Break

3:15 to 3:30 Advanced Coal Gasification (IGCC) Materials, Chemistry and Early Beneficiation Experience

Jack Groppo

Topics: characteristics and uses of gasification materials, early designs and construction of beneficiating plants

3:30 to 4:00 Hg Control Regulations and the Future Impacts on CCB's

Kevin Henke

Topics: fundamental chemistry of Hg, current state impending Hg regulations and issues; summary of developing control technologies; potential impact of CCB

4:00 General Question and Answer Session for Part III.