



**RMCFMI**  
Promote Western Coal Through Education

## Short Course Outline

Thursday, May 20, 2010 – 12:30-4:30 p.m.

Holiday Inn – Price

### *Underground Conveyance System Design vs. Reliability*

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#### Abstract

The belt conveyance system of a coal mine is a critical resource to the success of an operation. A highly reliable system is absolutely necessary for high production rates. This short course will look at modern modeling and simulation tools available to engineers to identify design weaknesses and improve performance. Case studies will be used to demonstrate evaluation techniques.

#### 1- Using Models to Simulate Conveyor Performance

- i. Static Analysis of Running Conditions
  1. Power Requirements (30 Min)
  2. Sizing Components
    - a. Belting (15 Min)
    - b. Pulleys (15 Min)
    - c. Idlers
    - d. Motors (15 Min)
    - e. Take-up (Part 1) (15 Min)
- ii. Dynamic Analysis of Transient Conditions
  1. Stopping Simulation (30 Min)
  2. Starting Simulation (30 Min)
  3. Take-up (Part 2)
- iii. Transfers (30 Min)

#### 2- Using “Root Cause Failure Analysis” and Modeling to Solve Real Life Problems and Increase Reliability

- i. Example 1- Short Belt Splice Life (30 Min)
- ii. Example 2- Drive Pulley Slip (30 Min)
- iii. Example 3- Conveyor Won't Start (30 Min)
- iv. Example 4- Take-up Pulley Failure (30 Min)
- v. Example 5- Transfer Plugging/Spillage (30 Min)

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