June 20, 2015
8:00 AM-5:00 PM

Safety, Health and Ventilation Cost Benefit Optimization with Simulation and Control

During this workshop, attendees will gain knowledge in complying with pertinent industry challenges through ventilation design and ventilation operation. The main theme of the workshop is the use of advanced computer simulation models for air distribution by mine ventilation, together with heat, humidity and contaminant concentration solutions of ventilation tasks. Techniques for analyzing safety and health conditions using trial-and-error as well as systematic search algorithms are also presented. The course will provide attendees with advanced skills in applying mine ventilation and contaminant transport as well as numerical porous-media models.

Topics:
- Mine ventilation model elements for air flow, heat, humidity, and contaminant transport
- Calibration and validation of network models against mine measurements
- How fast can large ventilation models be solved and the results be animated for analysis of scenarios being optimized?
- Optimization for safety, health, and cost benefits: set the boundary conditions and the objective functions
- Find the Jacobians: what are the sensitivities if changes are made in locations, speeds of fans or settings of air regulators? What can we do to make informed improvements in air distributions for optimization?
- Use your ventilation model for finding the answer to the great challenge: the safer and better mine with lower operating cost

Presented by Davood Bahrami, George Danko, and Craig Stewart