

# PITTSBURGH MINING RESEARCH DIVISION



## Refuge Alternative Webinar: Introduction

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Refuge Alternative Webinar

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Pittsburgh, PA

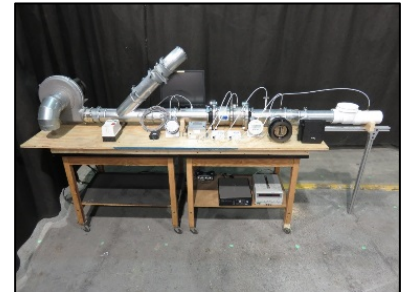
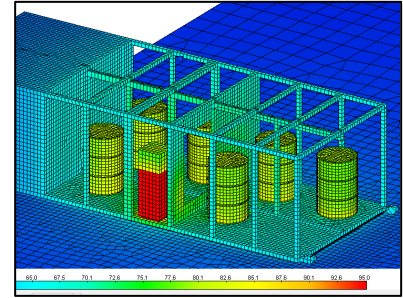


| Time                | Topic   |
|---------------------|---|
| 9:00 AM – 9:05 AM   | Introduction  |
| 9:05 AM – 9:15 AM   | Refuge Alternative Laboratory Facility  |
| 9:15 AM – 9:30 AM   | In-mine RA heat & humidity tests  |
| 9:30 AM – 9:45 AM   | RA heat mitigation systems research   |
| 9:45 AM – 10:00 AM  | Effect of various parameters on mobile RA internal ambient  |
| 10:00 AM – 10:10 AM | RA miner metabolic heat input and “critical” apparent temperature   |
| 10:10 AM – 10:20 AM | Break   |
| 10:20 AM – 10:40 AM | University of Nevada, Reno BAA Contract: Universal Mobile Refuge Alternatives Thermal Simulation Modeling Tool Demo                     |
| 10:40 AM – 10:50 AM | Discussion  |
| 10:50 AM – 11:10 AM | BIP RA contamination ingress, purging, and relief valve research  |
| 11:10 AM – 11:15 AM | University of Kentucky BAA Contract: Design and Construction Considerations for a Protected Compressed Air Line to a Refuge Alternative |
| 11:15 AM – 11:20 AM | BIP RA stopping/door system research  |
| 11:20 AM – 11:25 AM | RA communication research   |
| 11:25 AM – 11:30 AM | Break   |
| 11:30 AM – 12:00 PM | Discussion  |

# Advancement of Refuge Alternatives for Underground Coal Mines

Project explores critical parameters related to deployment and usability of RAs

- RA heat/humidity buildup
- Air delivery systems
  - Relief valve design
  - Purging
- Contamination during ingress
- BIP RA stopping/door system design
- RA communication systems



# Types of Refuge Alternatives (RAs)

- Built-in-place (BIP) RA
  - Permanent structures
  - Can be sized to accommodate large number of miners
- Rigid Mobile RA
  - Rigid metal structure
  - Provide oxygen via compressed oxygen cylinders
- Tent-Type Mobile RA
  - Inflatable tent contained within a rigid metal box
  - Provide oxygen via compressed oxygen cylinders
  - May hold up to 36 miners

