VOEST ALPINE MINING & TUNNELLING PTY LTD

Ergonomics of Underground Coal Mining Equipment – ABM25 Innovations
Ergonomics of Underground Coal Mining Equipment
ABM25 innovations

- Where we have come from (ABM20)
- The 1st ABM25 (3rd Qtr 2003)
- The ABM25S (3rd Qtr 2006) – evolution from West Wallsend
- Other ergonomic initiatives
ABM20 ~ 1992

- The first commercially manufactured simultaneous cut and bolt miner
- Machine design based on the functional requirements of operation
- Canopy to protect drill rig operators (2 x 20 tonne)
- Area for material pods
- Integrated ventilation
Safety Statistics Summary
ABM & CM

CM
- By Injury
  - Strain 40%
- By Body Part
  - Back 21%
  - Knee 11%
  - Fingers 6%
- By Job Task/Description
  - Cable Handling 32%
  - Handling 10%
  - Repairs/maint. 9%
  - Roof Bolting 7%

ABM
- By Injury
  - Strain 36%
- By Body Part
  - Back 29%
  - Knee 14%
  - Fingers 9%
- By Job Task/Description
  - Cable Handling 23%
  - Handling 12%
  - Repairs/maint. 15%
  - Roof Bolting 12%

Source: Coal Services Statistics
1999 – 2003  n=858
Summary

Injury Type; Strains, pulls, twists, bruises 75%

Body Part; Back, Arm and Knees 85 – 95%

Job Task; Handling (cables / supplies etc) 50%

Op./Maint./Inspections 45%

Note: Statistics do not consider age, shift roster, shift etc. When injury occurred, accident severity (ie disabling, medical, LTI etc)
1st ABM25 (3rd Qtr 2003)

• Platforms/work areas
• Operator protection
• Materials handling
• Maintenance
• Controls
• Environment
ABM25S (3rd Qtr 2006)

- Including West Wallsend improvements
  - Lighting – access, work area, controls
  - Rubber floor mats – non slip, anti fatigue
  - Ventilation – air fans, ducting design etc
  - Hand rails

- Platforms/work areas

- Materials handling

- Maintenance

- Controls

- Environmental
Platforms/Work Areas

• Slimmer machine – increased work platform area (wider, larger area inbye rib rig)

• Rear platform steps fold up for flitting and breakaways

• Raise /lower platforms
Materials Handling

- Mesh carrier designed to “load, carry and position”
- Mesh carrier twists for easier access for operators to pick up mesh
- Materials pods (with side cut outs etc), mesh, straps loaded with Eimco – minimises manual handling
- Raise /lower platforms - improved access to materials pods and mesh/straps
Maintenance/Controls

- New drill rig motors – smaller pumps
- Improved maintenance access
- Push button roof rig controls
- New operator screen locations both sides
Environmental

- Noise attenuation power pack covers
- ITP dust suppression system
- Horizon control
Other Ergonomic Initiatives

• The ABM is presently the safest miner on the market
• We either continue to manage this environment or automate
• Development system improvements are still required for operators to maintain performance levels
• The ABM is the best product suited to the automation process
• Long term view – implement safe, reliable automated systems – slowly reduce operator exposure to the hazardous environment
The Solution Partner of choice