



# DRIVING ENERGY IMPROVEMENT INITIATIVES IN MINING INDUSTRY – AFRICAN UTILITY WEEK

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# INTRODUCTION



- Botswana mining industry electricity consumption approximately 50% of national grid
- Current generation a mix of coal, diesel and solar
- Investigations into other forms of power generation continuing (gas, renewables)
- Energy savings essential to conserve resources

# ELECTRICITY USAGE



- The greater part of the electricity usage is in running the minerals processing plants - electric motors
- Further minerals beneficiation consumes large power due to the heating processes – heat furnaces
- Plant designs contribute to power consumption

# Energy Saving Strategy



- Audits necessary to establish efficiencies within the operation
- Electric motors, furnaces, compressed air and steam production are normally the largest consumers of power in an operation
- Underground shaft hauling at non-peak periods

# INITIATIVES

- Focus on electric motor drives
  - Energy efficient motors (vibration, noise & heat)
  - Variable speed drives (power relative to demand)
  - Correctly sized motors (load match)
  - Regular maintenance (keep to manufacturers specs)
  
- Manage demand by incorporating latest technologies that can control items such as geysers
  
- Use of compact fluorescent lamps (CFLs) and Light Emitting Diodes (LEDs)

# MINE TO MILL PROCESS



- Comminution processes are blasting, crushing and milling with latter being largest consumer of power
- Blasting offers more efficient ground size reduction
- The whole ore beneficiation process is based on blasting

# PLANT DESIGNS



- Eliminate long range conveyors
- Incorporate efficient electric motors
- Use natural landscape to take advantage of gravity

# ALTERNATIVE ENERGY SUPPLY



- Renewables including solar power
- Co-use of power sources e.g. Solar panels in houses
- Gas generation of electricity
- Research into platinum fuel cell technology



# CONCLUSION

- There is scope to be more energy efficient particularly new mining entities
- Co-generation of electricity – local and national grid
- Effort on renewable electricity generation