Sustainable Asset Performance

...a Mining View
Disclaimer

• The views expressed today are my own

• They are not those of Idemitsu Australia Resources Pty, the parent company or any subsidiaries
Who am I and Who is Idemitsu?

Doug Munro

- Maintenance and Asset Manager for Idemitsu Australia Resources
- Mechanical Engineer from “Across the Ditch”
- 30 years in Heavy Industrial Maintenance

Idemitsu Australia Resources (IAR)

- Coal Miner with interests in three mines:
  - Ensham – Central Queensland
  - Boggabri – New England NSW
  - Muswellbrook – Hunter Valley NSW

- Idemitsu Kosan
  - Highly diversified, Japanese, petroleum and related industries – interesting trivia OLED technology
Sustainable Asset Performance? What is it?

• Providing predictable plant performance and availability at a reasonable cost for a long time

• Costs include:
  – Capital and replacement
  – Maintenance parts, labour and supporting services
  – Production disruption
  – Planned and unplanned downtime

• And maintaining our Social Licence to Operate
  – Comply with all of our licencing conditions, particularly environmental
  – Maintain open and transparent engagement with the communities in which we operate
  – Protect our workers from harm
  – Provide work on and off the Mine
  – Diversify our business into agriculture and renewable energy
Short Term – under one year

Design and Maintenance must provide planned plant availability with few breakdowns at a reasonable cost

- Design must come from the OEM
  - Many years of real life testing to necessary to produce a tough enough design
- Built in diagnostics and web based support are a modern trend however they have their own issues
- Maintenance starts at the OEM but rapidly changes to the operator
  - OEM recommendations are “Maintenance Heavy” and bleed money to the OEM
  - Operators must analyse failure modes, risks, their own capabilities and circumstance

Diagnostics require sensors – Sensors and wiring introduce additional cost and failure points

- Specialist maintainers are difficult to find in regional locations
- Web based support now has a major hurdle – Cyber Security
  - IAR simply doesn’t allow third party access to plant
  - Data out is possible – Data in is not
Medium Term – one to say five years

Design changes that improve critical functions are often implemented

- Safer Access Systems
- Higher capacity seats
- Fire prevention
- Fire suppression
- Engine upgrades

Maintenance Systems often focus on reducing maintenance without reducing safety or availability

- Critical Safety Systems tend to stay with OEM recommendations
- Brakes, Steering, Structures, Pressurised components
- High cost components tendency is to condition monitoring and refurbishment
- Oil testing, thermography, crack inspections, onboard instruments
- Refurbishment to the extent necessary; not necessarily to “as new”
- It all depends on the failure mode
- Low cost or wear components may be run to “failure”
Long Term – five years plus

- Major plant is expensive
  - Komatsu 930E - Ultra class 300 tonne Truck - $7,200,000
  - Liebherr R9800 – 800 tonne Excavator – $17,300,000

- We expect a long life
  - 930E
    - Minimum 60,000 hours - 10 to 11 years (200,000 km on your family car is ~ 3,000 hrs)
    - More likely 75,000 hours – 12 to 14 years
    - Possibly 100,000 hours – 16 to 18 years
  - R9800
    - Minimum 80,000 hours - 11 to 12 years
    - Possibly 90,000 hours – 13 to 14 years
• Autonomous Haulage is here  
  – Well at least in WA
• But not Excavators and only some Dozers and Drills
• You need a well defined task, a big job and generally new plant
• Typically requires a long term strategic commitment to specific OEM’s – systems currently not widely adaptable to multi manufacturer/multi model equipment
• You do save on the operator but you add substantially to your capital cost, place additional restrictions on your mine and increase the technical requirements on remaining staff.
Conclusion

• In case anyone thought otherwise - Sustainable maintenance is not new
  • Maintainers in mining have been stretching the lives of components and plant for as long as mining has been around
• Plant replacement is very expensive
  • If you want to sell innovative technology it must be “Application Ready”
• And you must take new skill requirements into account
  • If we can’t get maintainers with the required skills on Site, we can’t use your product
Discussion Questions

1. If you want to sell innovative technology it must be “Application Ready”
2. If we can’t get maintainers with the required skills on Site, we can’t use your product
3. Web based support now has a major hurdle – Cyber Security
4. Maintaining the Social License to Operate is critical
5. Specialist maintainers are difficult to find in regional locations