

Client Reference

Mining | Coal

Life Cycle Costing Model



Client Background

Our client has four mid-size coal mines encompassing underground mining, opencast mining, beneficiation plants and discard-handling disciplines.

The coal mines supply coal locally and internationally.

The underground mines consist of mechanised sections in low, mid and high seam applications with the following equipment suite: continuous miners, shuttle cars, roof bolters, feeder breakers and a range of supporting infrastructure such as conveyor systems, electrical, instrumentation and water reticulation. There is also support equipment such as tractors, LHDs, MPVs and LDVs.

The asset base consists of both the client's assets and outsourced ownership assets.

Key Challenges

- Most equipment is client owned but mining and maintenance is done by a contractor.
- The contractor gets paid a Rand/ton value to maintain the machines.
- The client is responsible for structural replacements and rebuilds of the primary assets.
- Repair and rebuild strategies should be in line with the contractor performing the maintenance.
- A contract is valid for five years and the budget must be completed in line with the strategy.
- Obsolete equipment ready for rebuild should be in a state where certain components should be used in the rebuild of the machine.



“The LCC model enhances my ability to manage a lean and agile engineering team. This model will ensure healthy components on assets in line with the business strategy, thus improving the overall availability and reliability of the assets. By doing this, production will increase.

Client – Engineering Manager

Pragma Intervention

- Pragma's CIS team used an Excel based LCC model as a starting point to develop the LCC model in On Key.
- Functionality was enhanced in the On Key model for better visible outputs (reporting and graphs).
- Pragma engaged with OEMs to collect and analyse all component benchmark norms.
- Component benchmark norms from the OEMs were rolled out to all three underground mines, standardising across the business.
- The Pragma planning office captures and updates data on component replacements daily.
- They report weekly to the client and contractor on component and machine health.
- The LCC model is used in costing for certain projects.



Inputs to the model

The development and implementation of a Life Cycle Costing Analytical Model (LCC model) was done at the client and the following input was required:

- A component tracking list of primary equipment
- Benchmark lifespan norms on these components as per OEM requirements
- Replacement value of the components
- Fitted dates and tonnages of these components
- Condition environments that the machines operate in.

Value add

The output of the LCC model and value add include:

- Component health on all primary equipment and components
- Capital budget forecasts for components and machine replacement and repairs
- Warranty tracking on replaced components.



Tools and Technology

- On Key EAMS
- Asset Type Attributes
- Asset Register Administration
- Life Cycle Costing Model in Qlikview