



**E3K**  
ENGINEERING 3000

---

# Mining Services

E3K have been providing services to the mining industry and their suppliers since 1999. As specialist mechanical engineers we conduct studies in a variety of applications from efficiency maximisation and failure analysis to design auditing and capital equipment reporting. Our engineers are skilled in design and analysis using Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD). Further, we have completed projects using safety standards and experimental testing.

## Contact:

Address: Level 2/31 Musk Avenue, Kelvin Grove, QLD 4059

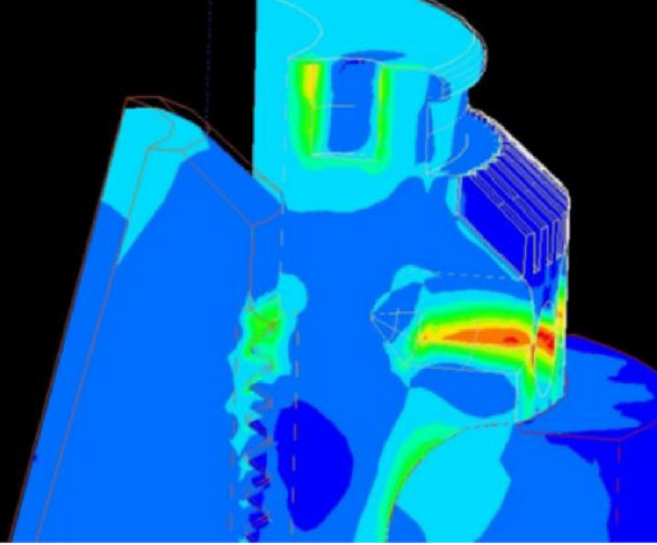
Phone: (07) 3853 5250

Website: [www.e3k.com](http://www.e3k.com)

Email: [info@e3k.com](mailto:info@e3k.com)

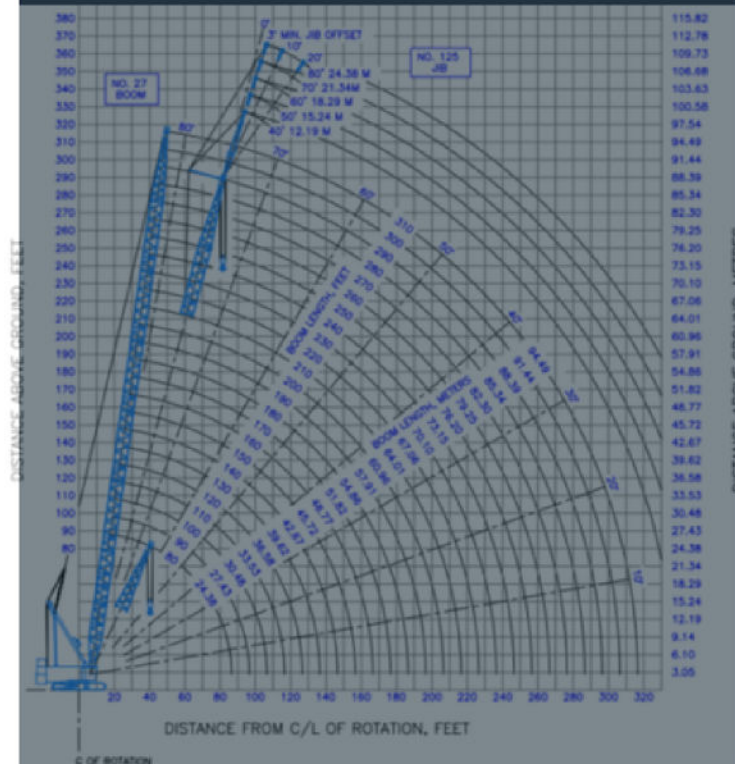
## Capital Expenditure Reporting

As part of a mine life extension, E3K engineers researched inefficient, unsafe and under capacity equipment at a copper and gold processing plant, proposing upgrades that would allow fit-for-purpose production to continue for 20 years. \$4.2 million of capital equipment and spares was approved. Another \$20.75 million of equipment was investigated and recommended for upgrade.



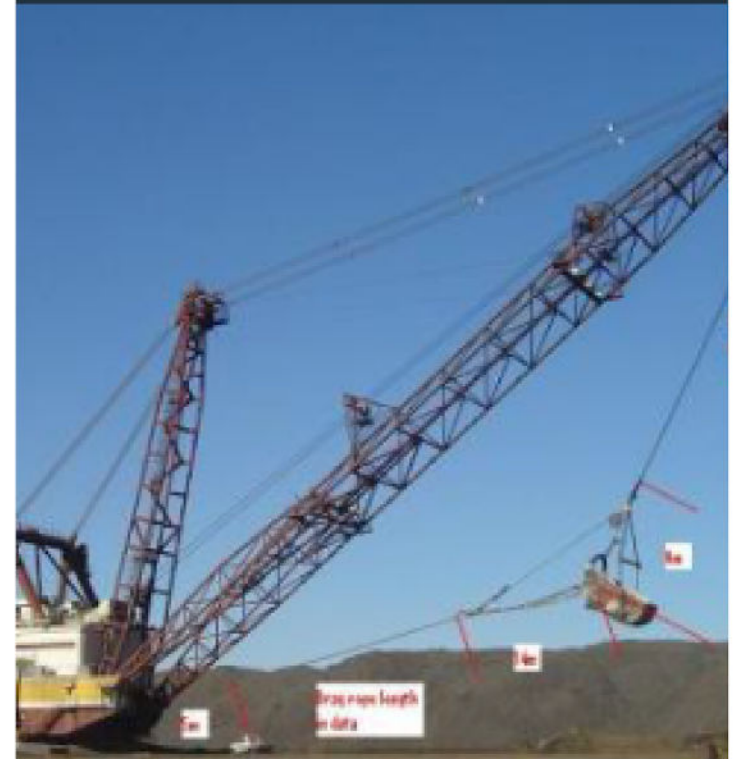
## Novel Cone Nut Tensioner Stresses - FEA

Technofast Industries contracted E3K to perform FE analysis on their conical-threaded bolt tensioners. A custom thread design enabled Technofast to reduce the number of cyclic load tests on a range of products, allowing them to win a key contract.



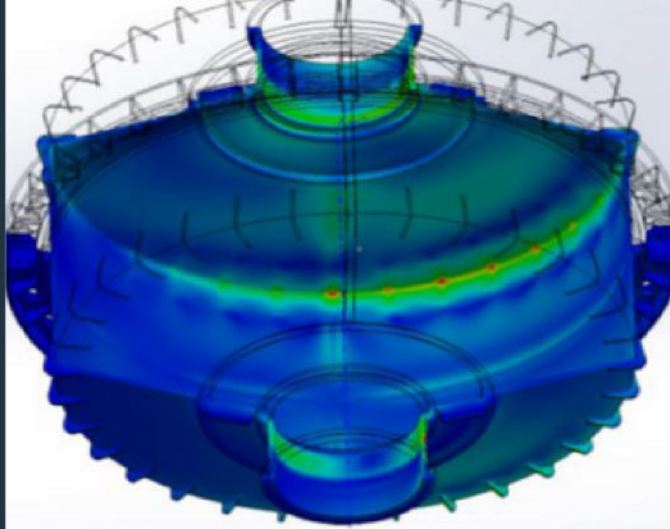
## Dragline Bucket Dynamic Optimisation

Coal dragline optimisation is a highly researched field. In 2004, E3K performed a dynamic payload analysis of a dragline at Norwich Park, operated by BMA Coal. The resulting Payload Mass Algorithm was verified with a short data set by E3K and over 9 hours by BMA Coal. It used dynamic sensor input to determine the mass of the payload during continuing operation.



## Failure Analysis of a Girth Gear

KCGM contracted E3K to review a mill girth gear failure and the numerous reports that had been produced regarding the excavation. E3K produced a management level report analysing the failure and providing a recommendation for the potential remaining life of the gear.



## Safety Investigation for Haul Truck Personnel Access

After a mine safety incident, E3K were engaged to design a safe access system for a Caterpillar 777D. Australian Standards requirements were researched and a new access platform was designed to minimise cost, but ensure the safety of the operators.

"

## Failure Analysis of a SAG Mill

A 34ft diameter SAG mill developed cracks in the corner weld near the end of its service life. E3K conducted FE analysis on the mill to determine the reduction in stress intensity at the repaired site and provided recommendations for continuing use and the potential replacement.

