



“The design assessment instigated by Berrima Colliery and carried out by Advitech will be critical for the DPI assessing and issuing Design Registration for the 40 year old winder in use at the mine. I would not hesitate to use the services of Advitech again and I valued their expert advice.”

Mr Robert Reay
 Manager of Mechanical Engineering
Berrima Colliery

Advitech Pty Limited

Head Office

1 Elizabeth Street, Tighes Hill
 (Newcastle) NSW 2297

PO Box 207
 Mayfield NSW 2304

Telephone: 02 4961 6544

Sydney Office

Suite 17, Level 6, 91 Phillip St
 Parramatta NSW 2150

Telephone: 0438 832 403

Email

mail@advitech.com.au

Website

www.advitech.com.au

Structural Assessment

Case Study: Drift Winder Structural Assessment

Client: Berrima Coal

Project Summary

Berrima Coal operate a drift winder originally designed in 1967/68. Structural improvements have been implemented over time, and in 2008 the winder was extensively upgraded with a new controller and brake release hydraulic system. Advitech was contracted to perform a structural design assessment to assist with registration of the upgraded winder. Specifically, the winder was required to comply with Clause 112A of *OH&S Regulation 2001 - Requirements for Design Registration of Powered Winding Systems* gazetted in 2007. The gazette notice required assessment against the requirements of MDG33 and other specified standards.

Advitech prepared finite element models of the winder and drive train shafts. The modelling activity was supported by classical structural analysis for both fatigue assessment and static loading such as the 120% rope break case. Additionally, gear train strength and durability, bearing life, hold down bolting and brake system strength and fatigue life were also assessed against relevant standards. From the structural analysis results, specific inspection activity was recommended for inclusion in the ongoing Berrima Coal NDT program to ensure focus on the most critical areas of structure.

Project Features

- Structural assessment of a drift winder against MDG33 and related standards.
- Finite element static and fatigue analysis supported by classical structural analysis.
- Structural assessment report documenting all calculations for mine records.
- Assessment of the hydraulic brake hold system against MDG 33 requirements.

Project Benefits

- The structural analysis results can be fed back into ongoing NDT programs to ensure that critical structural areas are appropriately monitored, with NDT technicians being aware of the critical locations and what type of defects to look for in those locations. This facilitates faster turnaround and increased confidence that any damage present will be found. Structural analysis results can also be used to determine the required inspection period.
- The documented structural design assessment provides clear evidence of regulatory compliance both currently and for the envisaged operational life of the winder.
- Independent verification of brake hold off hydraulic system compliance with MDG 33.
- Advitech's varied skill base with professional engineers experienced in mechanical design, stress analysis, hydraulic systems and risk assessment allows an integrated approach with systems such as mine winders.