

CASE STUDY Locomotives Upgrade



“The upgrade will substantially increase the life of the existing locomotives...”

Three for Five

Siemens' solution for Queensland Rail locomotive fleet upgrades

Queensland Rail is Australia's largest provider of rail freight transport for Australia's coal mining industry, transporting 155 million tonnes of coal in 2004-2005.

As international demand for coal continues to grow, Queensland Rail is significantly expanding coal haulage capabilities to handle a projected annual increase of 10 per cent.

To deliver the necessary load shifting power, Queensland Rail has commissioned Siemens to upgrade 63 locomotives using advanced AC Traction technology.

THE CHALLENGE FOR QUEENSLAND RAIL

Queensland Rail has an ageing fleet of electric locomotives operating in the primary coal haulage rail systems of Goonyella and Blackwater in the Bowen Basin region.

To meet its target for annual coal haulage of 235 million tonnes by 2010, Queensland Rail needed to:

- increase locomotive performance
- reduce life cycle cost of fleet
- ensure high locomotive availability and mission reliability
- reduce maintenance costs
- increase safety and functionality
- reduce environmental impact.

Queensland Rail selected Siemens' proven international capability to upgrade its existing locomotives.



THE SIEMENS SOLUTION

Siemens is partnering with United Goninan to completely upgrade 63 electric 31/3200 class locomotives to the more powerful 3700 class.

The upgrade will substantially extend the life of the existing locomotives, deliver significant savings through improved efficiencies and lowered maintenance costs, and support Queensland Rail to meet its projected coal haulage growth targets.

Increased power, tractive effort and efficiency will mean that just three upgraded locomotives will do the work of five old locomotives, delivering more throughput, reduced transport costs, and freeing up rolling stock.

The upgraded locomotives will include new electrical and traction control systems and improved structural and bogie design to ensure a minimum design life of 20 years.

The Siemens AC Traction technology, proven in heavy haul applications around the world, will replace existing DC traction equipment, and improve adhesion and tractive effort to the rail. New regenerative braking technology will return electrical energy to the supply system.

The Siemens Goninan partnership delivers innovative technology and a blend of local and international experience - Siemens will provide the entire electrical technology and United Goninan will perform the mechanical refurbishments and fit-out of the locomotives.

Locomotive Characteristics	31/3200 Class (old)	3700 Class (upgraded)
Weight	110 tonnes	126 tonnes
Starting Tractive Effort	375 kN	500 kN
Continuous Effort	260 kN	430 kN
Max. Regenerative Brake	Not fitted	4000 kW
Max. Rheostatic Brake	2250 kW	4000 kW
Continuous Power	2970 kW	4000 kW

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