

## Freight: Heavy haulage giants join in fresh battle

By Robert Wright

Published: September 20 2010 17:20

The small town of Erie, by the lake of the same name in north-western Pennsylvania, has no obvious links with the mining businesses currently hacking huge quantities of commodities out of Australia, Brazil and South Africa for export to China. However, many of the high-powered diesel locomotives that move coal, iron ore and other bulk commodities from producing countries' mines to ports start life in a vast brick building on the town's eastern side, the main production plant of the US's General Electric.

Producing the power of more than 400 standard family cars, the latest diesel-electric machines rolling off the long Erie production line allow mining companies and train operators worldwide to carry far more than ever before on each train leaving a mine or quarry for a port or power station.

Yet many involved believe GE's transportation division now faces some of the toughest challenges in the 20 years since it took over market leadership from Electro-Motive Diesel. Route electrifications and Chinese competitors are both potential threats. More immediately, Caterpillar, the earthmoving equipment manufacturer, bought Illinois-based EMD, GE's only serious competitor, in June and is expected to invest heavily.

**Henry Posner**, chairman of Pittsburgh-based Railroad Development Corporation, an international railway investment company, says General Motors, EMD's owner until 2005, let the company fall behind.

"EMD lost the market to GE," Mr Posner says. "EMD is now playing catch-up and, with its new owner, it should have a bigger budget for innovation."

Lorenzo Simonelli, chief executive of GE's Transportation division, points to two key areas of technical improvement in the past decade. One is in the diesel engines that are at the heart of both GE's and EMD's locomotives, driving the electric generators that power the electric motors.

GE says its latest engine, in use on its Evolution model, saves fuel by generating as much power from 12 cylinders as its predecessor did from 16. EMD has also achieved fuel savings, but from a less comprehensive engine redesign.

The other main improvement is in the software controlling the locomotives' electronics. Control over each wheel's grip on the track, the power delivered to motors, and many other important functions is now much more sophisticated.

The improvements have made a noticeable impact on the efficiency statistics by which the big Class I North American railroads – GE's largest customers – are judged, says Mr Simonelli. "We're willing to invest," he says. "That's where we stay ahead."

The 1,300km network run by Rio Tinto, the mining company, in Western Australia's Pilbara region provides GE's products with some of their toughest tests, with locomotives having to start and stop trains of 33,000 tonnes.

Sid Hay, Rio Tinto's manager for rail development, says the Evolution, which it has been using since 2008, has continued improvements under way since 1995, when it introduced GE's then-new Dash 9 model.

The Dash 9 allowed Rio Tinto to make its trains longer than the 210 cars it was then running. The extra power also allowed Rio Tinto to cut back the number of locomotives per train from three to two – though it has since reverted to three to ensure reliability.

“When we went back to two locomotives, we actually pushed the train length to upwards of 230 cars,” Mr Hay says. “We also increased the total weight of the cars.”

The Evolution's main benefit has been reduced fuel consumption, Mr Cohen says. “The Evolution series locomotive has slightly more power than the Dash 9, with significantly lower emissions,” he says.

The next technical step is likely to be into hybrid power. Much of a modern locomotive's braking effort is produced by turning its traction motors into generators and dissipating the energy in large banks of electrical resistors.

GE is investing \$150m in developing sodium battery technology that would instead allow braking energy to be stored to power the train on restarting.

Yet GE could be less well-placed if many operators decided to switch to picking up remotely generated electric power from overhead power lines – as happens on South Africa's main coal export line to the Port of Richards Bay.

Mr Simonelli says GE will switch to building purely electric locomotives if the industry is interested. But it most recently built them in 1991.

Chinese manufacturers, meanwhile, have already supplied some of the many African railways being built or refurbished by Chinese companies.

Mr Simonelli insists that the cost benefits of GE locomotives' fuel-efficiency and reliability more than outweigh the lower initial cost of buying a locomotive from a Chinese manufacturer.

**Mr Posner** says the experience of the Iowa Interstate Railroad, owned by Railroad Development Corporation, bears out Mr Simonelli's point.

The Iowa Interstate recently took delivery of 12 GE Evolution locomotives. It had calculated that the GE product's flexibility would allow each one to replace three existing locomotives, while also letting the company run longer trains and thus save fuel.

“It's transformed the way we operate,” Mr Posner says.

[http://www.ft.com/cms/s/0/3195b626-c44d-11df-b827-00144feab49a.dwp\\_uuid=aa96ea02-c44f-11df-b827-00144feab49a.html](http://www.ft.com/cms/s/0/3195b626-c44d-11df-b827-00144feab49a.dwp_uuid=aa96ea02-c44f-11df-b827-00144feab49a.html)