

COVER

The Green Engine that CC





Railpower Technologies Corporation is revolutionizing modern industry with their ultra-low switcher locomotives and hybrid cranes. Although the industry is still considered young, Railpower, is quickly positioning itself for global competition with their constant innovations in technology and non-bureaucratic approach to management.

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By Mark Toriski



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“Railpower was the first to introduce hybrid locomotives to the transportation industry,” says Kris Redinger, Electrical Engineering Manager. “Somehow the Railpower story is not very well known. We are a smaller company that has not been able to infiltrate the traditional media.”

Over the past four years, Railpower Technologies has quietly tapped into the railroad industry market with their innovative technology, a market that has been seldom touched in the past 20 to 30 years. Their products are used across the United States and Canada. They possess a work environment otherwise unheard of in a business of their nature and keep themselves one step ahead of the competition by exceeding regulation standards that will not be in place for another

three years. This maverick company is set to become a global leader in their field.

Despite a rough start to the year, Railpower received the 2007 Clean Air Award from the Environmental Protection Agency for over delivering their product standards by 57%. They also received two sizable grants this year; a \$32 million for working capital and research development, purchased through shares, and \$35 million from the Ontario Teachers’ Pension Plan

(OTPP). Locally, they work closely with the Technology Counsel of Northwestern Pennsylvania and have met with local and state officials to discuss investments. “[The OTTP] looks for exciting opportunities that make business sense,” says Mitch Gillispie, Director of Product Service. “When they looked at our diligence they saw tremendous value and the ability to be a long term player and invigorate their investment.”

“We are changing the world by making it cleaner and greener. As soon as you reduce the fuel consumption and emissions, you are making a cleaner environment for everyone,” says Kristen Brown, Human Resources Supervisor. “It is so disheartening when you see so many people who don’t care about the environment. You hear all this stuff about ice caps melting and some people don’t believe in global warming. We are doing something that is making a difference.”

The railroad industry is behind when compared to other industries advancements with hybrid technology (the automotive industry for example). However, it is believed they will have to advance as fuel costs continue to rise along with regulations. “Most railroads will be switching to green technology. It is more economical to switch green,” says Jim Kyle, Procurement Supervisor and Material Planner. “The only way this won’t happen is if the United States came up with its own oil and the price of fuel went down. Then locomotives could afford to stay the way they are.”

Often considered a major contributor to the staggering amount of pollution in cities of industry, the railroad market has already benefitted

from the outcome of Railpower’s Eco-Motive low horsepower (hp) units, the most often overlooked in terms of updating technology. Low to medium horsepower units constitute a great majority of a railway fleet, yet are seldom replaced or updated.

“We are a market that has probably not seen new locomotives delivered to major customers in the past 30 years,” says Gillispie. “We are focused on increasing horsepower. The yard and branch line locomotives are the forgotten sector of the railroad. Low horsepower units are the most significant pollution contributors and the least efficient locomotives as far as fuel consumption. Our products increase fuel efficiency

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Yard switchers, a locomotive that assembles the train by coupling with cars in the railroad yard and attaches them on the tracks, and road switchers, that take the train to the mainline unit, are Railpower’s principle products. Both are vital to the industry but spend most of their lifetime idling for long periods with their diesel engines running at full power. Railpower’s battery dominant hybrids and engine dominant hybrids utilize their capabilities to run at minimal power

or completely shut down when not in use.

The units have multiple engines, allowing them to run at various peak efficiency points. The battery dominant uses 336 batteries coupled with a small genset (similar to an automobile alternator) and a diesel engine. The genset will recharge the batteries while the locomotive runs idle. The technology has proven vastly effective in the area of light-industrial applications, with fuel savings ranging over 70% and emissions ratings at an 80% reduction. The company has become so advanced their meeting emissions requirements at a Tier 3 level, which is not expected to be regulation requirements until 2011. They are impacting the environment by providing green technology today as opposed to when it is regulated.

“We will always be one generation ahead of the competition,” says Gillispie. “We are doing things that are unexpected and the customer benefits from it. Historically emissions have tightened fuel economies on locomotives. We are providing tighter emissions requirements and exceeding it by one tier level standard and improving better fuel efficiency by 30% to 40%. We have already far exceeded our expectations. We continue to push the edge with fuel efficiency as far as how we manage the gensets, reducing RPMs, and increase the management of a genset so it improves ratings and is more efficient. Reliability is something we have spent about \$9 million in redesigning the locomotive for 2008 to make the design more robust and much more reliable.”

With the delivery of their first EcoCrane to a Vancouver port in

early 2007, Railpower positioned themselves in the market of rubber-tired gantry cranes. Their battery dominant technology in their Green Goat fleet can be applied to current cranes, replacing their power source from an 800 kilowatt genset to a battery pack and small genset requiring 50 kilowatts to recharge. “The primary constraint on a Port is their emissions footprint,” says Gillispie. “This is a higher margin product. Ports can expand their number of cranes without impacting their environmental footprint.”

Railpower’s rapid growth of development and lack of impeded ideas are a testament to their relaxed work environment. Their multi-genset locomotive went from concept to out-the-door delivery in 15 months. A remote diagnostics system for all products, allowing

the company to receive downloads daily on the status and usage of their locomotives and cranes, was an idea from a young engineer. He is now a manager working on the project (nicknamed RemoDi). “This speaks of the talent and team we have here. We have a concentrated group of talented people and, when coupled with our work culture, it brings out efficiency,” says Redinger. “Working at Railpower, you do not have a lack of contribution and a very good creative freedom. If someone here has a good idea we are going to use it. It allows the best ideas to come out.”

A vast diversity in age, the average is mid-thirties, has allowed Railpower to take advantage of the talent pool in Erie. Over 60% of their staff is Erie natives, both to prevent the supposed “brain drain” and to

make sure the company preserves its Erie roots.

“We are a group of people who are highly talented and who want to create,” says Kristen Brown. “It is so inappropriate to treat people like children. Too many policies stifle a work environment. You see how people are when you just let them be productive instead of putting in rules forcing them to be. As long as you can maintain fun and exciting atmosphere you’re not going to have a situation where you have to go policing people.”

After going public in 2004, Erie was announced as the location for Railpower’s headquarters. Upon Jim Maier’s retirement and the appointment of Jose Mathieu at the end of 2005, the company headquarters moved to Montreal, Mathieu’s home. The move was



falsely speculated Railpower may have been edged out of the industry. But the intention was to make Railpower an even more viable company in the global market.

By becoming a multi-national company Railpower now has a broader reach into the international market. They are seeking to enter Eastern Europe's massive railroad industry and Poland is under investigation for a possible plant site. They are projecting that application of their Eco-Motive technology will become the standard overseas.

"We take base-core locomotives and strip the frame to install our technology," says Gillispie. "Our customers can build their own locomotives or work with other companies that have the that capability. That would be our intention as we look towards an export market."

Railpower's abilities to completely rebuild a previously existing locomotive with their technology is not just an indicator of how green they are (they reuse all the pre-existing metal) it shows how fresh, innovative industry stays ahead of their competition. MatLab-Simulant, software used in their design process, allows engineers to run a simulation of an idea a customer, or employee, may have as a product improvement. The simulation determines if the concept is an actuality in a matter of weeks, rather than investing months to create a prototype, preventing a cease in production to do trial-and-error processes.

In late 2006, a string of complaints were reported regarding Railpower's Green Goats were not performing to standard. By February 2007, the entire fleet was recalled to ensure the problem

would be diagnosed and repaired. The results showed that numerous causes, including the batteries not living up to the expectations of the supplier, and consumers misusing the locomotives in the yard, were at fault. They are currently in the process of getting the Green Goats back into the market with a more secure battery and impact detectors, to monitor its use.

"We had customers calling us and thanking us [for the recall]. We were just trying to have everybody's safety in mind and do the responsible thing and even though we were in a precarious situation because our money was running out, it was what we had to do to prove that we are not

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just selling a product," says Brown. "You are always going to have problems with new technology. Our product development time was six months to a year. Larger companies are five to seven years. You are going to have flaws when you are putting something out that fast. I think we would rather continue to be that aggressive in order to get new technology into the market and then continue to work with it to make sure it is the best. We don't abandon our customers."

The Goats were not the company's primary manufacturing focus at that point, as the hybrid road switchers were in large demand for nearly two years, but Railpower felt the effects of the recall economically

A Conversation with **Jose Mathieu,** CEO of Railpower

Montreal - Jose Mathieu is a realist. Since becoming CEO of Railpower at the end of 2005, Mathieu has been focused on ensuring the company secures its position in the world market and becomes a dominant force in renewable energy. Mathieu says Railpower had to make strategic changes in order to obtain their objectives.

"Two years ago the company did not have a real product that was profitable. We focused on locomotives. But as we started targeting a bigger market we had to change focus to the road switchers and other areas that our technology could enhance," he says.

The company also focused on recruiting top management and technical people to organize Railpower. He also points out that moving the headquarters to Montreal gave the corporation an international face. "When I joined the company, it had gotten to a point where we needed to recruit more talent. Since I knew many people in Montreal that knew transportation and locomotives, we moved the company there." But, by keeping the majority of the engineering staff in Erie, Mathieu was able to take advantage of the talent in the States as well.

Mathieu also mandated that Railpower break even and continually develop new products.

By the end of 2008, world oil production will reach its peak and begin to decline. Mathieu is keenly aware this and also the impact Railpower can have on the industry. He points out that making the switch to green is all about economics. "Companies are driven by the dollar. By creating enough side benefits for going green, customers will be convinced," he says. "As a company, we are well placed to meet the future if the industry is willing to go in that direction. There are 10,000 cranes in the world and everyone will need to convert. Because of fuel and emissions no one will use conventional power plants. Logic says that eventually everything will be hybrids."

and in the media. They saw a drop in stock in the first quarter of 2007 and their media attention focused solely on the recall. "We all had doubts on our minds," says Redinger, "but everyone knew our capabilities. We have a good feeling where we stand against our competition. This company will go through a growth spurt if we are right about the regulations coming in. We are the leader now and we will be the leader then."

As the demand, and regulations, for Railpower's technology grow, so will the company. In addition to plans to work with the European market, they hope the next ten years will see an expanded work force and more manufacturing plants, possibly in the Erie area. Research has begun on whether their technology is applicable to the tugboat market, something that will be under continuous development throughout 2008. Ocean Tug and Barge, the largest provider of boats in North America has already expressed interest upon hearing they could potentially see improvements of at least 20%. "I don't think it is our goal to be an enormous industry," says Brown. "We are always going to try to maintain that friendly work environment we have now. We don't want to be oversaturated with policy and procedures, eliminating the family atmosphere. I see us being the leader in a lot of different derivative markets with our hybrid technology." *EL

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