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# RAILHAUL

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## RHT RailHaul Technologies Inc.

RailHaul is a Canadian company focused on the development and commercialization of self-powered, semi-autonomous, heavy haul freight rail car systems. <https://railhaul.ca>



We integrate proven components and systems in our designs for low risk, high reliability client configured haulage solutions....uncovering new opportunities by applying the latest technology and thinking for overlooked steel wheel on steel rail niche applications, making them economically attractive and also environmentally friendly and sustainable.

We have invested a decade in Research & Development, secured the necessary Intellectual Property Patents, and are now commercializing the technology. The initial focus is for open-pit mining applications, ports, and remote communities where the operating duty cycles strongly benefit from our innovative technology approach and provide good value and productivity. We do not compete with locomotive hauled trains and mainline railways, and do not plan to. For most applications we will become a preferred feeder to them.

Our business model is to own and manage the overall engineering and system design, with manufacture and servicing coordinated through strong, experienced, and capable local partners, while always maintaining control & leadership for all technical & commercial agreements and customer relationships.



### **Value Proposition**

The RailHaul system has many potential use cases:

- Open-pit mining, underground mines, surface mines
- Remote community or stranded resource assets
- Coastal and inland ports

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RailHaul provides a competitive alternative to heavy haul mine trucks and conveyor systems for mines, along with a more economic mode of access for ports and remote communities.

Our value proposition for most use cases is straight-forward:

- 25 - 50% less capital cost
- 15 - 25% less operating costs
- 10%+ less emissions and green house gases

For ports and remote communities, the value proposition will vary based on:

- The comparative economics for other modes of access (road, air, tidal, other water, ice roads)
- Location, distances, and type of topography encountered (mountains, muskeg, waterways)
- The duty cycle and priority freight needs of the community or port:
  - Household goods (e.g. food, water, consumables, hardware etc.)
  - Fuel (e.g. diesel, gasoline, jet fuel, CNG, LNG)
  - Resource extraction (e.g. forestry products, mined products, agriculture)



## **RailHaul Technology: Self-Powered, Heavy Haul, Freight Car System**

The RailHaul system is based on a self-propelled transporter, operating individually or in a multiple unit consist, that can climb much steeper grades at higher speeds for added productivity than traditional rail or truck systems. Industry standard proven components and systems are used (batteries, engines, controls, propulsion, braking, bogies, track) to provide for a highly configurable low risk solution.

The RailHaul system utilizes modern standard gauge rail technology designed to be laid on basic road beds (e.g. secondary municipal road standard). Our system takes up significantly less space for what is normally required for heavy haul mine trucks, and the rail bed is less intensive and less costly.

## **RailHaul Product Line**

The RailHaul product line is highly configurable to accommodate various customer requirements and applications, with all mining transporter models sharing the same base design capabilities:

- 120 metric ton load capacity
- Two, 3 axle truck sets with 4 motor traction system
- Semi-autonomous operation initially, fully autonomous in 2<sup>nd</sup> generation design
- Safety focused control and communication system with multi-sensor redundancy
- 10 %+ grade capability, up to 15% based on rail / ambient conditions

- 90km/hour maximum speed capability
- 190 metric ton maximum loaded vehicle weight

## Base Model for Mining Applications:

- Hydraulic, dual side-dump capability
- The optimum power capability and system will be determined by the client route profile and duty cycle required. A detailed application analysis will be done to determine this.

## Base Model for Container Transport:

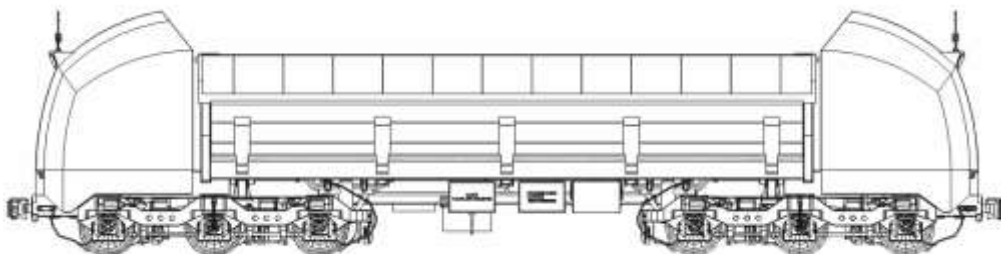
- Double stack well car for containers
- Two axle trucks with two traction motor propulsion system
- Multiple unit consist option

## Power System Options:

- All battery with kWh capacity determined by application analysis
- Battery-electric hybrid with pantograph for overhead catenary (“trolley assist”)
- Diesel-electric or inline generator with diesel or natural gas fuel
- Diesel-electric or inline generator battery hybrid
- All electric with pantograph for overhead catenary
- AC traction with regenerative power harvesting capability

## Strategic Partners

We are partnering with innovative, agile companies with solid reputations and track records for delivering quality products and service in rail vehicle design, manufacture, steel fabrication, remote and semi-autonomous vehicle control systems, communication systems, engine and battery technology, and rail line design and track construction.



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## **RailHaul: An Experienced Team Focused on Customer Success and Meeting Commitments**

Each of our founders has decades of rail and/or industrial experience.

Michael Price	Chief Executive Officer
Frank Donnelly	Chief Technology Officer
Peter Ballachey	Chief Financial Officer
Tony Maciulewicz	Chief Marketing & Sales Officer
John Watson	Intellectual Property Lead

We are targeting to complete the design and build of a first prototype test and evaluation battery dominant diesel-electric hybrid transporter for mining applications in 2021.

For additional information or to request an application analysis for your specific needs, please contact:

[mikeprice@railhaul.ca](mailto:mikeprice@railhaul.ca) Communities and Mining Clients, Investors, Governments

[tonymaciulewicz@railhaul.ca](mailto:tonymaciulewicz@railhaul.ca) Mining Clients, Ports, Logistics Companies, Partners, Suppliers

