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# RAILHAUL

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## RHT RailHaul Technologies Inc.

RailHaul is a Canadian company developing and commercializing self-propelled, semi-autonomous, heavy haul freight rail car systems, and unpowered heavy haul dump cars. <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 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 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 to provide much improved value, productivity, and lower emissions. In the vast majority of application opportunities we do not compete with locomotive hauled trains and mainline railways, but become a preferred feeder to them.

We have partnered with world class railcar designers for the overall vehicle and system design. Manufacture and servicing is coordinated through strong, experienced, and capable local partners. RailHaul always maintains control & leadership for all technical details, commercial agreements, project management, 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

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

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

- 25 - 50% less capital cost
- 15 - 25% less operating costs
- 10% - 95% less emissions and green house gases

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

- The comparative economics for other modes of access (road, air, tidal, other)
- 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-Propelled, Heavy Haul, Freight Rail Car System**

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

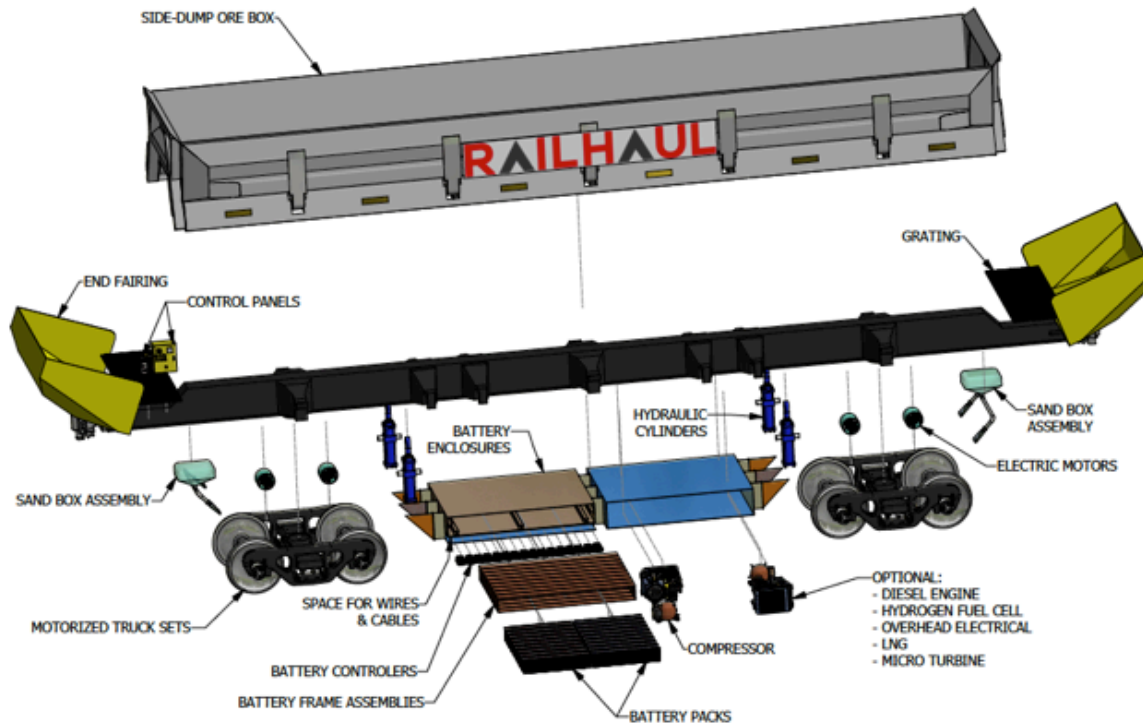
The RailHaul system utilizes modern standard gauge rail technology. A railroad takes up significantly less space than what is normally required for a road for heavy haul mine trucks. The rail bed is less intensive, less costly than for a haul truck road, and is less costly to maintain.

## **RailHaul Product Line: Powered Transporters and Unpowered Dump Cars**

Transporters are highly configurable self-propelled rail vehicles that can accommodate various customer load carrying needs and application requirements in a dual side dump or dual slide / bottom dump configuration.

Unpowered Dump Cars are transporters without propulsion and control systems.

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## Transporters

- Up to 110 metric ton load capacity
- Two, 2 axle truck sets with 2, 3, or 4 AC traction motor propulsion 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
- Up to 100km/hour maximum speed capability
- Up to 143 metric ton maximum loaded vehicle weight
- Options for hydraulic dual side-dump, or dual slide dump / bottom dump capability
- Multiple unit consist capability

## Power System Options

- All battery with optimum 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
- Regenerative power harvesting capability

The optimum power capability and system will be determined by client route profile and duty cycle requirements. A detailed application analysis using RailHaul’s proprietary Transportation Analysis Tool (TAT) is done to determine the optimum configuration.

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## **Strategic Partners**

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

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

Each of our team has decades of rail, mining, or industrial experience.

Michael Price	Co-Founder & Chief Executive Officer
Frank Donnelly	Co-Founder & Chief Technology Officer
Tony Maciulewicz	Co-Founder & Chief Marketing & Sales Officer
Daniel Haag	Senior Vice President Marketing & Sales – America's

The design and build of our first unit was completed in June, 2022. This is an all battery powered dual side dump transporter for mining applications. It also serves as RailHaul's engineering development unit. Client demonstration visits are welcome and take place in Vancouver, BC, Canada.

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

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