CryoLogistics
CO_2LD | Powered by Nature
Refrigeration Technologies Ltd.

COMPANY PROFILE

What We Do

CryoLogistics is responding to a need expressed by the $300B cold chain industry to lower costs by developing a disruptive technology that can replace or hybridize the costly and polluting electromechanical refrigeration (reefer) systems now used to transport high value perishable food and pharmaceutical products. Because it has no electromechanical components our system lowers total cost of ownership. It operates silently, emits no particulate matter, has a net-zero carbon footprint and enables load mixing of dry and refrigerated cargo. CryoLogistics fully intends to revolutionize transport refrigeration.

Minimal Viable Product

Our modular unit is based on a scalable design that can be customized to each end-user's requirements.

The Market Opportunity

The cold chain is a global $300 billion industry that spans the production, transportation, wholesaling, distribution and retail sale of high value temperature sensitive consumables. More than 110 million metric tons of perishable food product is shipped around the world aboard millions of individual transport refrigeration units (TRUs) each year. Over 150,000 TRUs are being manufactured annually. Each TRU is a complex and expensive electromechanical system that depends on diesel fuel and/or electricity. These systems produce cold energy while emitting large quantities of greenhouse gasses, particulate matter and noise, and cost several dollars per hour to operate and maintain. The cold chain industry is actively seeking a simple, innovative, economical and climate friendly alternative that will introduce new operating efficiencies, reduce emissions and improve competitive advantage. Our system is that alternative.

Did You Know?

According to the UN Food and Agriculture Organization global food wastage, ***caused in part by inadequate or improper refrigeration***, is estimated to exceed 1.3 billion tonnes annually. That is equal to USD$2.5 trillion or 30% of total production.

Food security is an escalating problem in many parts of the world. Our unit will help combat food waste by delivering an economical refrigeration capability in regions where it does not now exist.

Putting Nature to Work

Natural refrigerants fell out of favor following the introduction of synthetic refrigerants like HFC, HCFC and CFC in the mid-1900s...but they're making a comeback. The Montreal Protocol has led to a global phase down of synthetic refrigerants, resulting in a revitalized interest in nature's climate friendly alternatives. Carbon dioxide is an abundant, naturally occurring, efficient, economical, safe and stable refrigerant that is receiving widespread acceptance in commercial and industrial applications. We believe that nature is full of promise when it comes to technical innovation and our team is putting nature's refrigerant back to work.

Applications

Our refrigeration technology system can be adapted to fit the needs of a variety of applications including food and pharma production, over-the-road trucking, intermodal rail & marine transport, air cargo, cold storage warehousing, food distribution centres, grocery retailers and food service providers.

Contact

Peter M. Evans, MA

Founder & Chief Executive Officer

Cryologicstics Refrigeration Technologies Ltd.

1.250.588.7539

evans@cryologistics.ca

Privately held Eligible Business Corporation registered in British Columbia.

Revolutionizing the Cold Chain

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Path to Market

Our commercialization strategy begins with a thorough knowledge of the market, gained through customer discovery interviews with cold chain industry stakeholders. Several stakeholders have agreed to be our pilot partners. We anticipate that our pilot partners will become early adopters, endorsing the system's benefits and value proposition and promoting it to their industry partners (*i.e. food producers, wholesalers, distributors and retailers*). Pilot partners strongly influence buying behavior within our target market, which is the line-haul and less-than-truckload segments in North America, Europe and Asia.

Positioning Statement

Keeping a load of high value perishable product at its correct temperature, while in storage and transit, is critical to consumer health, product quality, value retention and industry profitability. Our system has no moving parts and requires no electrical energy. It provides rapid, reliable, efficient and economical cooling power on a scale that out performs electromechanical conventional vapor compression systems. Our system offers a ~12% lower total cost of ownership, increases equipment optimization, accelerates ROI and reduces emissions by ≥80%.

Core Technology

Our core technology combines a passive (*patent pending*) thermal diode heat exchanger coupled to a sealed carbon dioxide heat sink. This system uniformly removes heat energy from a transport unit's cargo load space and establishes the desired temperature set-point without auxiliary power or electromechanical components. Our minimum viable product is a modular thermally insulated transport load unit capable of safely refrigerating a palletized shipment of temperature sensitive product for up to four days. It is truly simple and truly elegant.

Development Milestones

Our goal at CryoLogistics is to develop practical solutions to the problems being experienced throughout the cold chain. We have listened to the industry and responded by developing a technology that will achieve the operating and performance metrics that the industry is in need of. We are partnered with the University of Victoria Faculty of Mechanical Engineering and the Camosun College Applied Technology Program to design, build, test and validate our system's technical and economic feasibility. Our proof of concept (*alpha)* prototype will be completed and ready for demonstration by Q4 of 2017. Our beta prototypes will be ready for field trials in Q2 of 2018.

Value Proposition

- Lower total cost of equipment ownership
- Enables mixed loads
- Improved load capacity & versatility
- Better equipment optimization & ROI
- Zero noise & particulate matter emissions
- Net-zero carbon footprint

Our Joint Development Partners

In addition to UVic and Camosun College, CryoLogistics is partnered with the Foresight Cleantech Accelerator Center, NRC-IRAP, Mitacs, NSERC and with Cold Star Solutions Inc., a BC-based cold chain company. Our advisory board consists of nine career business, academic, engineering and finance professionals.

CAMOSUN · COLD STAR SOLUTIONS INC. · Foresight cleantech accelerator centre · NSERC CRSNG · NRC-IRAP · Mitacs · University of Victoria

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