



U.S. Pending Patent Investment Opportunity "Green" Truck Sleeper Cab Heating & Cooling System

Investment Highlights:

- Unique patent-pending product utilizes DC-voltage batteries and principles of thermo-electric heat transfer (Peltier effect) to both cool and heat the air space in tractor-trailer truck cabs without using the engine (and the resulting fuel consumption) or outside connections to power the system.
- Environmentally-friendly "green" design eliminates the need to idle engine to provide climate control. It is the only mobile heating, ventilation, and cooling unit developed that does not use any fossil fuels, liquids, compressor, or A/C power, thus does not produce any Nitrogen Oxide (NOx) emissions. Cooling function requires no hazardous liquids that can potentially leak.
- Self-contained unit can be easily installed in the bunk storage space of a standard sleeper cab.
- Initial product cost to the truck owner is reasonable and pays for itself in approximately 18 months through fuel savings alone. Ongoing maintenance costs are minimal due to very few moving parts.
- Excellent opportunity for a truck fleet owner or company providing products and services to long-haul truck owners in addition to other potential applications for use.

Profile:

This unique acquisition opportunity is a proprietary (U.S. patent pending) stand-alone, DC power-based system designed to comfortably cool and heat on-road, heavy-duty truck sleeper cabs in outside ambient temperatures ranging from 30 to 90 degrees Fahrenheit for an extended period of time. The system is run with the engine shut down, avoiding expense and risks associated with keeping the engine idling, reducing wasted fuel, and allowing compliance with state trucking regulations, which may limit or prohibit extended engine idling time. The system's intellectual property design utilizes thermo-electric peltier chips, proprietary software, standard DC truck batteries, a power management system to ensure the unit operates efficiently, and fans to move air through the system and cycle the heated or cooled air through the truck bunk area. The only moving parts are fans to move air through the system, resulting in a unit that requires minimal maintenance. The design is also environmentally friendly in that it does not use a compressor or

Freon (which when leaking can cause a suffocation hazard in confined spaces) and eliminates the emissions and fuel loss associated with idling the engine to maintain climate control. The owners of this technology are trucking industry veterans. They also worked with other industry experts from major truck fleets who are experienced in truck electrical systems and familiar with existing heating and cooling alternatives to develop this technology.

Industry Description:

Long-distance freight trucking in the U.S. is a \$150 billion industry in 2011. Industry revenue is projected to grow to \$175 billion by 2016. In 2006, the trucking industry employed 1.8 million drivers of heavy and tractor-trailer trucks. This number is expected to grow to 2.03 million by 2018. In 2004, there were 2.7 million class-8 trucks in the U.S. (Gross Vehicle Weight Rating over 33,000 lbs; includes all tractor-trailer trucks). In 2006 the U.S transportation industry logged 432.9 billion miles. Class 8 trucks accounted for 139.3 billion of those miles, up from 130.5 billion in 2005.

Heightened by mandates from federal, state, and local government over environmental concerns, reduction of truck idling is becoming a significant target in efforts to reduce nitrogen oxide (NOx) emissions and fuel consumption from heavy-duty trucks. Long-haul truck operators typically idle to generate heating or cooling in their cab. Argonne National Laboratory (ANL) estimates that drivers idle six to eight hours a day and on average 1,830 hours per year. These numbers also suggest that there are over 490,000 heavy-duty trucks that travel more than 500 miles daily, and are most likely to idle overnight. With average fuel consumption during idle approximating 1 gallon/hour, total fuel consumption for the idle period of these vehicles is around 840 million gallons annually, releasing 200,000 tons of NOx and 5,000 tons of particulate matter into the air. Over 37 states have passed anti-idling legislation, spurring a demand for product solutions that support idle reduction.

Projection Data:

Quotes or estimates have been obtained indicating a cost of \$5,805 to produce each unit, excluding the optional alternator upgrade (\$1,200 estimated cost) and based on an order quantity of 1,000 units. Using a projected end-user product price of \$8,000 (excludes optional truck alternator upgrade and installation), the system will pay for itself in approximately 13-14 months from fuel savings alone. Truck operators using the system will save 1,830 gallons of diesel fuel annually (based on the ANL research above). At an assumed cost of \$4.00 per gallon, the fuel savings are \$7,320 annually.

The owners of the technology estimate that the system can also be leased by the truck owner at \$275/month, based on a capitalized cost of \$8,000 and a full payout lease over 36 months at 15%.

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Daniel Braiman, Managing Director
dbraiman@aarons-bell.com

9101 East Kenyon Ave., Suite 2300, Denver, Colorado 80237 • Office 720.200.0470 • www.aarons-bell.com