



# ADVANCED TRAVEL CENTER (TRUCK STOP) ELECTRIFICATION (ATE) SYSTEM

## 2005 COMPUTERWORLD HONORS CASE STUDY

### TRANSPORTATION

IDLEAIRE ALLOWS LONG-HAUL DIESEL TRUCKS TO HEAT & COOL TRUCK CABS WHILE DRIVERS REST WITHOUT IDLING THE ENGINES, PROVIDING FILTERED HEATING & COOLING, ELECTRICAL OUTLETS, INTERNET, TELEVISION, MOVIES AND PHONE SERVICE -- DELIVERED AND MONITORED VIA PRIVATE WAN, TO EACH PARKING SPACE, WHILE SAVING TONS OF FUEL. [20055280]

*A Search for New Services*



### SUMMARY

IdleAire replaces the decades-old requirement for extended idling of long-haul diesel trucks to heat & cool the truck cabs while drivers rest with residential/hotel amenities --filtered heating & cooling, electrical outlets, Internet, television, movies and phone service -- delivered and monitored via our private WAN, to each parking space.

Robert Carrigan,  
Chairman of the Chairmen's Committee

Ron Milton,  
Vice-Chairman of the Chairmen's Committee

Dan Morrow,  
Chief Historian

### APPLICATION

Long-haul trucks, over a million of them, help transport the majority of this nation's goods. The drivers of these are on the road 306 days a year or more and are required by the government to rest 10 hours for every 11 behind the wheel. They rest in the integral sleeper compartments of their truck because they usually can't afford a motel and don't want to leave their load or rig unattended at night. They typically seek parking at locations that provide needed amenities, such as showers, 24-hour restaurant, laundry facilities, etc., but are at other locations, such as ports, border crossings, distribution facilities and terminals for periods of time. Regardless of location, the only way the vast majority of drivers has to heat or cool their cab is by idling their truck's diesel engine to power the vehicle's heater or air conditioner. Idling also allows them to use whatever appliances they may have in the sleeper cab to make their weeks on the road more bearable.

While extended idling is a decades-old practice aimed at improving the comfort of these professional drivers, it has many drawbacks. Among them:

- IdleAire estimates that, nationally, these trucks consume 4.4 billion gallons of diesel just to heat or cool truck cabs while parked;
- At \$2.053 per gallon (the national average diesel price on 12/30/04), that's over \$9 billion for fuel that moves no product;
- The noise, vibration and emissions from an idling truck – and that of other trucks nearby – prevent drivers from obtaining quality sleep and reduce alertness behind the wheel and driver fatigue is a major contributor to accidents;
- This extended idling produces an estimated 31 million tons of diesel emissions annually;
- Idling these diesel engines, designed to operate at highway speeds and temperatures, increases maintenance costs and shortens engine life.

IdleAire's goals are to provide a market-based business alternative to the extended idling of long-haul trucks, a solution that improves the driver's lifestyle, living conditions and safety on the road, a solution that is universal and affordable for all long-haul trucks today, and a solution that reduces costs for truck owners, creates a new revenue for owners of truck stops and other truck parking locations, and improves the environment for all.

IdleAire's Advanced Travel Center Electrification (ATE) system combines current and emerging technologies with a unique business model to create such a market-based alternative. It is suitable for any location that long-haul trucks congregate and idle for extended periods of time.

It is the only truck parking location electrification system that allows the driver of ANY long-haul truck on America's roadways to turn off the engines today instead of idling -- all while enjoying many of the creature comforts drivers expect only at home or in a hotel. These services, including filtered heating and air conditioning, electricity, Internet, satellite television, movies on demand and computer-based, interactive driver training are delivered and monitored via IdleAire's own private, secure intranet network that stretches from New York to California. The network, which provides the national scalability of the IdleAire system,

controls and monitors the electricity and all other services to each individual parking space, handles financial transactions, customer service, communications and marketing. A Pentium-speed computer with color touch screen that fits into the truck's passenger window is IdleAire's interface with the driver, who use it to control the environment and order services for his/her individual truck cab.

IdleAire is also the only alternative to extended idling that requires a miniscule, one-time investment (a \$10 window adapter) for any truck to be able to use, while providing a new revenue stream to the truck parking lot owner who has invested no new capital. IdleAire installs, operates and maintains its system at each location, while sharing revenue from the system's hourly use. The current fleet price for fleets with signed agreements with IdleAire is \$1.40/hour. The retail price is \$1.65/hour.

IdleAire's 23 locations in 10 states have delivered over 3 million hours of service to the nation's long-haul drivers, conserved 3 million gallons of diesel fuel and eliminated over 32,000 metric tons of diesel emissions. The system earned the 2003 R&D 100 Award from R&D magazine, the 2004 EPA Clean Air Excellence Award, the 2004 California Governor's Environmental & Economic Leadership Award and the 2004 CALSTART Blue Sky Merit Award. As of 12-30-04, IdleAire has agreements with 711 truck fleets to use the system and contracts with three of the nation's four largest truck stop chains for installation of IdleAire, in addition to commitments from numerous independent locations.

## **BENEFITS**

IdleAire has affected four major constituencies in major way.

Truck drivers are able to turn their engines off and rest better with IdleAire than they ever had. In fact, the common reaction among drivers after their first experience with IdleAire is "that's the best night's sleep I've ever had on the road." In addition, IdleAire allows drivers to do their job while remaining connected – connected to their families, connected to their employers and connected to the world at-large – using our phone system, our Internet and E-mail services, and our satellite television. IdleAire removes much of the isolation that has typically been part of a professional long-haul driver's life. The built-in touch screen computer with Internet also allows drivers to experience and learn computers and the Internet through a user friendly technology, which quickens the learning curve, provides a more satisfying user experience and builds confidence quickly.

Truck owners/fleets pay for IdleAire service for their drivers. With IdleAire, truck owners/fleets are able to do their part to improve air quality while reducing all the costs associated with extended idling, including fuel, maintenance, and engine wear & tear. The more drivers use IdleAire, the more money the truck owner saves. In addition, truck owners are seeing the value that IdleAire represents to drivers and are using it as a tool to retain and recruit drivers who want a better lifestyle on the road.

Truck stops and other locations where long-haul trucks congregate and typically idle for extended periods are reaping new revenues without any new investment of their own. Those revenues exceed those lost from declining diesel sales, and are creating an incentive for parking lot expansion, as one California truck stop has already done. These locations also become better neighbors because their truck parking lots are cleaner, quieter environments.

Communities and the public at-large are benefiting because IdleAire improves air quality, results in a quieter environment, provides a higher quality rest for drivers behind the wheel on our nation's highways the next day, and reduces the nation's dependence on foreign oil.

## **IMPORTANCE**

Information technology drives every facet of the IdleAire system and is, in fact, what makes the IdleAire alternative to the extended idling of long-haul diesel trucks possible. To begin with, IdleAire puts a Pentium-speed computer (with color touch screen) in the cab of every truck using the IdleAire system. That computer, with our Internet and e-mail services, and our Internet-based phone service, connects every long-haul truck driver to the outside world -- and to IdleAire -- from the truck cab. The national IdleAire system is controlled and monitored at the individual parking lot level by the company's own secure network, headquartered at the operations center in Tennessee. The ability for such central control and monitoring is what allows the patented IdleAire solution to be scaled economically from coast to coast. IdleAire's combination of existing and emerging technologies garnered the company the 2003 R&D 100 Award as one of the most technologically significant products of the year, as judged by a 60-member panel of independent judges.

## **ORIGINALITY**

IdleAire's system originated as a challenge from a professional long-haul driver to his brother-in-law, A.C. Wilson, during a family RV vacation in the Smoky Mountains in the summer of 1999. The driver had just returned from a run to New Jersey, where he had been ticketed for idling his engine to keep cool while he slept in the heat of summer. He challenged A.C. to come up with a method to improve conditions for him and other drivers without the need for engine idling. That night, A.C. gave the challenge some thought, wondering why he couldn't devise a system that would provide many of the amenities to the cabs of parked trucks that they themselves were enjoying on vacation in their own RV's. Realizing that trucks weren't electrically wired and equipped the way RV's are, A.C. devised an external system that would provide all those same services, including filtered heating and air conditioning and electrical outlets. He presented his sketches and described his ideas to his brother-in-law the next morning at breakfast. With his brother-in-law's encouragement, A.C. set out to build the first rudimentary IdleAire prototype and then find a management team that could develop and deploy the system.

Although other alternatives to extended idling had been advanced to market, IdleAire had several unique characteristics. Various electrification or "shore power" systems for truck parking areas had been demonstrated (and are still being demonstrated) and each failed. None provided the key element needed in today's market for universal use – a way to heat and cool the truck cab, which is the primary reason drivers idle their trucks. They provided only electrical hookups, but since trucks don't have electrically powered heaters and air conditioners they still idled. These systems depended on truck owners investing thousands of dollars in each truck in order to shut the truck off ... and then maintaining and replacing those on-board systems at regular intervals.

On the other hand, owners of truck parking areas were required to pay for the electrification infrastructure to service these trucks, which they were not willing to do unless significant numbers of trucks were capable of using it.

IdleAire circumvented this chicken-and-egg situation by installing, operating and maintaining the infrastructure at the locations, and designing and manufacturing a window adapter system that would allow the IdleAire system to be used in every long-haul truck on the road. Cost of the window adapter, which is carried in the truck, is \$10.

Although heating and cooling is the primary component of the IdleAire system that allows drivers to shut off their engines today, IdleAire wanted to build and deploy a system that drivers would voluntarily seek out to use because it met a variety of driver wants and needs. Although there are optional services drivers can purchase at additional cost, the "standard" IdleAire package currently includes individually controlled central heat & air, electrical outlets, telephone connection with free local calls, satellite television, integral computer with color touch screen, unlimited Internet access, unlimited E-mail and 24-hour IdleAire help desk.

As of 12-30-04, IdleAire has delivered over 3.1 million hours of standard services to drivers, an auditable record to the parking space level thanks to our own WAN, and a number that exponentially exceeds any other "electrification" system ever devised and the only one to provide such a wide range of services.

## SUCCESS

With over 3 million hours of service delivered, over 3 million gallons of diesel conserved (1.0-1.2 gallons per hour), over 32,000 metric tons of diesel emissions eliminated, 711 fleets with commitments to use IdleAire (and growing daily), and 48% of the nation's truck stop parking spaces committed to IdleAire installation, including three of the top four national truck stop chains, we have reached many, but not all, of our goal – nationwide deployment.

We have developed and deployed a reliable, fully operational system, which includes a custom microcomputer, and which can withstand the rigors of the truck parking lot environment. Our system benefits every long-haul truck owner, every long-haul truck driver, every truck parking lot location where we are installed, and every person who drives the nation's highways and breathes the nation's air.

IdleAire is finding increasing acceptance among its end users, the professional long-haul driver. An independent survey recently found that more than 70% of these drivers knew of IdleAire, and another showed drivers ranking IdleAire among their top desired benefits, with 39% ranking it as their most desired benefit.

"Pulled in to ...Atlanta, GA tonight, tired, hot, wore-out and saw your new additions to the parking lot... I am blown away...this is the answer to the trucking industry's idle problem! Thank you for bringing this product to the industry."

- Danny L. Doyle, Driver

"My company has all their loads on the internet. It is convenient to just pull in and check my loads so I know where I'm going next."

- Akin Lipscomb, Driver

"It saves me money when I can turn my truck off."

- Andre Joannette, Driver

"I drive for Crete Carriers...tried your Idle Aire in Cab Service. I found it very convenient and easy to use. I had my truck shut off...and was able to relax and catch up on my e-mail and do some browsing. I also saved fuel and idle time. I really do hope that you increase your service throughout the country. Keep up the good work..."

- Manuel Morales, Driver

"We're making every attempt to keep our rates down for our customers and improving the working environment for our drivers by taking fiscally responsible actions, like providing our drivers access to the IdleAire system," said, which has 1,500 drivers. "IdleAire is a logical way for us to reduce costs and retain our drivers by improving their work environment. That all goes toward being able to manage rates for our customers." Arrow has saved nearly 8,000 gallons of diesel fuel in two months since signing with IdleAire.

- Joe Taylor, Director of Driver Services, Fuel and Equipment Utilization, Arrow Trucking

"... great driver recruitment tool, retention and safety tool. IdleAire makes our drivers more comfortable on the road and comfortable drivers are safer drivers. We're also very interested in using the IdleAire system to deliver out safety meetings to drivers."

- David Nelson, Vice President of Safety, Wiley Sanders

"I chose IdleAire over all the other alternatives because it is the only solution that answers all the issues around idling and because it also offers other benefits. It gives some much needed creature comforts to my drivers and it improves the communications between the drivers and the home office. Additionally, I believe that as IdleAire becomes the norm, the industry will see an improved safety record due to a better rested driver."

- Doug Surrent, President, Purdy Brothers Trucking

"After three years of researching technologies that allow fleets to eliminate extended idling and save fuel and money, our study shows IdleAire provides the single best solution. IdleAire requires minimal investment in truck retrofits, is reliable and, with over 2 million hours of service already delivered to drivers, is a proven, popular system. IdleAire is the only comprehensive electrification technology and business model that provides an immediate value proposition to all our customers, while conserving fuel, improving drivers' lifestyles and reducing emissions. We look forward to making the IdleAire system available at all TA sites and we will be encouraging our franchisees, most of whom are already excited and willing, to follow our lead."

- Peter Greene, Senior VP, Development and Franchising, Travel Centers of America

"The customer response to the first four IdleAire installations has been very positive and we are eager to roll out this new service to additional sites as soon as possible. I congratulate IdleAire on their business model, which solved longstanding barriers to traditional truck stop electrification, and also on their patented technology, which has proven that it can deliver effective and reliable service, improving the quality of life for drivers while protecting the environment."

- Jim Cardwell, COO of Petro Stopping Centers

"I Love the System...Having the IdleAire System has increased my business by 41%. They provided a turn-key operation, including the staffing, materials and support to make the system a success. We have new revenue streams coming from our parking lot, happier driver customers and a cleaner, quieter environment. IdleAire is a business-based approach that benefits everyone and I look forward to more products and services from IdleAire."

- Gary Mkhitarian, President/CEO, Bruce's Bakersfield Truck Stop

"Our experience with this first site has justified the faith Pilot had in IdleAire when we signed our agreement. If anything, we are even more excited now because we've witnessed on our own site the reception drivers are giving IdleAire and we are more firmly convinced that IdleAire is this nation's best solution to the challenge of idling reduction."

-Jimmy Haslam, CEO, Pilot Travel Centers

IdleAire has grown in the past with private equity and debt financing, as well as receipt of government grants. We expect to be able to continue on this course, although there is no guarantee such funding will continue to be available, and have plans to deploy at least 70 new locations in 2005.

## **DIFFICULTY**

This simple idea quickly grew into a complex, technical product with lots of obstacles to reaching our target market. For one thing, trucking is an established business with deep-seated habits and traditions, and professional drivers are independent individuals usually slow to accept new things. In addition, the truck stop industry operates on a narrow margin, has been bludgeoned with new moneymaking ideas for years, and also is skeptical of any new schemes from unknown companies.

We were told by numerous industry sources that truck stop owners wouldn't allow us to put our equipment on their property, truck owners (fleets) wouldn't pay for their drivers to use our services, and ultimately drivers wouldn't use the system anyway. Moreover, it became very apparent very quickly that providing the services we envisioned would require a sophisticated, private, national computer network for billing, monitoring and control.

Numerous technical issues from HVAC control, Internet access, fuel card billing, and physical service delivery to software development, network design and user interface confronted us, in addition to challenges of user acceptance. We met these challenges head on from the beginning by assembling a unique team of specialists from mechanical and electronics engineers to network designers, Internet experts and marketing and business gurus. We launched simultaneous attacks on the problems and issues, ultimately completing more than 15 designs of the service delivery module, multiple software updates, and numerous infrastructure improvements over two years of development before we had a viable commercial product.

We were able to achieve commercial readiness in such a short time (and with a relatively small financial investment) only because we succeeded in gathering a team of entrepreneurial-oriented employees who dedicated themselves to achieving the Company's technical and service goals in as short a time as possible. Now, with over 400 employees, the Company strives to maintain that same entrepreneurial spirit and individual involvement that enabled us to reach this level of success. We know that only by recognizing individual strengths and capitalizing on the power of the team can we maintain momentum toward a national presence that benefits drivers, truck owners, truck stops and communities.