CORPORATE BACKGROUND

LaserMotive creates systems to deliver electric power without wires by directing laser light to a specialized solar cell that turns the light into electricity. This wireless power system can transmit power to electric aircraft or remote terrestrial locations, launch rockets without onboard power, deliver power over long distances underwater through fiber optic cable, or beam solar energy from space to Earth.

In 2005, NASA offered a challenge to any group that could demonstrate long-range, high-energy power beaming. Using the Space Elevator concept as the framework for its competition, NASA required teams to create a laser-powered robot able to climb a cable vertically 1 km at speed. Prior to NASA's November 2009 Power Beaming Challenge, no one had successfully met the challenge, when LaserMotive not only became the first and only to succeed after four years of effort by more than 20 teams, but it nearly doubled NASA's speed requirements for the Level 1 prize, winning $900,000 in the process.

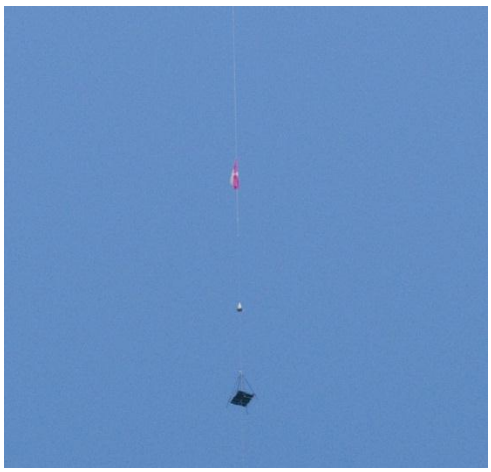
Since then, LaserMotive has demonstrated flying an unmanned aerial vehicle on laser power, and it is under contract with NASA to design the architecture for laser powering of low Earth orbit satellites and launching of laser-powered rockets.

Company Vision

LaserMotive will become the leader in providing systems that transmit kilowatts of energy over kilometers of distance where electrical wires are impractical or uneconomical. It expects to be the first company to bring wireless power via laser to commercial reality, and a leader in wireless power for decades.

Corporate History

LaserMotive was founded in February 2007 by Dr. Jordin Kare and Thomas Nugent to commercialize high-power, long-range power beaming, based on their belief in laser power beaming as a powerful solution for a variety of applications, near-term and in the future, on Earth, and, especially, in space.



Kare, Nugent, and the initial team of scientists and engineers worked nights and weekends to build a system capable of winning the NASA Centennial Challenge prize for beamed power, as a clear demonstration of both the practicality of power beaming and the company's capabilities. In November 2009, LaserMotive became the winner, and only successful entrant, of the Power Beaming Challenge by powering a climber vehicle up a 1,000-meter cable at an average speed of 4 m/s. Before and during the 2009 competition, the LaserMotive system set several world records and delivered more than 1 kW of electric power over several hundred meters.

The records LaserMotive set in the 2009 competition include:

- Greatest distance for laser power beaming: 1 km (3280 ft., 0.62 miles)
- Most power transferred to a receiver: over 1 kW

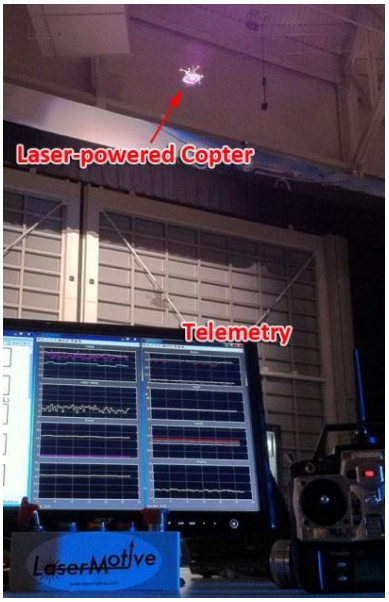
- Highest efficiency power beaming: over 10%, DC power to DC power
- Fastest climbing speed up a cable at this competition: 3.97 m/s (8.88 miles per hour)
- Specific power in a laser receiver of ~500 W/kg

With LaserMotive's success, wireless power is becoming a reality, and the prize money seeded the beginning of the effort to commercialize laser power beaming.

In October 2010 LaserMotive achieved another major milestone and further advanced the technology by demonstrating wireless power delivery to an electric quadrotor helicopter (aka quadrocopter). The successful flight used a battery that would have enabled roughly five minutes of flight, and instead flew for nearly 12.5 hours continuously, powered wirelessly by laser from the ground. This constituted 150x battery life. Multiple times during those 12.5 hours, the quadrocopter flew off the laser beam to demonstrate battery-only operation, then flew back within range of the laser beam and recharged its battery while flying.

The flight set the following records:

- Longest hovering flight duration for an untethered electric vehicle: Limited only by the venue; the Ascending Technologies Pelican quadrocopter and the LaserMotive power system were both capable of continuing indefinitely.
- Endurance record for any VTOL aircraft in this weight class
- Longest beamed-energy-powered flight of any type



In addition, the flight marked the following key milestones towards operational laser-powered UAVs:

- Repeated fully automatic acquisition of UAV by laser tracking system
- In-flight battery recharging
- Automatic position hold in beam, with the laser tracking system controlling the UAV position
- "Class I" operation, meeting US and international laser exposure limits everywhere on the ground.

In August 2011, LaserMotive commenced work on multiple contracts for NASA, to design the architecture to use laser power beaming to power satellites in orbit and launch rockets without combustible rocket fuel. That work will last through the second quarter of 2012, and will likely result in a follow on contract to begin technology development.

Throughout the last two years, the company has been developing extensive relationships with various groups within the Department of Defense, major defense contractors, and other commercial firms, as it educates potential users and builds market demand for wireless power.

LaserMotive's primary product at the moment is a prototype modular wireless power system. It is a mobile system that provides the full range of functionality to deliver a kilowatt of electricity over a kilometer to a lightweight PV array on a moving target or targets. This is the same flexible system that LaserMotive used to win the NASA contest.

LaserMotive also provides a full range of research, development, and implementation services in the laser power beaming field. It possesses the know-how to build commercial systems on a range of scales from a few watts to many kilowatts. It will design systems, and also perform integration and assembly itself (at least for the first few years) to avoid the danger of leaking trade secrets and to maintain the

necessary control for timely delivery of quality systems. LaserMotive will ultimately subcontract the manufacturing/assembly of the systems it designs.

At the end of 2011, LaserMotive converted from a limited liability corporation to a C-corporation.

2012 promises to bring significant technology advancement, new demonstrations, and multiple DoD and NASA contracts. We may even have our first commercial product by year end!

Awards

LaserMotive has received a number of awards and honors.

- NASA 2009 Power Beaming Challenge – Level 1 winner
- Clean Technology and Sustainable Industries Organization (CTSI) (in conjunction with DoD)- Top 10 Defense Energy Technology Solution
- MIT Enterprise Forum of the NW: NW Startup Demo – winner
- NW Entrepreneur Network: First Look Forum – Runner-up, and Audience Favorite
- Seattle Business magazine – Top Innovators of 2010
- Clean Tech Open – Pacific Northwest semi-finalist

Media

The novelty of LaserMotive's technology, and the extraordinary potential opportunities for its application, has generated and will continue to generate considerable media interest. In the past several years, LaserMotive has received favorable, high-profile coverage from a wide variety of media including:

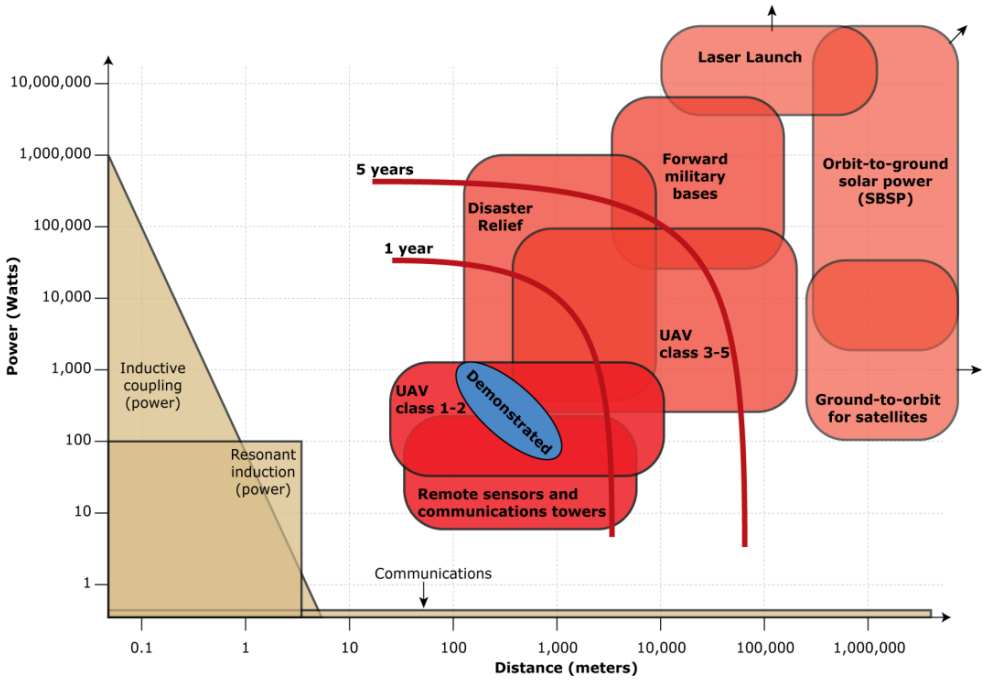
- New York Times
- The Guardian
- New Scientist
- MSNBC
- CNNMoney.com
- Popular Mechanics
- Xconomy.com
- Space News
- Discovery News
- Gizmodo
- Aviation Week
- The Economist
- NASA Tech Briefs
- Unmanned Daily News
- Defence Professionals
- Seattle Business Magazine
- PopSci
- MarketWire
- Fox News
- Military & Aerospace Electronics

Target Markets

Commercial applications of wireless power are in the R&D stage, but looking at some of the top industries expected to utilize power beaming provides an idea of its market potential. We believe this technology can take an incremental "stepping stone" approach to developing new markets by using early markets to fund R&D and prove the technology, generate revenue, further product development, and open follow-on markets.

The basic performance parameters of power beaming are the amount of power and the distance over which the power must be delivered. Essentially, we will make the invisible extension cord longer and thicker. The chart below illustrates where some of the various market opportunities fall on the power-distance spectrum.

Power and distance requirements for various power beaming uses, and a comparison to other wireless power technologies

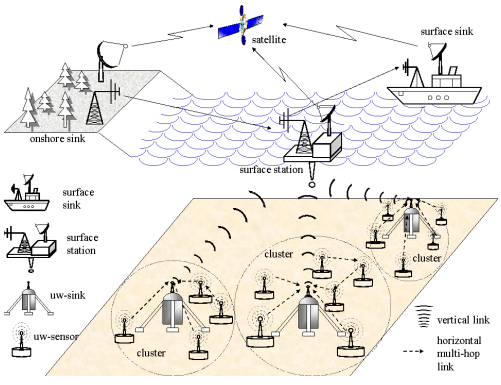


The discussion below starts in the lower power, shorter range applications, and moves towards higher powers and longer ranges for new products over time.

Power Over Fiber

Most applications of power beaming will involve beaming the laser through free space. Laser power can also be delivered over fiber optic cable. There are a number of potential uses of laser-supplied power for which delivery through open air is not practical, particularly underwater (open water power delivery becomes problematic beyond a few meters). These include

- Power for underwater drones and sensors (copper wire is too heavy and has too much drag)



- Tethered UAVs

- Modular satellites

Our initial estimates of the amount of power we can deliver over various distances are as follows.

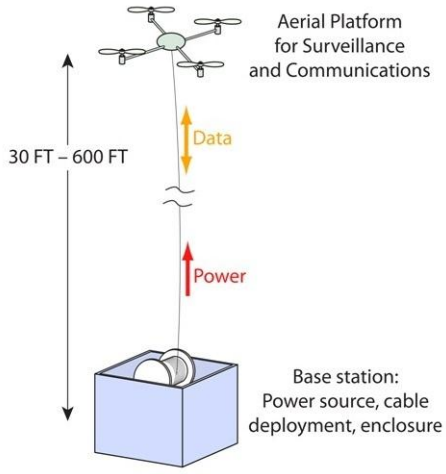
- 250m: 500W
- 500m: 466W
- 1km: 362W
- 5km: 113W
- 10km: 34W

Splitting the beam to send it down multiple paths will probably result in a 60+ percent power reduction for each of two branches coming off the split (e.g. 100W arriving at the splitter, ≈40W coming out on each of two legs.

Specific market opportunities for power over fiber include the following.

InvisiTower

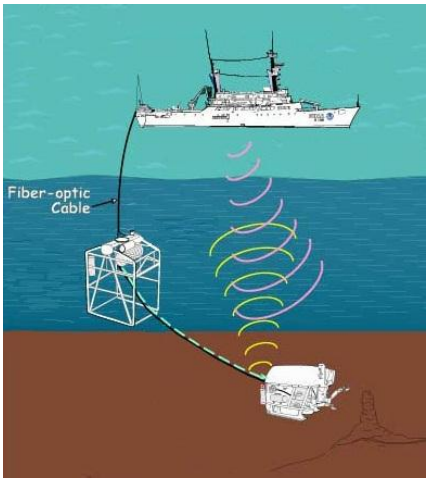
A small UAV receiving power through a fiber optic cable can remain aloft hundreds of feet off the ground indefinitely. The UAV can carry a payload of cameras, sensors, radio repeaters, or other devices. The system will be easily transportable, deploy and recover at the push of a button, and not require a trained operator.



InvisiTower will appeal to a variety of users.

- Military deployments will include security for forward operating bases and combat outposts; and communication relays to extend radio communication ranges.
- First responders: only a small portion of the 45,000 police and fire departments in the US own helicopters. InvisiTower will provide them an inexpensive tool for aerial visibility for incident response, event security and communications, disaster relief, and search and rescue. One of the largest hostage rescue teams in the world has expressed a very high level of interest in InvisiTower.
- Structural inspection of tall buildings, wind turbines, and other tall objects. After the August 2011 earthquake in the Washington DC area, the National Park Service engaged a specialized team of architects to rappel down the outside of the Washington Monument to inspect the structure for damage. InvisiTower would easily serve that purpose.
- Oil platform security. An oil platform that is 100m high can see 39 km to the horizon. Adding 200m with InvisiTower would extend the visible horizon to approximately 67 km and increase the total visible area from approximately 4,800 square km to 14,000 square km.

Unmanned Underwater Vehicles (UUVs)



Many UUVs operate at distances and in environments for which they can operate on a tether, and many currently are tethered for data and communications. Laser power can be sent over the same or a parallel fiber optic cable, providing unlimited power to the UUV.

Delivering power underwater over copper wire has a number of limitations, chiefly the weight and drag of the copper. Fiber optic cable, which is far lighter and smaller, avoids those issues. In addition, because what is being transferred through the cable is light, rather than electricity, laser power over fiber also avoids other issues such as electromagnetic impacts and signatures.

Consequently, there are numerous situations in which a UUV powered by laser over fiber is feasible, whereas a UUV powered by electricity over copper is not. Power over fiber will significantly expand the uses of UUVs.

Underwater sensor networks

In recent years there has been rapid growth in interest in ad hoc underwater wireless sensor networks (UWSNs), for military and civilian applications that include environmental monitoring, underwater exploration, disaster prevention, assisted navigation, tactical surveillance, and mine detection. Among the biggest limitations to the UWSNs, which are comprised of numerous autonomous and individual sensor nodes, is the limited battery resources of each individual sensor node.

Laser power provides two solutions. First, for those sensor networks where it is feasible to connect the sensors via fiber optic cable, such as a UWSN that is pulled behind a ship, power can be delivered over the cable to sequentially recharge each sensor's battery.

Second, for sensors where a fiber connection is not viable, a UUV that is either tethered to a ship or land-based laser transmitter or carries the transmitter on board can approach a sensor node and deliver the laser power through open water of a few meters. This will allow for periodic recharging of each node in the UWSN without the need to remove the nodes from the network or send in divers to replace batteries.

Unmanned Aerial Vehicles (UAVs)

One of the biggest problems voiced by UAV users is their limited endurance. UAVs are used in a growing variety of military and homeland security applications, including border patrol, situational awareness, and surveillance, as well as experiencing an increasing level of civilian use, particularly outside the US. UAVs are increasingly becoming priority purchases given their acknowledged importance as a key enabler and force multiplier in current and future conflicts, and they are anticipated to outnumber manned aircraft in the not so distant future. For example, the U.S. Air Force has a goal of having 60 percent of its fleet be UAVs. There is also a developing civil market in non-US countries with the expectation of massive growth now that US regulations are being relaxed.

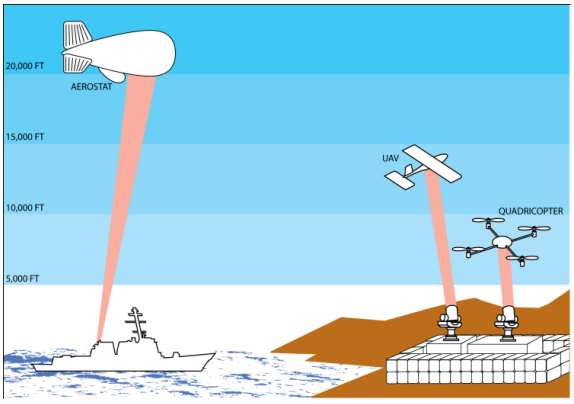
The US dominates the UAV market (80 percent of the current market), as it integrates these systems into all its armed services and at different levels; it has also been using UAVs for border patrol. In June, 2010, the Department of Homeland Security announced that it was "seriously considering" significantly expanding the use of UAVs to patrol US borders.

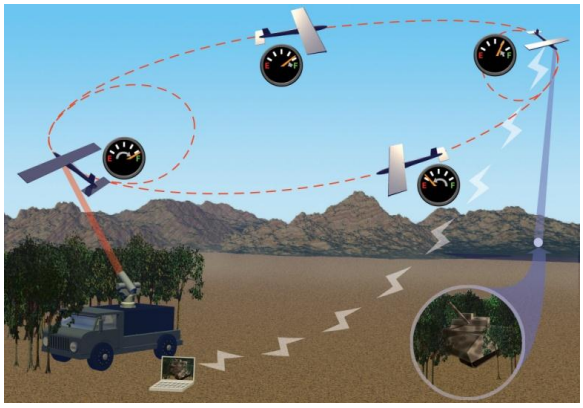
The range and mission duration of UAVs are limited by their on-board energy storage (either in the form of batteries or fuel). Landing UAVs to refuel them not only takes them off-station, but it requires skilled manpower and adds risk: even more than manned aircraft, UAVs are most likely to crash when taking off or landing. Further, many hand-launched UAVs require soldiers to dismount the protection of armored vehicles during gun fights, increasing their risk of injury or death.

Fuel-powered UAVs have been unable to stay aloft more than 80 hours. Electrically-powered UAVs have many advantages, including quiet operation and low maintenance requirements, but they have much more limited range and endurance, even with the best foreseeable batteries. Even a solar-electric UAV has to date remained aloft for only 14 days, but with severe compromises in utility. Solar and other remotely powered "eternal" UAVs and lighter-than-air (LTA) platforms are bulky, fragile, and expensive, and they so far have very limited payloads and operational envelopes, so they are of very limited practical use.

Wireless power for UAVs in flight can give them potentially unlimited endurance aloft. In some cases, this will be accomplished by having a series of laser beaming stations that allow the UAV to be re-powered whenever it passes over one of the stations. Beaming power would enable UAVs to remain on-station indefinitely, greatly enhancing their utility, lowering UAV lifecycle costs, reducing the risk of crashes, and enabling new missions. Wireless power would also enable vertical flight UAVs, such as helicopters, which currently have too little endurance to be useful for many missions, high-altitude airships, and long endurance UAVs that need power over extended time, and even potentially replace certain satellites, such as those in orbit over cities, coastlines, and other fixed sites.

There are many possible missions that wireless power could enhance or enable, some of which are detailed in the appendix. The two figures below show just two of these possible scenarios.





The first shows observational platforms that are continuously powered from the ground. The second figure shows a surveillance UAV that can travel to a target and return to a recharging station and recharge without having to land. The advantage to this design is that the UAV can travel out of the line of sight of the charging station and return only when it needs to be recharged.

"Eternal" UAV's also have potential civilian applications, for example as cellular or wireless internet platforms, monitoring stations, and surveying, although safety and reliability issues must be resolved.

Silent, refueling-free laser-electric UAVs are practical with current technology and could be developed and deployed quickly, in addition to integrating the technology into the existing UAV fleet. LaserMotive has received serious interest from numerous military groups interested in the development of power beaming systems for UAVs.

Clearly, the UAV market presents a substantial, near-term opportunity for the development and commercialization of laser power beaming.

P2P: Wireless Sensors, Communication, Relays, and Military Outposts

One of the challenges in the continued development and implementation of wireless sensors, relays, and communication systems such as cell towers is the need to design them to operate on very low power levels, due to the frequent limited availability of onsite power. This requires designing and developing onsite power generation, power conservation, and power management.

Military outposts, in some cases down to individual soldiers, today deploy a wide variety of electronic sensors, from simple perimeter alarms to sophisticated thermal-infrared cameras, over distances of hundreds of meters to several kilometers. Other users of wireless distributed sensor networks include border security; geophysicists, including those in the oil and gas industry; industrial process and machine health monitoring; communication systems; environment and habitat monitoring; and traffic control.

Similarly, remote military outposts use power for operations, communication, air conditioning, and other critical power needs. They are often located in dangerous areas where travel between outposts and a main base is anything but routine.

Providing power for these wireless sensors, relays, and outposts can be a challenge. Until now, there have been only three basic choices: string wires to a fixed power source, carry a generator and fuel, or carry batteries. Solar collectors are of limited use due to low average power density, weather problems, and vulnerability to attack (in the military realm).

The need for power transmission in military operations has a significant human toll. More than 1,000 Americans have been killed in Iraq and Afghanistan hauling fuel to air-condition tents and buildings. There have been even more deaths among soldiers killed by IEDs while maintaining the roads necessary to deliver the fuel. Those lives would not have been lost if power had been beamed to the tents and buildings.

Power beaming can deliver continuous power, or intermittent power for battery recharging, to such sensor devices and military outposts, eliminating the need to send employees, or, more particularly, soldiers out, potentially under fire, simply to replace the batteries or provide fuel. This will improve safety and decrease expenses. Similarly, remote radio relay and communication stations that currently require regular visits for refueling generators or replacing batteries can be powered wirelessly, in some cases allowing equipment to be placed in sites that are now simply too hard to reach on a regular basis. Further, beaming power to the sensors would expand the development and utilization of remote sensors by reducing the design requirement of power generation, conservation, and management.

Disaster relief

In major natural disasters, such as earthquakes, hurricanes, or flooding, one of the biggest problems during the early recovery phase is the lack of power. Typically, the power sources or transmission infrastructure are destroyed or at least rendered unusable by the event. Thus, residents and relief workers lack the power they need to begin the recovery process. Like the lack of potable water, the lack of power in the aftermath of a natural disaster can often lead to more deaths than the event itself. For example, the nuclear meltdowns in Fukushima Japan occurred because of a lack of power to run the water cooling pumps after the damage from the tsunami.

The current best solution is to deploy generators and fossil fuel to provide power in the location of the generator. For a large scale disaster, this can require sourcing and transporting many generators, and requiring large amounts of fuel.

An alternative would be to use wireless power. By setting up a base station at an elevated location or on a naval ship (such as a nuclear-powered aircraft carrier), power could be beamed to small receivers that will then provide local power. This would significantly decrease the number of generators and amount of fuel, while simultaneously reducing transportation logistics.

Power beaming could quickly allow water cooling pumps, communications towers, emergency field hospitals, and other critical resources to receive power, regardless of the electrical grid's status. This also enables the establishment of relief services where needed most, rather than where they have the best access to power.

Long-term Opportunities

Over the next two decades, power beaming will be an enabling technology for an increasing variety of military, space, aerospace, and other uses. LaserMotive will be well-positioned for these markets due to the above product and market development over the next few years.

- Power could be beamed to satellites, either from ground to space or from one space-based satellite to another satellite. This application has been envisioned for decades, but the technology is only now making it within reach. LaserMotive is currently under contract to develop the architectural design for satellite power for NASA.
- Cheap, routine access to space may one day be available by laser-launched rockets that could replace dangerous chemical rockets, where the search for revolutionary launch systems has been hindered by high cost (billions) and high technical risk. By leaving the power source on the ground, laser-launched rockets would need to carry only inert gas as reaction mass and would produce far less pollution. LaserMotive believe power beaming technology advances will allow laser launch capability to be developed at a modest cost and relatively low risk. Laser launch is a likely source of research funding in the next few years. LaserMotive is currently under contract to develop the architectural design for laser launch for NASA.
- NASA is developing lunar rovers to explore permanently-shaded craters on the moon, but one challenge is that they will not be able to generate power while in the shadowed crater. LaserMotive's system could beam power from the rim of the crater down to the rovers, rather than having to weigh them down with extra battery power, or even from Earth to the rover.
- Boeing expects to have low or zero-pollution hybrid or all-electric commercial jets by 2035. These could have their batteries recharged in flight with power beaming, which is a use that is also of interest to NASA.
- Solar power collected in space for use on Earth allows the efficient collection of more intense solar energy without the obstacles such as nighttime, weather, or contamination that can reduce the efficiency of surface-based solar power collection. That power will be transmitted to Earth via lasers, and a single satellite could beam power to any location on an entire continent.

Competition

Current Technologies

There are existing technologies that are substitutes for wireless power and have the potential to become more competitive through advanced development. By their very nature, though, they will never have the endurance of laser power beaming.

Battery technology and charging technologies are developing, in part through the drive to build electric cars that will have wide market interest. As PHEV and EV manufacturers expand their market share,

there will be better battery technologies, but there are fundamental physical limits on what batteries can do – fundamentally the difference between a battery and an extension cord.

Fuel cells have been promoted as a promising technology for decades, though to date the development has not met expectations. There are efforts, however, that could prove competitive to power beaming. For example, for nearly a decade the U.S. Navy has been pursuing on-the-spot fuel reformation and desulfurization, which would allow it to place fuel cells on Navy jets and siphon off a small portion of the jet fuel to power the onboard electronics through a fuel cell, leaving more fuel to power the engines. If fuel cells are able to generate hydrogen on the spot, from sources such as traditional fuel or water, they could enhance the system endurance, but they would still suffer from the fundamental limitation of requiring the power source (fuel) to be on-board the aircraft.

Wireless Power

LaserMotive has an opportunity to lead the market, as the first privately held company to focus exclusively on commercial wireless power solutions for large applications. Its key competitors fall into two categories:

- Major aerospace companies, potentially including Boeing, Raytheon, Lockheed Martin, Northrop Grumman, and General Atomics. They typically focus only on longer term aerospace applications, such as weapons, powering rockets, and launching rockets or satellites into space.
- A few small companies, which are typically focused on small scale applications, e.g. transmitting power through fiber optic cables.

Two of the small companies with some traction in the space are:

- Power Beam Inc. (powerbeaminc.com). Aimed directly at the consumer electronics market. Power Beam is trying to power speakers and other home electronic. The ranges are short (indoors), and the power levels are so far low (generally under 10W). The "development" system that it sells is approximately $6k-$12k (depending on power level).
- Lighthouse Development, LLC. A small group that includes the leader of one of the unsuccessful teams in the NASA competition, working with U. Md. on power beaming demos, but all on their own dollar so far. To date their target niche is power beaming for remote sensors and active signs.

Contract electronics manufacturer JDSU sends low levels of power (< 10W) over short distances via fiber optic cable, primarily for specialized electronics. There are no apparent plans to significantly expand this power beaming capability.

Several LaserMotive differentiators represent significant barriers to competition. The first of these is product functionality. LaserMotive's system design supports a unique set of features not found elsewhere in the market. These features required three years of effort and are expensive to duplicate, and they would be particularly expensive for large system integrators.

Additional LaserMotive differentiators include proprietary technology for creation of PV receivers on moving objects. This patented invention for which LaserMotive has exclusive use allows for optimal power extraction even when part of the panel is shadowed or not illuminated by the power beam. Further R&D may result in additional patentable technology.

LaserMotive's competitive advantage is also firmly rooted in its prestigious employees and advisers. With more man years of experience in house than the rest of the world combined in power beaming and its application, LaserMotive is uniquely qualified to pursue this market opportunity.

Management

LaserMotive was founded in February 2007 by Dr. Jordin Kare and Tom Nugent. The company is comprised of a team of physicists and other scientists with 300+ years of experience across numerous fields, and includes world-class laser power beaming experts, experienced machinists, electrical engineers, systems engineers, and software programmers. LaserMotive is a Delaware corporation.

Tom Nugent, President, was a project scientist at Intellectual Ventures Labs, a multidisciplinary early-stage R&D laboratory in Bellevue, WA. He also served as Research Director for LiftPort Inc., a pioneer in the development of the modern space elevator concept. Tom has been involved in liquid-fueled rocket engine development and testing through the MIT Rocket Team, and advanced fusion propulsion research at the Jet Propulsion Laboratory. He holds a B.S. in Physics from University of Illinois at Urbana-Champaign, and M.S. in Materials Science and Engineering from MIT.

Scott Milburn, COO, manages the business side of LaserMotive, including operations, finance, business development, government relations, sales, and marcom. He has 30 years' experience in business, law, technology, and finance. His previous corporate roles included COO and General Counsel of QL2 Software, Inc.; head of business development at Reality Response, a homeland security technology company; a founder and Managing Director of Convergent Technology Group, Inc.; VP of International Business Development of Webforia, Inc; and VP of Business Development and Operations at AdRelevance, Inc. Scott came to AdRelevance from his partnership at the Preston Gates & Ellis LLP (now K|L Gates) law firm. His 18-year legal career began as a trial attorney in the United States Department of Justice, Tax Division. Scott earned his JD from the University of Richmond, and his BA from the University of Virginia.

Dr. Jordin Kare, Chief Scientist, has for more than 20 years been a leading physicist, aerospace engineer, and a top industry expert on laser propulsion and laser power beaming. As a physicist in Lawrence Livermore National Laboratory, he was the project leader for Mockingbird, a conceptual design for an extremely small reusable launch vehicle, and mission planner and science team liaison for the Clementine lunar mapping mission. Prior to co-founding LaserMotive, Jordin spent 10 years as an independent consultant to the aerospace industry and government agencies, developing and analyzing new concepts for remote sensing, space systems, and energy technology; during this time he twice received grants from the NASA Institute for Advanced Concepts. He holds dual undergraduate degrees, in Electrical Engineering and Physics, from MIT, and a Ph.D. in Astrophysics from the University of California, Berkeley.

Dave Bashford, VP Operations, is an applied technologies developer, electro-mechanical designer, and prototyping specialist with more than 30 years' experience in the innovation business. He provides robust practical solutions and an entrepreneurial approach to concept creation and refinement, to detailed design and engineering, prototyping, testing, and evaluation. Prior to joining LaserMotive, Dave served as Technical Associate in R&D at Philips Oral Healthcare/Sonicare where he managed the operation of the Innovation & Development laboratory and provided prototyping and failure analysis expertise during the development of Sonicare's resonant drive system based product line – Flexcare. Dave's other development work includes laboratory management, electro-mechanical and computer systems design, and product development at Coinstar, Inc. (NASDAQ: CSTR) from start-up through IPO.