

**Company Profile**
**NASDAQ PS Ticker Symbol:** AERG

**Website:** [www.aergs.com](http://www.aergs.com)
**Industry:** Advanced Technology Development

**Location:** Tucson, AZ

**Financial Background**
**Funding Stages:** Previously \$40m private, 60m government

**Previous Contracts:** \$86 million over 8 years

**Previous Market Value:** >\$1 Billion market value at peak

**Investors:** CIA In-Q-Tel early investor, heavy insider investment

**Contact:** Thomas C. Dearmin, CEO 949 842-2844

**Business Summary**

Applied Energetics (AE) is an advanced engineering company that has successfully designed and produced radical new weapon technologies for the Department of Defense. This includes the use of lasers to wirelessly transfer electrical energy through the air with exact control. On demand and controlled transfer of electrical energy through the air can accomplish low level wireless Taser effects scalable to very high levels using variable settings. This is a fundamental breakthrough that has produced an entirely new class of directed energy weapon for future warfare environments and counter-terrorism. Importantly, highly advanced underlying technologies and a broad range of important intellectual property was developed and captured during research and development activities and through weapon effectiveness demonstrations. As a result, AE controls significant critical IP including LGE and certain other areas of IP labeled as 'classified' by DoD.

The company intends to dual purpose and expand its fundamental technologies, knowledge, and rapid technology development into commercial markets with a strong focus on the emerging Technology 4.0 smart factory manufacturing environments.

**Emerging Markets**

Newly developing advanced manufacturing processes, such as 3D additive processes, require a common material type to be used due to its deposition process. Examples include melting of plastic feed materials using high temperature extruders, photopolymer cross-linking using UV lasers or patterned light sources, and melting or sintering of metals from powders using high power lasers. These processes generally produce individual parts with a single or simply mated second material or coarsely alloyed combination of like materials (e.g., metals). Additionally, many of these processes are designed to rapidly produce large volumes using relatively coarse starting materials and deposition resolutions resulting in rough finished surfaces and poor tolerances compared to traditional methods. To accommodate for these drawbacks, post-processing using traditional CNC machines are required for final fit and finish thus resulting in hybrid processes. It is expected that these hybrid processes will be refined over time and form an extremely important set of core capabilities for smart factory environments going forward many years.

**Opportunities**

Existing underlying AE protected IP, knowledge and a strong technology base will allow for combining a very broad range of dissimilar basic materials such as metals, dielectrics, organic and inorganic molecules, and even live biological elements using a

common set of deposition and processing technologies. Furthermore, the same basic underlying technologies and processes allow for in-situ and hybrid post-processing such as surface Nanostructuring, ultra-precise 3D photo-polymerization and athermal machining at the micrometer spatial dimension. These capabilities will allow Applied Energetics to create novel new fabrication processes and systems that will be required for very fine 3D additive and subtractive manufacturing processes at the atomic/nano material level and micrometer physical dimensions.

**Products/ Platform, Competitive Advantages**

Applied Energetics will apply its knowledge base and IP to further advance areas of lasers, electrical energy transport, material vaporization, plasma generation and control, and optical physics to the next generation of advanced manufacturing. This includes novel processes for fundamental material combinatorial control to the atomic level, electric and magnetic field controlled mass transport deposition and surface structuring, on-demand combinatorial alloying of thin films, and hybrid in-situ and post-processing of the resultant materials for final shaping and functionality.

The aforementioned technologies and fundamental processes can be applied to advanced manufacturing areas including mixed material 3D fabrication, nanoparticle generation and deposition, on-demand mixed and gradient alloys, precision fabrication including athermal material removal, dielectric modification including sub-surface refractive index change and welding, and advanced optical sensing for process and quality control.

**Target Markets**

Technology 4.0, and inherently Manufacturing 4.0, are multi-generational growth opportunities that will include highly advanced 3D fabrication capabilities, adaptation of exotic new materials and devices, and on-demand flexible and efficient manufacturing processes. Examples of expected product areas accessible by AE include mixed Photonic/RF/biological functions on a single chip for medical and environmental sensing that are directly linkable at the Cyber-Physical level and Internet of Things. These and similar products and applications will encompass large market areas and greatly impact nearly all aspects of society.

**Customers and Investments**

Previous customers were singularly focused on advanced weapon development and included, *CIA, DHS, Navy, Army, and Marine Corps*. Total contract and internal R&D activities totaled approximately ~ \$130M. Our future customer targets include ongoing DoD advanced weapon development including LGE while expanding to DoD/Gov't mandated U.S. competitiveness initiatives and large commercial industrially driven players currently positioning aggressively in Industry 4.0 strategies.

**Business Model**

**Funding will be used to re-establish an operational advanced research and development company.**

- ❖ AE will utilize public equity markets to execute an aggressive strategic Internal R&D program.
- ❖ Manage and capture LGE related technologies, IP expansion.
- ❖ Increase shareholder value with aggressive acquisition, merger and revenue base expansion to position for strategic alignment in Technology 4.0.
- ❖ MoU agreements with DoD and Manufacturing 4.0 players.