

Statement to the House Armed Services Committee's
Subcommittee on Tactical Air and Land Forces
(Small Business Innovative Technologies and Research)

By

Mr. Enrique J. Enriquez
President, Locust USA

Mr. Chairman, Ranking member, and members of the Committee, I am honored to be back again before you today. My name is Enrique J. Enriquez; I am the president of Locust USA, which is located in Miami, Florida. I have over 20 years experience with leading edge manufacturing entities such as Rolls Royce Ltd., Miami where I was in charge of Engineering Systems Developments and worked as a Project Leader on the manufacturing of the Sapphire Project (Star Wars) satellite structure. I pioneered CAD/CAM/CAE and was a CAD/CAM consultant for 10 years at Coulter Corporation a 6000 employee market leader in hematology equipment. I am an associate professor at the University of Miami and Florida International University. My responsibilities at Locust USA, Inc. include Technology Directive, Industrial Partnerships, Customer Relations and Corporate Finances.

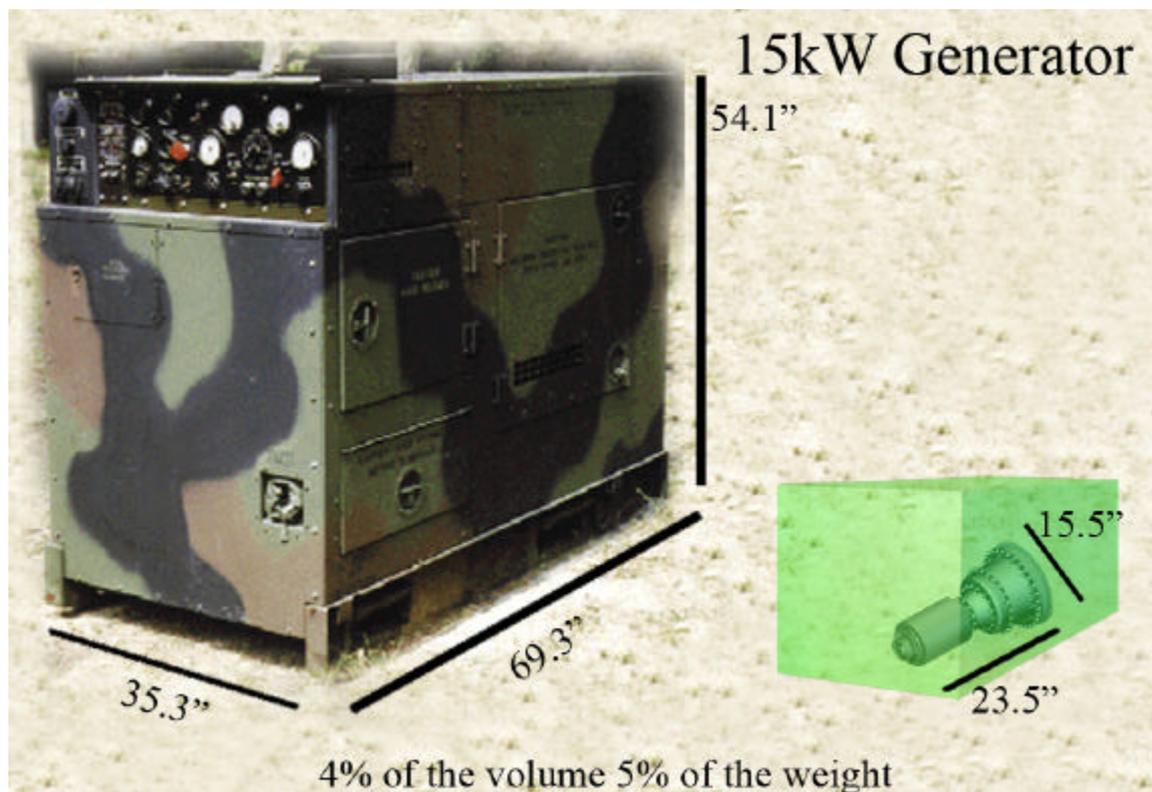
Locust USA, Inc. was founded in 1999 to develop and market heavy-fuel burning very small, high-speed turbine engines for the UAVs/UGVs, Extended Range Low Cost Missiles, General Aviation and Power Generation markets. Locust is affiliated with two established South Florida companies, one possess engineers with gas turbine experience of over 30 years each. The other company has a manufacturing capability that features production of micro components for the Bio-Medical industry and a state-of-the-art rapid prototyping facility. The micro component fabrication capability makes this company a natural for producing the essential parts of our micro engines. Our affiliation does not end with just those two companies; we have added two very capable companies that make high-speed electrical generation equipment, their personnel are world renowned in this field. In summary, ***Locust is unique; it's a small business with a large business capability.***

The integration of these four team members into Locust, and their "*cutting edge*" technology, has already demonstrated large synergistic benefits as the normal development time for a new Locust engine has been reduced from the normal multi-year time period to only months. Today, Locust USA is able to initiate a new advanced technology engine design and enter initial engine testing in less than 18 months.

Locust customers have been the Army and DARPA. Army programs are mostly turboshaft engines for potential application to UAVs, ranging in power from 40 hp to just above 150 hp. The DARPA sponsored programs are in a power class of less than 30 horsepower, and down to 5 horsepower. Our engines feature high-speed starter/generators that are capable of producing 0.5 Kw to over 100 Kw in electrical power. In this regard,

Locust has operated high-speed rigs to as high as 240,000 RPM. One such design was operated for the required 100 hours at 191,000 RPM. Our highest operating engine speed to-date is 140,000 RPM.

I mention these rotational speeds because they are very important to our work. Most gas turbine engines in the field today are rotating at speeds of about 70,000 RPM or less, but the laws of physics require our small engines to run at much greater speeds. There is a positive side to these high speeds. The good part, you can rotate electric generator rotors at these high speeds to generate electrical power at greatly reduced size and weight. As an example, we are now completing a preliminary design of a 15 Kw turbogenerator system that is depicted in the chart along with a present 15 Kw system.



The present system is powered by a diesel engine that runs at speeds of less than 5,000 RPM, our engine and generator will operate at a speed of 120,000 RPM. The present system weighs around 2,000 pounds, our turbogenerator system will weigh near 100 pounds. What does all this mean to our Armed Forces? ***Lightening the Force.***

This technology has dual-use capability; it also can be used for emergency power in civil applications for hospitals, schools, business, and homes. For example in 2004, four hurricanes hit the state of Florida and although electrical power was restored to most customers within a month or two, others located in the areas most affected by the devastating winds lost electrical power from September 2004 till April 2005.

Our new high speed design has been presented to several DoD agencies, in all cases a positive response was noted; however no one has stepped forward yet to fund the project to completion.

Lastly, but most important, let me thank you Mr. Chairman and your Committee for your past support in developing small lightweight heavy-fuel burning turbine engines for our war fighters, especially the language and funding recently passed by the House in the FY06 Defense Authorization Bill. Together, we will be able to lighten the force and eliminate the need of volatile fuels on the battlefield, simplifying logistics and increasing safety.

I want to thank you for inviting me back, and for listening to my comments. I will be glad to try and answer any questions that you may have.