

## Form Fit and Function, LLC, Dover, NJ | [www.ffdsgn.com](http://www.ffdsgn.com)

2003–2004 Navy TAP Participant

**“It is critical to embrace all members of the Navy support team, to demonstrate your broader corporate maturity and willingness to address any and all issues that may arise in transitioning your technology to the Fleet.”**

—Odilo Vazquez, Form Fit and Function president

Can securing a \$10M Navy IDIQ contract be considered a Phase III SBIR success story? Certainly it can! In fact, Form Fit and Function, LLC (F3) is enjoying Phase III success of that magnitude brought about by its shock and vibration technology. F3's 2004 NAVAIR IDIQ contract was a direct result of the technology developed under its SBIR Topic: N01-018 (Semi-Active side-lateral engine mounts for control of vibration and shock loading) which was issued in early 2001. As of July 2006, over \$1.6M in technology tasks have been completed against this IDIQ, with an additional \$690,000 of open tasks scheduled to be completed in 2006 and 2007.

As a fast track requirement, the Navy was very concerned with the inability of existing aircraft engine mounts, specifically those on the E2-C and advanced Hawkeye aircraft, to adequately sustain the shock load associated with aircraft landings, catapult launches and in-flight turbulence. The objective of the SBIR solicitation was to secure a cost effective engine mount system for carrier-based, turbo-prop aircraft. F3 structural engineers addressed this need through the development of a system that would monitor the aircraft's dynamic conditions and adjust the engine mount to compensate for the corresponding dynamic events.

During stress conditions, F3's technology attenuates vibration over 95 percent and it protects the engine up to 4800 lbf during shock events. To achieve this performance, the F3 technology employs magneto rheological fluids coupled with a closed loop control system to react to shock and vibration events in under one millisecond. By utilizing the properties of magneto rheological fluid to change viscosity almost instantly, the technology can tailor the engine mount to react to the dynamic events

in real-time. Without impacting the current aircraft configuration, the F3 system reduces crew fatigue, as well as structural damage to the aircraft, by reducing in-flight vibrations, thereby reducing maintenance costs.

When looking back at how exactly this “fast track” success occurred, multiple factors need to be considered. First of all, was it solely a function of the “magneto rheological fluid” technology or did the Form Fit and Function team implement other management activities that facilitated the adoption of their SBIR technology? These questions were posed to Odilo Vazquez, president of Form Fit and Function, in a discussion concerning F3's Phase III success.

Vazquez acknowledged that the development of the rheological fluid technology was certainly central to satisfying the Navy's technical requirements, but he also emphasized that meeting the SBIR technical specifications was only the “first gate” in securing the \$10M IDIQ contract. The NAVAIR systems command was equally concerned with the ability of a small firm, such as F3, to provide the full range of follow-on support needed to implement this program on the E2-C fleet and other designated military aircraft.

A big challenge for F3 was to build awareness of their technical success. This was achieved by working closely with Sam Carson, the E2-C chief project engineer at Pax River, who also functioned as the SBIR TPOC during the Phase II development cycle. Carson was instrumental in helping the F3 engineers bring their technology to the engineering prototype level and securing the necessary E2-C testing opportunities.

Beyond this technical support, the key management influenc-

**Company Success: \$10 million IDIQ contract**

Pictured in the upper right is the E2-C Hawkeye Plane. The photo in the lower right is F3's Side Lateral Engine Mount, designed specifically for use on the E2-C Hawkeye.



ers from NAVAIR were Carol VanWyk and Janet McGovern, who both provided strong "shepherding" throughout the Phase III transition process. Their primary focus was one of helping F3 communicate its underlying corporate strengths and broader management capabilities, beyond their demonstrated technical expertise. The F3 management team also built a strong vector-of-support among other NAVAIR support organizations including Larry Miller, who provided technical support and transition assistance and Kevin McDonald, who provided close contract administration support.

"It is critical to embrace all members of the Navy support team, to demonstrate your broader corporate maturity and willingness to address any and all issues that may arise in transitioning your technology to the Fleet," said Vazquez. The trust and confidence that F3 has built with the NAVAIR management team has continued to grow, and has clearly piqued the interest of some prime contractors—as F3 is currently responding to additional interest from Boeing and Airbus for both military and commercial applications.

The Boeing interest developed from the recommendation of a separate Pax River TPOC familiar with the Boeing V22 needs, while the Airbus interest was generated from a recent Form Fit and Function symposium presentation in California. Vazquez emphasized that he utilized the Navy Forum® presentation developed as part of the Dawnbreaker TAP. He felt that this Forum® presentation "clearly communicated the inherent benefits of the rheological fluids technology and, coupled with the Corporate Capabilities brochure, provided both Boeing and Airbus management with a solid, professional understanding of the Form Fit and Function organization."



In summary, the biggest challenge confronted by Vazquez and the F3 team was one of building credibility in their SBIR technology, which they accomplished through effectively communicating their technical readiness level achievements to all of the affected NAVAIR partners. These hard data results were communicated through their network of support contacts, allowing Form and Function to build confidence in their management capability and to rapidly move through the NAVAIR testing and evaluation process. Vazquez emphasized that as SBIR firms navigate through the Phase II/III transition process, "they should be mindful of the need to communicate frequently with all of the key Navy influencers to assure that they are fully aware of the technical progress and the larger support capabilities of their companies."