

Indianapolis Region Companies Making Flight Safer, Fending Off Pirates

The Indianapolis region is home to major defense contractors like Rolls-Royce and Raytheon, but other, less well known companies in the region are also supplying cutting-edge technology to the military. Two of them are Xtreme Alternative Defense Systems (XADS) and Wolf Technical Services.

Creating Lightning

Pete Bitar, president and CEO of Xtreme Alternative Defense Systems (XADS), is developing a directed energy device that detonates roadside bombs. XADS was awarded a contract worth \$1.1 million to deliver 20 of its StunStrike Counter-IED systems to the Naval Surface Warfare Center in Crane, Ind. In Bitar's words, "We create lightning to destroy roadside bombs for the military."

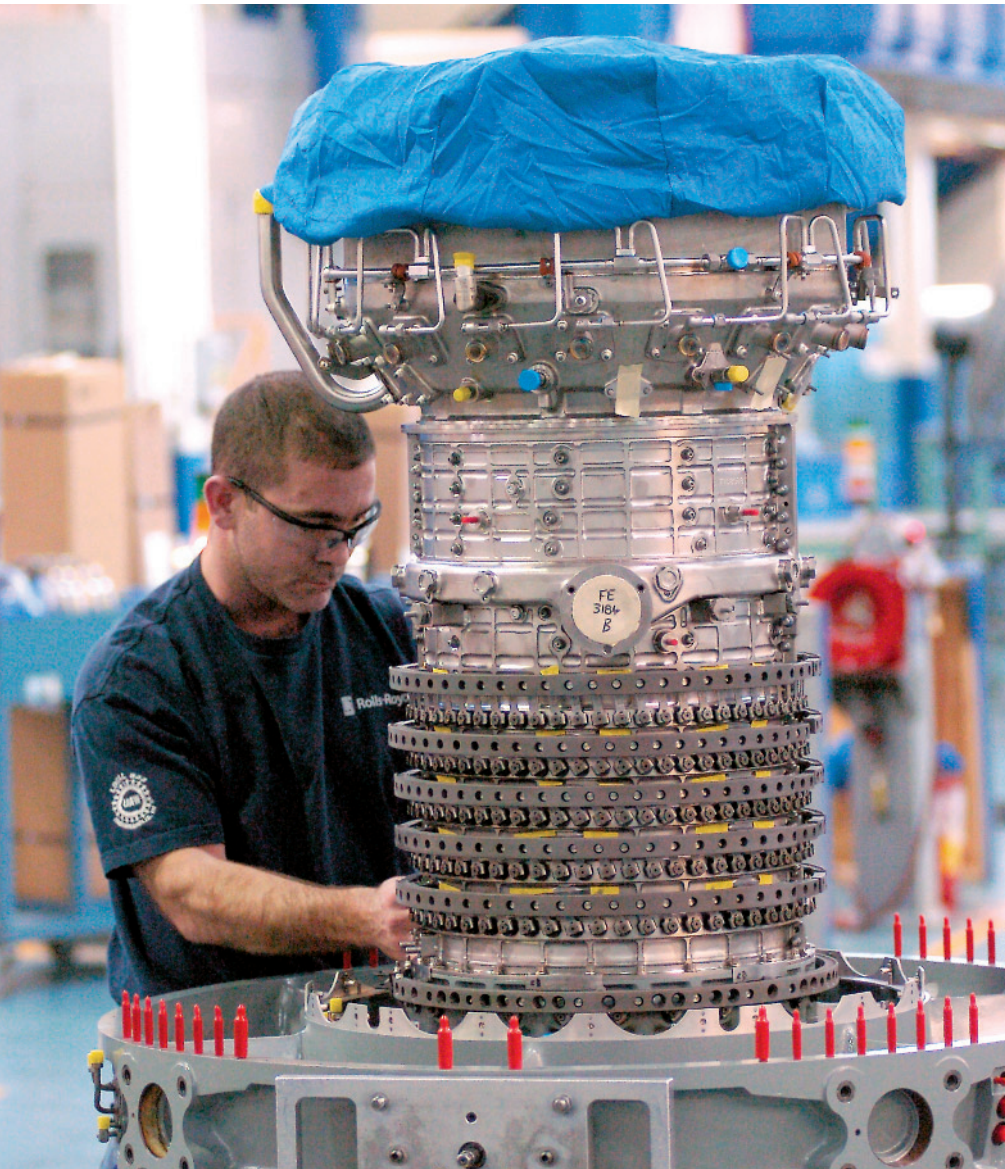
Bitar is also taking on pirates with laser products designed to visually impair would-be aggressors. "We've developed a laser rifle for counterpiracy applications," he says. "The laser rifle is designed for stopping pirates over a kilometer away, essentially causing them to not be able to see the ship they're trying to pursue."

At the time of this writing he was headed to London to pitch the product to Lloyds of London. Bitar says he already has customers for the device, including international shipper Maersk Group.

Anderson, Ind., is a natural fit for his business, Bitar says, because it has the highest number of electrical engineers per capita in the world. "I'm an inventor," he says. "I know enough to get myself in trouble and then my engineers get me out of it."

Bitar's other interests include developing a flying platform for mine detection after conflict. The vehicle would fly at low altitude and scan for mines with a magnetometer. He is also leading a team to pursue Google's Lunar X Prize, a \$30 million international competition to safely land a robot on the surface of the moon,

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The largest Rolls-Royce Corp. site in North America employs more than 4,000 people in the 10-county Indianapolis region.



Wolf Technical's energy-absorbing system restrains air crew members slowly rather than jerking them to a stop.

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travel 500 meters over the lunar surface, and send images and data back to Earth.

“The name of the team is LUNAR Recon,” he says. “We have scientists and rocket people from all over the country helping us out on that. We’re in the planning and the fundraising stage. We’re planning on putting something in earth orbit next year.”

Making Flight Safer

Wolf Technical Services Inc., an engineering company that uses technology to improve safety for military personnel, announced in September that it had won a \$12 million U.S. Navy contract to design and develop a restraint system to be used by crew members of fixed and rotary wing aircraft. The Common Mobile Aircrew Restraint System (CMARS) will allow air crew members freedom of movement within an aircraft while they are restrained to reduce injuries or ejection from the aircraft.

According to Stuart Nightenhelser, Wolf’s VP of Advanced Programs, the aircrew restraint is a reel-based system similar to an automobile seatbelt that keeps members of the aircrew secure as they’re moving about to do their jobs. A crewmember can dial in a maximum distance the tether can travel to keep him or her in the aircraft in the event of a crash. It also has an energy absorbing feature that dampens the speed at which the reel pays out during a crash to slow the crew member down gradually rather than jerking to a stop.

Wolf Technical Services started 30 years ago as a forensic engineering firm.

In 2005, as they started to look at other markets, that background led them to research and development projects that involved safety. “The nature of forensics engineering is that we end up seeing a lot of product failures,” Nightenhelser says. “We’re familiar with things that can go wrong and ways to solve the problem in advance.”

Wolf is also working on an energy-absorbing troop seat that can adapt to the severity of a crash as well as the weight of the person sitting in the seat. “Rather than just crushing and letting the seated occupant fall to the floor, it will absorb energy throughout the crash so the occupant is cushioned during the crash and protected,” Nightenhelser says.

“There are other seats out there that attempt to do that kind of thing,” he says. “The problem is they apply a constant force during the crash. The constant force behaves differently for a 110-pound person versus a 250-pound person. It’s not enough for the heavy person, and it can be too much force on the light person’s spine.”

Another project Wolf is working on is a weight-and-motion sensor that can be deployed across a roadway and weigh vehicles in motion. “The Army wants to detect vehicles that are anomalously loaded,” Nightenhelser says. The device would reveal if a vehicle had more weight

than it should on the rear axle or on one of the wheels, alerting personnel manning a checkpoint to the presence of a bomb. As a vehicle crosses the device it gives a total vehicle weight, individual axle weights and individual wheel weights. “The neat thing about it is that rather than just giving accurate weights of the wheels, it will also compensate for weight shift when the vehicle is in a turn,” Nightenhelser says. “The device detects the lateral forces from a turning vehicle and uses electronics and ‘smarts’ to compensate for them and figure out what the wheel weights would have been if the vehicle were not turning. It then reports accurate static wheel weights so personnel at a checkpoint can decide whether to stop the vehicle or to let it pass on through.”

Wolf’s business model is to solve problems with innovative technologies and bring in manufacturing partners appropriate to those products, Nightenhelser says. He notes that in 2005, when Wolf began to pursue research and development work, they weren’t aware of all the Indiana companies that would prove to be valuable resources. “In developing these devices we’ve teamed up with a lot of companies that you would normally think of as competition and put strong teams together. We’ve also found very good manufacturers here in Indiana. For everything from the initial technology

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development all through manufacturing, there are a lot of resources right here in the state for teaming up and helping out in these kinds of projects.”

Wolf and XADS are just two of more than 1,500 Hoosier companies with federal defense and homeland security contracts, part of a \$5 billion+ Indiana defense sector that’s working on projects ranging from the latest robotic reconnaissance jets to equipment that generates and harnesses renewable energy on the battlefield. This growing sub-sector of the region’s advanced manufacturing industry is a perfect illustration of doing well by doing good — enhancing job security for Hoosiers while supporting national security for the U.S. •