

Frontline Aerospace Debuts 'Humvee of the Air'

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Frontline Aerospace of Bloomfield, Colo., says they've designed a flexible unmanned aerial system capable of efficiencies not possible just several years ago.

Only slightly bulkier than the classic Volkswagen Beetle at 21 feet long, the V-STAR (Vertical, Swift Tactical Aerial Resource) could serve as a mid-sized utility vehicle for the military: what the company dubbed a "Humvee for the air." Now in the third generation of its design, the vehicle uses new materials and heat-exchanger technology to increase fuel efficiency and reduce emissions, a process called recuperation, company President and CEO Ryan Wood said Tuesday.

"Recuperation has been around for a long time but the big challenges have been weight, volume and cost, so what's happened in the past three to four years has been the advent of tiny microtubes ... that allow high-performance heat exchangers

to improve the performance of the thermal engine," he said.

When Rolls-Royce attempted recuperation several years ago, the design didn't work because the air vehicle was too heavy to achieve the desired efficiencies, he said. Wood said Frontline's slimmer V-STAR design (powered by twin Rolls-Royce engines equipped with its MicroFire technology) could have implications not only for military unmanned aircraft but for consumer automobiles around the world.

"At a minimum, we're two times better than anyone else—and at a maximum, we're 10 times better," Wood said, "and it's difficult to see how others would ever catch up with us."

Wood said the military would find the vehicle particularly use in the field because it's a deadly combination of stealth and all-weather capability with a large payload. In the field, special opera-



tions soldiers may use the vehicle for a multitude of purposes, possibly even transporting prisoners of war from a battlefield.

Aside from providing capabilities found nowhere else, the vehicle design incorporates morphing wings, allowing the vehicle to "transform" as the mission changes, he said.

See Frontline Aerospace Inc. at Booth # 1632

Northrop Grumman Reports Progress on UCAS-D

Northrop Grumman of Los Angeles updated the industry Tuesday on the development of the U.S. Navy's UCAS-D (unmanned combat air system demonstration), announcing good progress some \$800 million into the project.

"We're on schedule and we're on cost," Scott Winship, a company representative, told conference attendees Tuesday. "The design has not changed much through its iterations ... and it's going as smoothly as I've seen a tactical aircraft go." Winship said Northrop Grumman would test the aircraft within a year and put it on a carrier within two years.

Like a Global Hawk, the X-47 UCAS-D represents the vanguard of autonomous unmanned systems, capable of flying missions and landing

with minimal involvement from humans, he said. "It is fully autonomous in the sense that you don't fly it ... but it can be rerouted and it has to ask permission to fire weapons," he said.

One of the remaining challenges to deploying the autonomous aircraft system involves the achievement of stealthy broadband communications at sea, he said. Once some technical barriers break, however, the Navy plans a great symbiosis at sea between manned and unmanned aircraft, using UAS for missions at which robots excel—persistent sorties 3,000 miles from the ship lasting 50 or so hours.

"There are some things manned aircraft are better at," Winship said. "On the other hand, there are missions better suited for unmanned systems."

Though costly to develop, unmanned systems would create great efficiencies for the Navy as fewer pilots require fewer training sorties and fewer mistakes happen. In some 10,000 virtual landings, the computer has never missed the landing by more than nine inches, making minute corrections all the way down from the sky to the carrier, a dot in the sea the size of a postage stamp. In nearly every way, Winship said, the unmanned version behaves identically to the manned one, even flying the same contingency routes in the event of landing trouble, he said.

With flight certification for carrier operation in sight, Northrop Grumman says the work now remaining involves related systems rather than the aircraft itself.

See Northrop Grumman at Booth # 1001

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