



Unmanned helicopter missions a step closer

By Mike Cronin

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With Sanjiv Singh's help, perhaps a Black Hawk downed won't be so deadly.

Technology he developed with a team from Piasecki Aircraft Corp. in Delaware County enabled a full-sized helicopter last month to fly unmanned, choose a landing site in unknown territory and land itself.

The unprecedented feat means "actual missions are not far away for unmanned helicopters," said Singh, a Carnegie Mellon University Robotics Institute research professor.

"We're not only talking about the capacity to be able to transport troops, but also deliver time-critical medical care to combat casualties and extract those casualties," said John W. Piasecki, president and CEO of Piasecki Aircraft.

Autonomous helicopters could save military commanders from sending crews into hostile environments and putting them at severe risk, Piasecki said.

The Army paid Piasecki "less than \$2 million" over three years to develop the unmanned helicopter, said Michael Beebe, a project manager with the Army's Telemedicine and Advanced Technology Research Center at Fort Detrick, Md.

Beebe couldn't say when an autonomous helicopter might be deployed in the field. That decision is made by the "war fighters," he said.

In an interview, Piasecki referenced "Black Hawk Down" several times. The book, by journalist Mark Bowden, chronicles a disastrous U.S. mission in Mogadishu, Somalia, in October 1993. During the Battle of Mogadishu, 18 American soldiers were killed in action and 73 others were wounded. Armed residents of Mogadishu shot down two Black Hawk helicopters.

Autonomous recovery "is another way of getting our boys back," Piasecki said. "When you talk about combat casualties in Iraq and Afghanistan, this is a way to minimize the risk."

Singh has worked on autonomous helicopter navigation for about eight years, he said.

During last month's successful test, a 10-meter-long Boeing Co. Unmanned Little Bird helicopter in Mesa, Ariz., flew at a speed faster than 20 knots while maneuvering around a 60-foot-high obstacle. The copter detected high-tension wires and repeatedly demonstrated its ability to land.

A computer, a software package and sensors that include a laser scanner, a GPS, gyroscope and accelerometer made it possible for the unmanned helicopter to complete its mission, Singh said.

"The helicopter has the ability to locate the casualty, then find a suitable landing site in the vicinity," Singh said. "It plans its approach and makes sure it avoids any obstacles."

The technology is advanced enough that it could help human pilots land in low-visibility areas within one to two years, Singh said.

The ability to extract the wounded or dead where it's too dangerous or not possible for manned helicopters to land is what most excites Beebe, he said.

"We're trying to save lives any way we can."

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