



Are three parachutes better than one? Start-up company is betting on it

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A family owned company is developing a emergency landing system for GA planes that uses three parachutes.

The ASR TriChute Landing System features one parachute for the plane's fuselage and a parachute for each wing.

"The fact is, three parachutes are better than one," explained Dario Manfredi, a finance executive who is the son of the system's designer and the force behind Aviation Safety Resources of Berkeley Heights, N.J. "When you separate the wings, you eliminate the fire risk. Separating the wings also eliminates most of the weight — fuel is heavy — so the parachute can bring down the fuselage easier."

Because the fuselage descends at a slower rate, passengers are safer — and the damage to the fuselage is not as great, he says. "Our main goal is passenger safety, but we do expect the fuselage to be recovered at minimal expense."

The design was originally conceived in 1947 by Manfredi's father, also named Dario, a carpenter who sketched out the first system on a napkin in a diner. "He said 'there has to be something done to help these people,'" the younger Manfredi recalled.

Working with a partner, Angelo Raiti, Manfredi developed the three-chute system to the point where he was able to demonstrate it to the military in 1967 on a Stinson Voyager. The demonstration, which can be seen at the company's website, AviationSafetyResources.com, was a success and the military asked for a second demo. Unfortunately, Manfredi died before that could be achieved.

The technology was "in limbo" until 1991, when Manfredi's children, determined to preserve their father's legacy, patented the system. But research at the time found that "the market wasn't ready," Manfredi said.

Of course, over the next decade, things changed considerably with the success of Ballistic Recovery Systems (BRS), which developed single parachute systems for ultralights and other small planes. The technology really took off when Cirrus Design Corp. added BRS chutes as standard equipment on all Cirrus planes. Now, the chutes can be found on a variety of GA planes.

"BRS opened the doors," Manfredi said.

The new company's first target will be six-passenger planes, starting with the Cessna T-210.

The three-parachute system is controlled by the pilot, who must press a button to arm the system and then another to activate it. Pressing the second button separates the plane's passenger compartment from the wings while simultaneously deploying the three parachutes.

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"The computerized system ensures that all conditions are right," he said. "It measures airspeed and altitude and gives the correct window for deployment." The plane has to be slowed and at an altitude of at least 700 feet for deployment to be successful.

While the primary concern is for passengers, there also is concern about where the wings will land after separation, according to ASR officials.

"We can't control where they go, but they will come down at a slower rate," Manfredi said. "That is the lesser of two evils."

THE NEXT STEP

The company is now in the process of building a team to take development to the next level. Included on the team is Precision Aerodynamics, charged with parachute design; O & N Aircraft Modifications, in charge of aftermarket retrofitting; and ballistics company Scot Inc. Also on the team are John Mariani, an FAA certification engineering consultant and pilot instructor, who served as test pilot for an aircraft company utilizing the single parachute system, and Thomas Morgan, an FAA Designated Engineering Representative (DER) and aeronautical engineer for the U.S. Air Force.

The final member of the team is Fred DiMaria, president of Creative Business Strategies, who is leading efforts to raise \$3.2 million in seed money to fund Phase II of the program, in which the team will build and test a radio-controlled model to collect data and fast-track FAA certification.

"There are no kids on this team," DiMaria said. "All these guys have been around a long time and are very patient."

Getting the system developed and working on the Cessna 210 will be "a hard problem with a lot of difficulties — which is good for engineers," DiMaria said. "If we're able to solve those problems and get the system certified on the 210, certification for other planes should be an easier problem for them."

For more information: AviationSafetyResources.com.

WHAT DOES THE COMPETITION SAY?

Officials at Ballistic Recovery Systems, the premiere whole-airplane parachute developer in GA, don't agree with Manfredi's claim that three parachutes are better than one.

"We tried cluster chutes," reported Larry Williams, president. "It increased the weight and it increased the complexity of things that could go wrong."

"Blowing" the wings off the plane also creates lots of challenges, he said, noting that "slowing the aircraft down and putting the gear down also adds to the degree of complexity."

"They still have a long way to go," he predicted.

See more about BRS on page 25.

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