"Back to the Future" Rotorcraft?

AirScooter "Part 103 Helicopter"

Back to the future? It's a seemingly contradictory phrase best-known as the title of the '85 Michael J. Fox hit movie that spawned sequels. But the phrase does make some sense when used in the explanation of a new "ultralight helicopter" from AirScooter Corporation.

"The original Sikorsky rotorcraft helicopter concept was based on a coaxial design much like the AirScooter," says inventor and AirScooter Corporation cofounder (with Jim Barnes in '00) Woody Norris. "What we've done is package the coaxial design in a modern lightweight craft that allows for intuitive control and incredible maneuverability." *Incredible maneuverability* brings to mind actor Michael J. Fox going *Back to the Future* in a modified (and airborne-capable) DeLorean sports car, powered by the fictitious "flux capacitor" powerplant.

The innovative VTOL (vertical takeoff and landing) AirScooter II claims to return to Russian-born American aviation pioneer Igor Sikorsky's original rotorcraft concept employing two counter-rotating coaxial rotors.

But unlike the Hollywood-created DeLorean air vehicle in the movie *Back to the Future* (and its sequels), the AirScooter is *real* – already reported on in an article in *Popular Science* magazine (and featured as the magazine's "Best of What's New in Aviation and Space Products of the Year for 2002"). The AirScooter is powered by a brand-new powerplant – the 65-hp AeroTwin 4-stroke engine, designed by motorcycle racing engine specialists at Pearson Motor Company in New Zealand (see next month's "Industry Watch" for an article on the AeroTwin engine).

"The innovative AeroTwin engine is the result of a 'gap' in the ultralight engine market," the company notes, "discovered as AirScooter Corporation searched for a light 4-stroke engine in the 50- to 75-hp range to power the AirScooter. When an existing engine could not be found, AirScooter Corporation decided to commission the design of a new engine." Sister company AeroTwin Motors Corporation was formed to manufacture the engine.

The simplicity of the AirScooter (for a helicopter) is perhaps its greatest innovation. Its coaxial rotor design eliminates the need for a conventional helicopter tail rotor, as well as the need and complexity of swashplates, collective and cyclic control. A number of benefits beyond conventional helicopter designs are achieved, according to the manufacturer, including the AirScooter's intuitive motorcycle-style handlebar flight controls. "To gain altitude," the company explains, "simply throttle up like you would on a motorcycle, turn left or right on the handlebars for craft rotation, and move the handlebar assembly as a joystick for directional control (including reverse). No pedal controls are necessary, which means someone without the use of their legs can just as easily fly the AirScooter."

The AirScooter's handlebar controls are certainly its most distinguishable feature. "The AirScooter's patented design also provides an amazing level of stability while hovering in the air and during flight," the company claims.

And the AirScooter company also claims their vehicle is a Part 103 ultralight, meeting the requirements for an *ultralight vehicle* in Federal Aviation Regulation (FAR) Part 103 (see page 59 this issue of *Ultralight Flying!* magazine). "In addition to its intuitive and greatly simplified flight control," AirScooter Corporation says, "perhaps the AirScooter's greatest design feature is that it falls into the ultralight weight class, requiring no FAA pilot's certificate. Weight has long been the greatest obstacle to a successful ultralight coaxial design. The AirScooter has overcome this obstacle by using superior design elements and space-age composite materials." The AirScooter's 14-foot-diameter rotors have extruded aluminum blades.

How easy is the AirScooter II to fly? "With practice," the company notes, "a recreational pilot can quickly become confident with the controls and perform basic flight maneuvers." The company says, "Flight speed is estimated to range from hover up to 55 knots (63 mph) carrying approximately 350 pounds of useful load while utilizing a 5-gallon fuel tank providing approximately 2 hours of flight time." Standard instrumentation includes digital readouts for fuel level, altitude and airspeed. "Performance specifications are engineering estimates that are corresponding well with final-phase engine testing currently taking place," AirScooter Corporation adds.

"Unlike most recreational aircraft," the company notes, "the AirScooter is not a kit. The AirScooter will come completely assembled except for installation of the rotor blades, and will include the added feature of extremely durable pneumatic floats instead of traditional helicopter skids."

Future AirScooter Corporation design plans include "an unmanned application, a two-passenger model currently in the design phase, and possibly a 100-hp 3-cylinder engine," the company indicates. "The AirScooter is currently in the final phase of testing with the new AeroTwin engine and is expected to be available this year," the company says without further prediction. The price tag is yet to be finalized, but is expected to be "under $50,000," according to AirScooter Corporation, which adds, "That's impressive, especially when compared to the price of most land-bound vehicles or small helicopters, and even more impressive when considering the substantial savings from having an aircraft engine that operates on gasoline instead of expensive aircraft fuel, and that the pilot licensing/training required to operate a conventional personal helicopter can be expensive. In addition, repair and maintenance costs are greatly reduced due to the smaller number of parts required for the simplified design, and lack of collective and cyclic components."

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– Buzz Chalmers





Perhaps the most innovative feature of the new AirScooter II "ultralight helicopter" is its "intuitive handlebar controls," which, through a coaxial rotor design, eliminate the need for (and complexity of) traditional helicopter collective and cyclic control. "Enhanced, intuitive flight controls are achieved by simple motorcycle-style handlebars and the absence of a tail rotor," AirScooter Corporation explains. "To gain altitude, simply throttle up like you would on a motorcycle, turn left or right on the handlebars for craft rotation, and move the handlebar assembly as a joystick for directional control (including reverse). No pedal controls are necessary."

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