

AVIATION WEEK

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Aiming High

Swiss startup targets commercial helo market

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COMMENTARY

Good all-round visibility, including a floor window to view underslung loads, is a key feature of Swisshelicopter's design.

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Swiss startup targets commercial helo market

Aircraft manufacturing is not welcoming to newcomers. The barriers to entry are high, particularly to the rotorcraft niche that has been dominated for decades by a handful of players.

So it was a surprise, at the industry's Heli-Expo showcase in March, to see a new helicopter from an unexpected source—Switzerland, a respected niche player in fixed-wing aviation, but a country with no notable history in rotary-wing design.

It was an impressive debut for Marenco Swisshelicopter, subsidiary of a Swiss engineering firm, which displayed a “pre-production prototype” of its 2.65-ton SKYe SH09 that was designed for greater multi-mission flexibility than other single-turbine helicopters.

Challenged to justify why a Swiss startup with no aircraft manufacturing experience believes it can enter the helicopter market, CEO Martin Stucki says simply, “Frank Robinson did it.”

After working for other manufacturers and failing to interest them in his concept for a low-cost helicopter, Robinson formed his own company in 1973 to develop the two-seat R22. The company has built thousands of helicopters.

But Robinson entered an underserved market. Swisshelicopter is targeting a light helicopter sector with several established players, notably the popular Bell 407 and Eurocopter AS350B3 Squirrel. The

company's approach is to offer more of everything.

The most striking feature of the SH09 is its cabin, a wide-open space with flat floor running all the way to rear clamshell doors and seats that slide in and out on rails. This rapidly reconfigurable interior is made possible by the carbon fiber airframe, which draws on Formula 1 race-car design for strength and crashworthiness.

The SH09 has the cabin volume and flexibility of a light twin, but is powered by a single turboshaft, Honeywell's HTS900, rated at 820 shp for takeoff but with a thermodynamic capacity of 1,000 shp. This gives the helicopter superior hot-and-high



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performance for a turbine single, says Stucki.

Entering the market with a single-engine helicopter seems odd for a company based in Europe, where operating regulations are heavily weighted in favor of twins. “The relation between cost and transport capacity for a single-engine helicopter is unbeatable by a twin,” says Stucki. “A twin with the same capacity is not just some percent more expensive in terms of hourly cost; it is more like a factor of two—especially when the single-engine helicopter has a cabin volume and flexibility as good as or better than a twin.”

It is also a pragmatic choice. “The competition is heavy in the light twin market, with new models from AgustaWestland, Bell and Eurocopter,” says Stucki. “The newest helicopter in the 2.5-ton class is the Squirrel, and it is based on a design from 1976. So we saw an opportunity to go in with a new helicopter, with a clean-sheet design, new technology and a powerful engine.” Feedback at Heli-Expo “proved this thinking was right,” he says.

“It will be interesting to see how single-engine helicopters develop in Europe,” says Stucki. “Nobody can afford to do a sling-load job in the mountains with a twin with less performance, payload and double the price per hour. In the U.S., commercial, medical and police operators work over cities with single-engine helicopters. The same is true for a lot of markets outside Europe.”

The helicopter could be fitted with two engines, but Stucki does not accept the conventional argument that twins are safer. “I do not believe in the higher safety of twins. They crash into cables and

terrain like the others. Outside the offshore sector, accident statistics do not prove that a twin is safer than a single. Technically, a twin is more complicated, and in many countries pilots have problems with the added complexity from an operational point of view.”

The five-blade main rotor is a mix between an articulated and a rigid design. “We have elastomeric bearings, but also spring stiffness in the flapping and lead/lag direction, which allows us to tune the frequen-

cies to the range that is needed,” Stucki says. Controls go up through the mast and the swash plate sits on top of the rotorhead. “Together with a rotorhead with low frontal area, we have low rotor-hub drag,” he says. The tail rotor is shrouded for noise and safety, with a short duct for low drag.

Swisshelicopter has an appealing design, access to technology and understands the market, but can it succeed? Funds are in place to build a prototype and talks are under way

with potential risk-sharing suppliers, says Stucki. “We are financed through a Swiss firm that belongs to a large international financial group. Our plan is to do the final assembly in Switzerland to start and for the European market.”

An experimental prototype is scheduled to fly in 2012, leading to two certification prototypes in 2014. Production is planned to begin by 2015, starting at 10 aircraft a year, and Swisshelicopter says the break-even is just 40 helos. ☺





SKYe SH09

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A Swiss made Helicopter