“First you have to make sure you can build a plane that is as fast at 45,000 feet as every other twin jet,” says Pilatus Chairman Oscar Schwenk. “And for that it needs a wing that is slim and aerodynamically designed for high speed. And then when the plane comes down and is supposed to land on a short runway, then it should have a,” he outlines a fuller, rounder wing with his hands, “so that you can approach slowly. And these two things basically exclude each other.”

About eight years ago, when Pilatus began to plan its next aircraft, it spoke to its customers. They said they wanted to use short runways. They wanted to land in places with no pavement. They wanted the cargo doors Pilatus had put on the PC-6 and PC-12. And they wanted more speed. They wanted an aircraft that would fly at least 100 knots faster.

“So we said, ‘Here is a niche,’” remembers Schwenk. “But then we realized, ‘That’s not actually doable.’”

The company went to work, and the PC-24 is their answer to the challenge. The aerodynamic shape of the wing is a compromise. To be able to fly fast enough with the wing, engineers had to design an aircraft so aerodynamic in other aspects that it would compensate for the wing shape. Then, to make it possible for the plane to use very short runways, Pilatus had to work extensively with flaps, spoilers.

The company expects the PC-24 to be able to land on just 2,525 feet of dry paved runway at sea level, and take off on 2,690 feet of the same. The distances on the wide variety of substrates that the jet will be able to handle will of course vary.

Pilatus says there are about 10,650 runways in the world accessible to aircraft able to land on paved runways with a length of 3,130 feet. If an aircraft needs only 2,690 feet, it can use an additional 1,300 airports. If that aircraft can also land on unpaved surfaces such as grass, gravel, sand, or snow, the number of airstrips accessible jumps to at least 21,000.

According to the company, this means the aircraft’s special capabilities make it able to land on about twice as many runways in North America and South America, and three times as many in Africa.

THE SWISS COMPANY

Pilatus Aircraft is based in central Switzerland, quite close to both the geographic middle of Switzerland and the alp on which the mythical founding of the country took place. The manufacturing and administrative headquarters form a cluster of buildings, in a long valley, backed up against the Burgenberg mountain. Straight ahead of this cluster is a barn with cows, to the left is agriculture, and to the right is the Buochs airfield, which appears to be a huge grassy field crisscrossed by a few strips of tarmac. Farmers cut the grass and gather hay.

The location is no coincidence. The company was formed in 1939 to build the military’s SB-2 Pelican airplanes
and to maintain other military aircraft. For protection in wartime, it was located well away from Switzerland’s borders. Or, as far from the borders as you can get in a country that is only 137 miles north-south and 216 miles east-west at its most extreme points. There was also another plan. Should the fighting of World War II get too close, they would move the production facility inside the mountain. This never happened, but the events of history created a company located in this impressively scenic location.

After experimenting with various prototypes following the war, the company found international success with the PC-6, introduced in 1959. This aircraft, usually known as the Pilatus Porter, has become something of a legend. It can land just about anywhere, and the large sliding door on each side of the cabin makes cargo transport easy. The Porters were mostly used by militaries and many kinds of government organizations, though various other organizations have made good use of them. Pilatus Porters have been fitted with skis to land on Swiss glaciers, or more frequently for use in the mountains of New Zealand. Porters with floats have been popular in Alaska. Many a salmon in the north of North America, for example, has been moved to a new home in a Ministry of Fisheries Porter. The aircraft also became a classic among sky divers. Pilatus says it makes sense to take the PC-6 to helicopter trade shows. The plane, which needs a strip of less than 350 feet to take off or land, can touch down many places that are classically the domain of helicopters. And a Pilatus Porter is much cheaper to run than a helicopter.

The company still builds five to ten Porters each year. They are mostly purchased for jungle areas, often in Indonesia or South America. The plane is a workhorse. And it is very slow. Taking a leap in speed, Pilatus began to build several models of turbo prop military training aircraft and became the leader in such aircraft. The company not only sells the planes, but also entire training programs that include simulators and mission plans. The planes are used by the Swiss Air Force and many others around the world.

Obtaining military contracts is a special business. “It takes a budget, and an approval and a planning process,” Schwenk says. “For the military training aircraft, it takes almost five years from the time we do the first demo until our first delivery.” He adds that sometimes in the last minute, the budget is not there, and delivery is pushed back even further, leaving Pilatus with a hole in its books.

About 25 years ago, the company decided it wanted to balance this out with civil aviation aircraft. Pilatus knew it would have to find a niche to be successful. It would have to do something no one else could. It took a look at its strengths. It had experience with single-engine aircraft, and it had experience with short, rough runways. So it set out to make a civil aircraft that was faster than the PC-6, and that maintained these capabilities.

When it came time to design the PC-24, Pilatus asked its customers whether they would want a single-engine jet, and the answer was no. So the company designed the aircraft with two Williams International FJ44-4A jet engines.

The airplane is expected to have a maximum cruise speed of at least 425 knots, or 489 miles per hour, at 30,000 feet. The range is expected to be 1,950 nautical miles with four passengers, or 1,800 nautical miles with six passengers. This will allow for travel such as Zurich to Cairo, or New York to Denver.

The cabin is 23 feet in length and 5 feet, 7 inches at its widest point. At the aisle center, it is 5 feet, 1 inch high. The company has designed passenger seats that can be added or removed within minutes, to allow for a multipurpose cabin. A moveable partition at the back allows users to choose between additional seats or a larger baggage compartment.

The 4-foot-1-inch by 4-foot-3-inch cargo door is a vital part of the aircraft’s versatility. It allows for easier loading of gear for special missions as well as any kind of large cargo.

When Pilatus opened its order book in 2014, making it the lead launch customer. The company currently has 34 PC-12s, the largest civilian fleet of the aircraft. President and CEO George Antoniadis says the company’s twenty years of experience with Pilatus made it comfortable with the large order of PC-24s. The company says it looks forward to offering an aircraft which, like the PC-12, has a “large cabin, exceptional performance, and trademark large cargo door.”

Beyond that, Antoniadis adds, “The PC-24 will let us fly to places that no other jet of that size could ever go.”

The company says these business-jet terminals, “meet the Swiss standards to which our planes are built.”

The company wanted to build a single-engine, single-pilot turboprop aircraft. “Everyone told us ‘You are crazy. You are building a plane that in the end you can’t certify for commercial use,’” says Schwenk. “And we said, ‘It makes so much sense.’”

The company designed an aircraft with a low stall speed, so that if the one engine were to fail, the plane would fly like a glider. At normal flight altitude, the pilot would have half an hour to land. If the plane were far from an airport, and had to land in the middle of nowhere, it had the rough-landing capabilities to pull it off. Authorities were impressed by it, and the aircraft received commercial certification.

The company had a roll-out event for the PC-12 in Stans, and Moritz Suter, founder of the regional airline Crossair and an important figure in Swiss aviation, came to see it. Schwenk remembers Suter telling him, “Listen, I know you can build planes. The whole world knows that. But this, what you did here, you just can’t sell it. You can forget it. If you sell more than 30 PC-12s, I’ll buy you a large beer.”

Since then, Pilatus has sold over 1,300 PC-12s. The company is still making them. It made 75 last year and is planning for 90 this year.

When, to the Pilatus PC-24.
Fly their own

The Swiss government has ordered a PC-24 for the country’s highest executive power, the seven-member Federal Council. This will be the first time that Swiss politicians can undertake international visits in a jet made at home.

They listen to the air traffic … and as soon as an airliner says, ‘Heavy icing conditions, I have to fly around,’ they take off and go in.”

“Unbelievable when you see it,” says Schwenk. “You do it with rigid foam. You put it on there, and the plane takes off anyway. When you look at it, you think that plane is never going to make it into the air like that.” A glimpse of the emotions attached to the aircraft comes through when he adds: “We spent so long working on those aerodynamics, and then he puts a block like that on there!”

As the company goes through this intense certification period, it already has evidence that it is building an aircraft people want to use. In 2014, when Pilatus presented the mock-up at EBACE, the company also decided to open its order book for a maximum of three days. It said it would accept up to 80 orders. This was before any potential buyers had seen an actual aircraft.

Within one-and-a-half days, the company had 84 confirmed orders, backed by deposits. This covers the expected PC-24 production through the end of 2019.

“We took a big risk with that. We believed Pilatus had such a good reputation that people would believe the aircraft will fly as fast as we say it will,” says Schwenk. “And they did.”