Now arriving: airport control towers with no humans inside

September 14 2015, byScott Mayerowitz

In this April 2015 photo provided by Saab AB, a plane takes off beyond a remotely controlled control tower at Ornskoldsvik Airport in northern Sweden. The dozen commercial planes that land here each day are guided in by controllers using video cameras at another airport 90 miles away. It's the first airport in the world to use such technology, but others in Europe are testing the idea as is one airport in the United States. (Stefan Kalm/Saab AB via AP)

Passengers landing at remote Ornskoldsvik Airport in northern Sweden might catch a glimpse of the control tower—likely unaware there is

nobody inside.

The dozen commercial planes landing there each day are instead watched by cameras, guided in by controllers viewing the video at another airport 90 miles away.

Ornskoldsvik is the first airport in the world to use such technology. Others in Europe are testing the idea, as is one airport in the United States. While the majority of the world's airports will, for some time, still have controllers on site, experts say unmanned towers are coming. They'll likely first go into use at small and medium airports, but eventually even the world's largest airports could see an array of cameras mounted on a pole replacing their concrete control towers.

The companies building these remote systems say their technology is cheaper and better than traditional towers.

"There is a lot of good camera technology that can do things that the human eye can't," says Pat Urbanek, of Searidge Technologies, "We understand that video is not real life, out the window. It's a different way of surveying."

Cameras spread out around an airport eliminate blind spots and give controllers more-detailed views. Infrared can supplement images in rain, fog or snow and other cameras can include thermal sensors to see if animals stray onto the runway at the last second.

None of those features are—yet—in the Swedish airport because of regulatory hurdles.

Ornskoldsvik Airport is a vital lifeline for residents who want to get to Stockholm and the rest of the world. But with just 80,000 annual passengers, it can't justify the cost of a full-time control staff—about
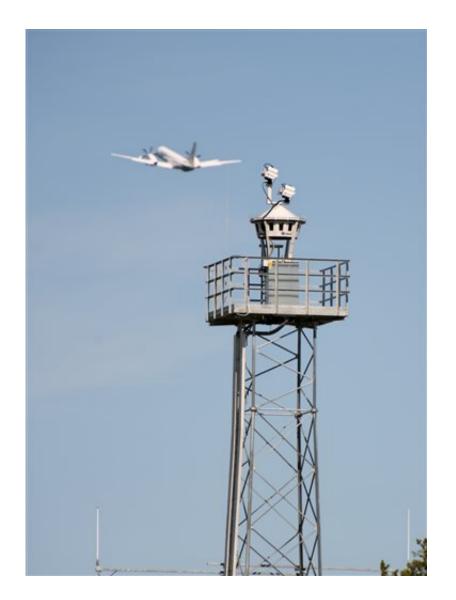
$175,000 a year in salary, benefits and taxes for each of six controllers.

In April, after a year and a half of testing a system designed by Saab, all the controllers left Ornskoldsvik. Now, an 80-foot tall mast housing 14 high-definition cameras sends the signal back to the controllers, stationed at Sunvsal Airport. No jobs have been eliminated but ultimately such systems will allow tiny airports to pool controllers.

Old habits are hard to break. Despite the ability to zoom in, controllers instinctively grab their binoculars to get a closer look at images on the 55-inch TV screens. And two microphones were added to the airfield at Ornskoldsvik to pipe in the sounds of planes.

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"Without the sound, the air traffic controllers felt very lost," says Anders Carp, head of traffic management for Saab.

The cameras are housed in a glass bubble. High pressure air flows over the windows, keeping them clear of insects, rain and snow. The system has been tested for severe temperatures: 22 degrees below zero and, at the other extreme, a sizzling 122 degrees.

Niclas Gustavsson, head of commercial development for LFV Group, the air navigation operator at 26 Swedish airports, says digital cameras offer numerous possibilities for improving safety.

Computers can compare every picture to the one a second before. If something changes—such as birds or deer crossing the runway—alerts are issued.

"Maybe, eventually there will be no towers built at all," says Gustavsson.

Saab is currently testing—and seeking regulatory approval—for remote systems in Norway and Australia and has contracts to develop the technology for another Swedish airport and two in Ireland.

Competitor Searidge is working on a remote tower for the main airport in Budapest, Hungary. That airport serves 8.5 million passengers annually and, within two years, controllers could be stationed a few miles from the airport.

Now, Saab is bringing some aspects of this technology to the United States.

Leesburg Executive Airport in Virginia is a relatively busy airport with 300 daily takeoffs and landings. Just a few miles from Dulles International Airport, Leesburg does not have its own control tower. A regional air traffic control center clears private jets into the airspace and then pilots use an established radio frequency to negotiate the landing and takeoff order. That often leads to delays.

Saab has built a system for Leesburg and on Aug. 3 started a three-month test with the Federal Aviation Administration. FAA controllers will, at first, familiarize themselves with the technology and just observe the planes operating as they already do today. If the FAA approves, the next phase would be to start clearing planes onto taxiways and to take off and land.

The National Air Traffic Controllers Association says it is participating in the testing.

Towers for large commercial airports are expensive. They need elevators, air conditioning and heating, fire suppression systems plus room for all the controllers. A new tower in Oakland, California that opened in 2013 cost $51 million. Towers at smaller airports are cheaper. Fort Lauderdale Executive Airport opened a new one in February at a cost of $15.4 million. Saab won't detail the cost of its system except to say it is "significantly less." There is no need for a tower and elevator.

The companies see a giant market: The vast majority of U.S. commercial airports—315 of 506—have control towers. However, only 198 of the 2,825 general aviation airports have manned towers.

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