

# SANDEL'S AVILON

## KING AIR PANEL SOLUTION

STORY BY DALE SMITH

“EVERYBODY BELIEVES  
IN INNOVATION UNTIL  
THEY SEE IT. THEN  
THEY THINK, ‘OH NO;  
THAT’LL NEVER WORK.  
IT’S TOO  
DIFFERENT.’”

**NOLAN BUSHNELL,**  
*American engineer and entrepreneur*

**J**ust in case you missed it, Sandel Avionics took center stage at last fall’s NBAA Convention & Exhibition in Las Vegas when it introduced the Sandel Avilon King Air panel upgrade. But with all the King Air avionics upgrades already available, what sets Sandel’s Avilon apart from every other retrofit option on the ramp?

Well, the short answer is everything. And that’s not a Las Vegas neon-lighted exaggeration. From the root concept to the functionality, hardware, installation and the guaranteed flyaway price, Avilon is a total rethinking and a complete innovation of everything that goes into a King Air upgrade.

Did I mention a guaranteed flyaway price? Yes I did, and it’s \$175,000.

### **The inspiration for Avilon**

Gerry Block, Sandel’s president and chief executive officer, said the idea for the Avilon transformation package came a few years ago during a casual “backyard meeting”

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with a couple of other aviation luminaries, Dick Taylor and Del Fadden.

“The three of us were discussing how the state-of-the-art in avionics was not to our liking – actually, we thought it was pretty bad,” Block said. “We thought it would be nice if someone did something about it, so that’s what we decided to do. That was the seed that started the Sandel Avilon program.

“We knew a lot about performance-based navigation and where future airspace was going – a lot of things that affect avionics design and performance. And we shared a common philosophy about how to improve the interfaces with the pilot.”

Block explained that the deeper they dug into what was right and wrong with current avionics, the more it became obvious that to actually create a system they felt would deliver their desired level of avionics innovation, Sandel would have to create all the components and software themselves.

### **Let’s start with the installation**

Block said that one thing they felt needed changing with regards to avionics upgrades was the fact that they are all too complex and costly to install.

“We started to kick around how to reduce the installation cost of a system because, in most cases, other options were too expensive relative to the value of the airframe,” he said. “And the problem gets worse as the value of that airframe continues to go down. So you have a lot of older airplanes flying with unreliable and underperforming avionics. That’s not a safe situation.

“We asked the question from the beginning – how does it install? And, I guess by the time it all got figured out and finalized, we had miniaturized all of the components to the point where we could easily mount them all right on the back of the panel and have it all prewired. Historically, our products (Sandel) have always pushed

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the envelope on ease of installation and interfacing, so we had a great starting point."

While it's one of those things that must be seen to be appreciated, simply put, all of the various wires and components that make up the Avilon package mount on racks behind the panel. Of course, that means all the boxes are marvels of miniaturization.

But, as Block explained, making tiny boxes was just one of the installation challenges to be solved. Next came how to eliminate all the wiring.

"Avilon's wiring is quite a bit different than what people conceive as needed for a typical integrated panel installation," he said. "From the way

the data busses are done, all of our components and displays just plug in with simple cables. No complex wiring bunches, looms, or multiconductor bundles that you always find behind the panel."

He also said the removal of all the typical "rat's nest" of wiring will save up to 150 pounds of weight.

"Our wiring is absolutely simple," Block said. "There are probably no more than a dozen cables in the entire installation. Nobody believes it until they see it. But once people actually do, they finally understand how we can achieve the low installation times we are quoting."

Block explained that another way Sandel was able to create its innovative solution was to start from scratch at each installation. The

Avilon system does not use anything that is currently in the airplane except the weather radar receiver/transmitter, standby attitude and the autopilot servos. Sandel makes everything else in-house.

"As part of our decision to move ahead, we had to essentially start with the design of a new line of avionics, including our own flat panel displays and RF components – ILS receiver, CNI transceivers, Mode S transponder, ADS-B Out and In, autopilot controller, TAWS, AHARS – everything you'd find in a new-generation turboprop or business jet," Block said. "We even developed our own flight management system. It will be the most sophisticated navigation and control system anyone has ever seen in this class of aircraft."

### But wait, there's more

Block said that along with re-innovating all of the standard avionics and their various interconnection requirements, his team felt that starting anew was the ideal time to introduce a new component they believe will make a major contribution to increasing the safety of single-pilot flight operations: Sandel's Path Guidance Panel.

"One thing that stuck out during our discussions about what was wrong with the current state of avionics was in the ways pilots interface with these technologies," he stated. "In analyzing accidents, it became obvious that, in many approach-to-landing incidents, the cases were highly related to the inability of the pilot to understand what their aircraft's 'automation' was doing at that given time."

An example Block shared was a single-pilot shooting an ILS approach. Suppose for the last 500 times, the autopilot has captured the glideslope. But for whatever reason,

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this time it doesn't. The pilot is suddenly out of his comfort zone and gets out of sorts and starts a chain of events that too often ends in a loss of control accident.

"With Aivilon's (patent-pending) Path Guidance Panel, we have integrated the tactical part and integrated it with the FMS in such a way that we now have two smaller displays on the panel that show the pilot both the lateral and vertical paths of the aircraft in real time," he said. "You see the glideslope in white and a magenta line showing the aircraft's current flight path and where the two will intersect. If it (autopilot) is not going to capture it, you'll know well in advance so you can stay ahead of the aircraft."

"We feel the Path Guidance Panel is going to have a significant impact on improving the safety of the airplane, especially in single-pilot operations. That's our goal and the thinking behind its development."

### **New panel with a new business model for avionics shops**

As noted earlier, by making installations a lot easier and faster, Sandel's Aivilon was created to virtually revolutionize the avionics upgrade business.

"Looking at it from the dealer/installer's standpoint, if all you are selling is labor, you can be much more successful if you can ultimately move more aircraft through your shop in the same time," Block said. "So it became obvious if we could come up with a way to greatly reduce the time and labor content, we could help dealers in two ways. First, there's a shortage of skilled people in the avionics business, and second, it's more profitable for dealers to sell

this kind of upgrade to their customers even at the lower price."

Helping shops reduce labor and increase profitability was one reason why Sandel targeted the venerable Beechcraft King Air as the first airframe to receive the Aivilon package. And it's also a reason Sandel chose to limit the program's availability to four pre-approved dealers: Cutter Aviation, Landmark Aviation, and Stevens Aviation in the U.S., and Rocky Mountain Aircraft in Canada.

"While the Aivilon package is currently only available through these four dealers, this is not to say in any way there will not be other projects coming along that they will not be able to offer," he said. "We're definitely looking at this as a long-term growth project."

### **Choosing the King Air**

After reviewing an extensive list of eligible airframes, Block said the venerable King Air was chosen for a number of reasons.

"First of all, it's a well-known, Part 23 airplane," he said. "And since this is a completely new, full-panel upgrade, we felt it would be easier for the FAA to work through if we used a familiar airplane. Next, research showed that over 90 percent of the available King Airs have not yet been upgraded. Why? We believe it's squarely because there is no suitable and affordable solution out there. To us, King Airs are a dramatically under-served market."

Block added that another benefit

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to Sandel's team selecting the King Air was the fact that its panel is connected to the airframe with just four bolts. In its early experience with STC aircraft, Sandel found that removing the old panel, avionics and wiring totals up to more than 80 percent of the entire project.

And because no two King Air panels are the same, the Sandel team has even created a checklist for the shop's technicians to follow before any of the actual removal begins.

"We get a worksheet from the dealer that tells us exactly what systems are already in the aircraft," Block said. "That way we can spot, even before the customer's aircraft comes in the door, if there are any potential problems

with the installation. There are a lot of King Airs out there, and many have had engine upgrades or other modifications.

"Our process means we get that information ahead of time, including photos of the panel, so we can determine if there are any engineering changes required to the Aviron package for that aircraft. If there is anything, we handle it at our end. It's all about simplifying things for the dealer and customer. Once we know what we're getting into with the aircraft, we can let the dealer know when to expect the Aviron panel so they can schedule the installation."

Block explained that once all the engineering is done, a complete Aviron package with the new instrument panel, avionics, brackets and wiring all arrive at the shop in one crate.

"Talking with our dealer partners,

they're expecting to do the Aviron installation in conjunction with other types of maintenance or inspections," he said. "This is their one chance to have access to the front of the airplane with most everything taken out. We anticipate that once they do one or two, they can complete the entire removal and Aviron installation in as few as five days."

### **\$175,000 flyaway price – guaranteed!**

"It's all about cost in this segment of the market," Block said. "The whole game is based on how we can deliver something of impeccable quality and high technical capabilities at the right price point. We could have taken a more traditional path, but we would have ended up where everyone else is – with a package that is too expensive and difficult to install.

"Our Aviron dealers also are experienced King Air service centers. When we presented them with this concept, we not only did not get any objections, they actually loved the idea because they strongly believe it will benefit their ongoing relationships with their customers. At this guaranteed flyaway price, we can make a profit. Our dealers can make a profit. And the customers will be extremely happy.

"As I said earlier, from the hardware to the installation, it's a new business model. We believe it will enable our dealers to ultimately do more upgrades than they would do if they only had the current options to work with. People who saw Aviron at NBAA all asked the same question: Why hasn't this been done before?

"While the guaranteed price will get a King Air pilot/aircraft owner's attention, Aviron is, above all, a technical offering. It brings more capabilities to the King Air than pilots are familiar with. Once they get a chance to experience it, we're confident it will change the way they perceive what state-of-the-art avionics truly is."

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### What dealers are saying

"The big announcement at NBAA has already created a lot of interest and customer excitement," said Will Cutter, president of Cutter Aviation. "Not only for the big savings, but also the addition of capabilities that Avidon has that the other systems don't offer."

"Customers who were considering other upgrades are now waiting to see what Avidon will offer. They won't be disappointed."

He said that the plans are to do Avidon installations at Cutter Aviation's authorized Beechcraft Service Centers in Phoenix and Dallas.

"We've been associated with Beechcraft for over 50 years, and we have a lot of King Airs running through our shops," Cutter said. "Our first Avidon installation will be done on the B200 that we use as both a demonstrator and in our charter operations."

He said one aspect of the Avidon upgrade that he's particularly interested in is the dramatically reduced installation times.

"Right now, it takes 1,300 man-hours to do a typical glass upgrade," Cutter explained. "And we're figuring we can do the entire Avidon upgrade in about 150 man-hours. So if a customer is going to bring his King Air in for a phase inspection or annual, which takes a couple of weeks, we can do the entire Sandel upgrade with no additional downtime."

Randy Deal, director of MRO sales for Landmark Aviation, shared Cutter's enthusiasm for Avidon's introduction.

"Their focus on the King Air couldn't be more appropriate and timely," he said. "Despite the features other available upgrades have offered, the majority of operators have yet to do major avionics upgrades. It is still an underserved market."

"Avidon will attract every kind of King Air operator, including the everyday workhorse types. These owners know they have to address upcoming NextGen mandates like ADS-B, and Avidon will deliver the fresh look, appealing design and future growth capabilities that will be attractive to them. I think it will come at

a price point that is unprecedented at this level of sophistication."

Deal said that since Avidon's announcement, Landmark has seen strong response from King Air 200-series owners, as well as owner/operators of other turboprop and jet aircraft.

While the Sandel Avidon STC approval is still a few months away, he feels customers are more than willing to wait.

"I've seen the Avidon installed in Sandel's King Air," he said. "I can tell you it doesn't disappoint." □



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