



The “bread and butter customers” for Flight Display Systems are corporate operators who fly Pilatus PC-12s (pictured) and King Airs to the various members of the Cessna Citation family.

In-Flight Entertainment

Audio/Visual Opportunities for All Aircraft

BY SCOTT M. SPANGLER

For most of aviation’s history, in-flight entertainment (IFE) has been a binary system found on commercial aircraft. After World War I, passengers on the 2.5-day Zeppelin flight from Europe to America could look out the window or read (the visual system), or retire to the piano lounge (the audio system). In the 1960s, first-class passengers started watching movies; those in coach had to wait another decade. Pneumatic headsets were the audio norm then, and the selection of music was limited. Akio Morita, the co-chairman



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of Sony, liked opera. In 1978, to pass the time on long trans-Pacific flights, Morita asked his tape recorder division to make him a cassette player, writes Tom Hornby in the "The Story Behind the Walkman."

In 1979, Sony shared the Walkman with the rest of the world, giving operators of personal and corporate aircraft an IFE system beyond the ADF's AM radio capabilities. VHS was big in the 1980s, and it found its way into a few corporate aircraft. In the 1990s, the MP3 player (early models had enough memory for six songs) and DVD players were introduced.

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Pilots and Passengers

Looking out the window is an important part of every pilot's job, so safety suggests cockpit IFE should be limited to audio options. One option already is found in many cockpits: a portable or panel-mounted GPS-based system that receives XM

weather (www.xmweather.com). By connecting this system to the audio panel, and with an additional subscription, pilots can access more than 160 commercial-free channels on XM radio (www.xmradio.com).

PS Engineering, for example, has always built IFE capabilities into its audio products. "I don't know if we were the first" to mount a standard stereo input jack on the faceplates of these products, said Gary Picou, vice president of quality systems and certification for PS Engineering, "but we've had it since day one."

Plugging in a portable music player or iPod often is more popular than panel-mounting of a separate box. Although, many audio panels and IFE equipment are designed for panel-mounting in singles and twins up to business jets.

When panel space is limited, operators opt for an audio panel with IFE input, which distributes music from a portable player through the audio panel's built-in stereo intercom. Some systems offer a Sirius Satellite Radio receiver (www.sirius.com), which requires a monthly subscription fee to access its 220 commercial-free channels.

Picou sees the future in these types of panels

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because pilots won't need to carry around a portable player or CDs. The operator can create a song playlist at home, then load it using a USB flash drive.

Picou doesn't see an increase in MP3 storage space because deciding what to play from a multi-gig selection would distract pilots. "When you have 200 hours of music in there," Picou said, "how are you going to select the ones you want to hear on the next four-four flight?" Now, pilots hit "play" with the option to skip forward or backward.

Regardless of the audio source, the panels automatically mute the music when ATC calls. Pilots can configure the system to mute the music for pilots without affecting the passengers, and when connected to a video player, pilots can listen to music while the

passengers get the movie's audio track. The muting system, in all its permutations, clearly fulfills its mission.

PS Engineering has been putting music in the cockpit for 25 years, Picou said, and no one "has ever said I missed a radio call, let alone a destination, because I was listening to music."

There are no technical service orders for in-flight entertainment equipment, Picou said, but most manufacturers do the next best thing by earning parts manufacturing approval for the equipment. This includes surviving the gauntlet specified by RTCA DO-160B, "Environmental Conditions and Test Procedures for Airborne Equipment." The tests, strenuous marathons at various pressures, temperatures and humidity levels, ensure reliability and that the shielding protects — and prevents — radio frequency interference and electromagnetic emissions.

AEA MEMBERS: Entertainment Systems & Audio Panel Manufacturers

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www.avionicsinnovations.com

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DECRANE AUDIO INTERNATIONAL
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www.uasc.com

Corporate Class

Flight Display Systems equips everything from Bonanzas to big Boeing 767s, but the "bread and butter customers," said Nick Gray, who handles international sales for Flight Display Systems, are corporate operators who fly Pilatus PC-12s and King Airs to the various members of the Cessna Citation family.

While each cabin entertainment package is a custom job, Gray said, if there is a "standard" package, it would be a moving map (with data from the GPS/FMS) with a monitor on the bulkhead or at each seat, a DVD player and a wireless headset system, so passengers can move around the cabin without wire worries.

Taking the next step, operators often add a cabin management system, which allows passengers to

control their individual audio/video sources, lights and other features from a touch-screen or push-button control module.

An option of growing popularity is an iPod docking station, Gray said. First offered a year ago, HD monitors and Blu-ray players are gaining on the LCDs and DVDs. "Many people have these monitors at home," and when they bring a Blu-ray disk to the airplane, they want to be able to watch it, Gray said.

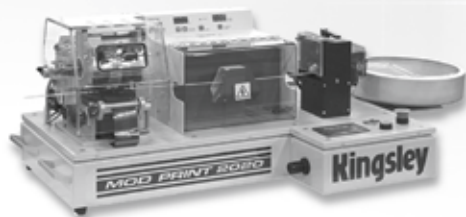
Another video input popular with the decision-makers who ride in back is a camera mounted to the glareshield, which gives a pilot's eye view of the flight.

To make the most of the downtime, most IFE upgrades coincide with other work on the aircraft, and

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IFE adds to the airframe value. Many customers are brokers preparing an airplane for sale, and they say IFE “definitely pays for itself, and sometimes more,” Gray said.

Installation

Installing any IFE system requires either an STC or field approval with the appropriate approved data, drawings and documents. How long this takes depends on the complexity of the system, said Trevor Strong.

An aero engineer chartered in the United Kingdom, Strong worked for British Aerospace for about a decade before moving to California, adding DAR and DER qualifications to his resume, and starting Strong Aero Engineering. He handles all manner of structural work, but VIP cabin interiors with exotic wood veneers, LED mood lighting and IFE systems are interesting projects he calls “pretty sexy.” He just finished one in a big Boeing, which included a 60-inch HD plasma monitor.

Such projects must be approved by FAA aircraft certification offices, Strong said, and “each one has its own culture, shall we say.” Everyone must meet the same regulatory requirements, “but they are interpreted by individuals with their own mindset.”

One aspect is universal: If the FAA decides an approval will take more than 40 hours of its time — and

it does not directly affect the safety of flight — it goes on a waiting list.

With top-mounted antennas affecting an airplane’s aerodynamics, satellite-based IFE systems “require a flight test with TIA — type inspection approval — and by default, the FAA thinks it will take more than 40 hours,” Strong said, “so when they see that, they put it on the waiting list.”

ACOs can transfer the approval to another office, but this takes time as well, often months. Having been on this waiting list, Strong describes it as a “nightmare” because customers need to get airborne, but the FAA cannot say with any accuracy when it will start the approval process.

This isn’t the first time “technology has advanced more quickly than its approval for use,” said Kevin Hufford, avionics manager for Chicago Jet Group. Another satellite system — GPS navigators seeking approval for IFR use — also got off to a slow start. In time, the system capabilities increased while the time and money it took to install and approve them shrank.

A greater challenge is finding the room to install the necessary IFE boxes while keeping their weight and necessary wiring in mind. Like putting a piano lounge in a Zeppelin, the airframe ultimately determines what is possible. Audio and visual IFE systems are optional equipment on most new corporate aircraft, but the original system — windows — is standard equipment on all aircraft. □