

# problem solvers

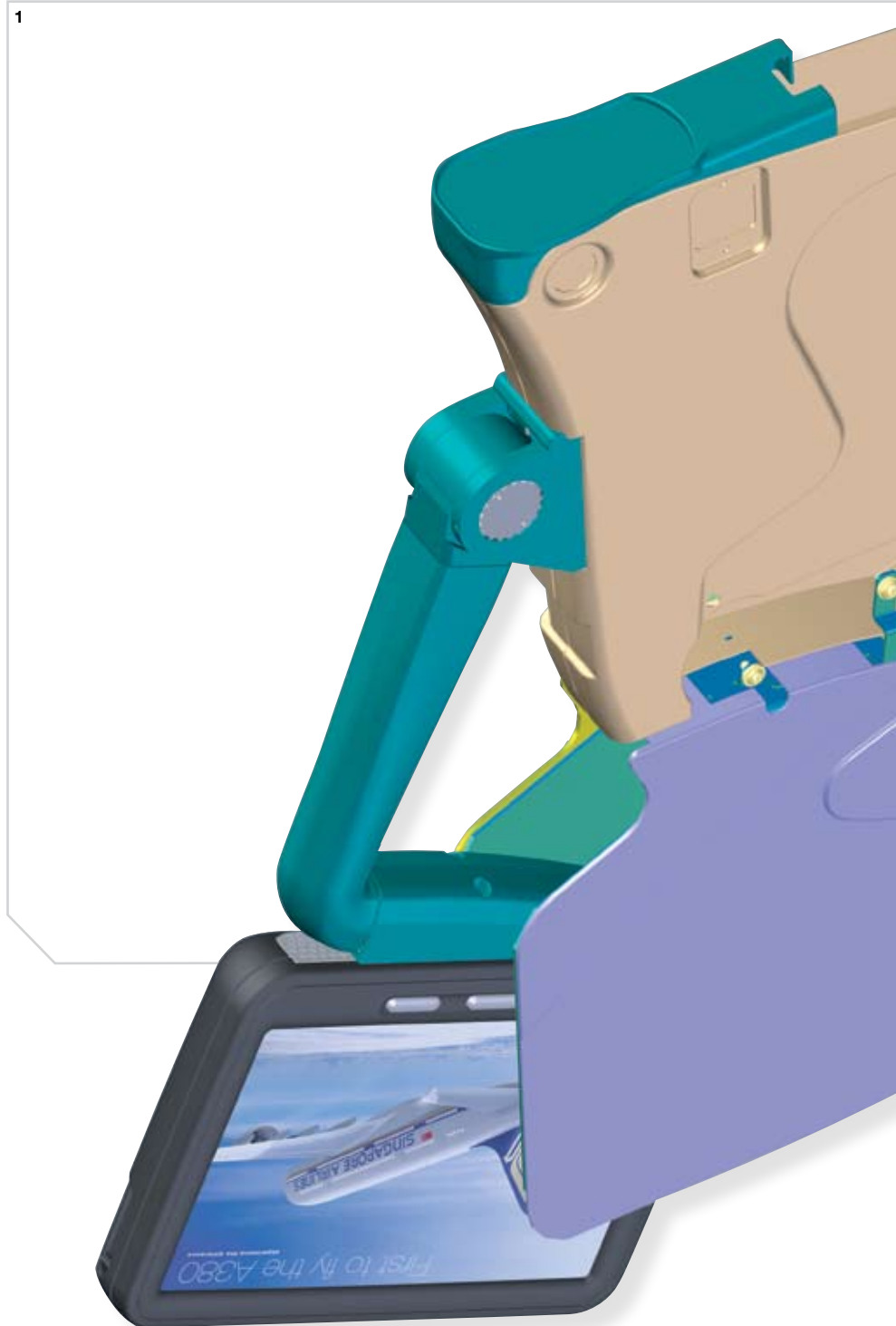
BILL STERMER SPEAKS TO SATTERFIELD AEROSPACE, WHICH SPECIALISES IN ESPECIALLY TRICKY OR SHORT-TIMEFRAME VIDEO ARM PROJECTS

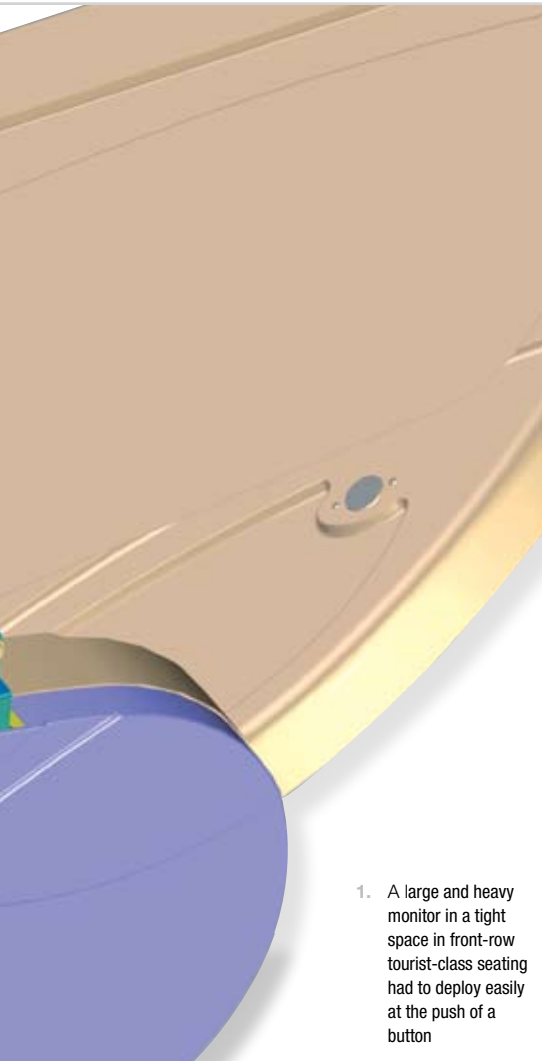
**T**he next time you fly in a business- or first-class cabin and deploy the video screen stored in your seat, there's a good chance the arm that holds it was designed and built by Satterfield Aerospace (S&S Numerical Control Division). Video arms are an indispensable component in the upsurge of the aircraft interiors industry, and because Satterfield Aerospace has a front-row view of the trends, Bill Stermer visits their new facility in Northridge, California, to meet with president John Satterfield.

**Industry trends** "All the airlines are highly competitive. Passengers expect IFE on long flights, and on anything over six hours they demand it," Satterfield said. "The competition is fierce. After a prolonged industry slowdown, many airlines held back and did not upgrade their cabins. Premium-class seating is where airlines make their money, and they compete heavily for customers in first-, business-, and now some tourist-class cabins as well.

"IFE in general, though, is still behaving like an emerging market. We developed our first video arm in 1998 for front-row tourist-class seats on a domestic airline. The front row is different – no seat ahead of you in which to mount a monitor. Tourist class is the most difficult because these front-row video arms are made in small quantities and the larger companies did not want to tackle it. There are all the peculiarities about stowage and different seat consoles, so it takes real collaboration with the seat maker. We're always interested in special applications and enjoy solving problems no one else wants to deal with."

Satterfield points out that in the highly competitive video-arm market,





1. A large and heavy monitor in a tight space in front-row tourist-class seating had to deploy easily at the push of a button

these factors worked in his company's favour. "For video arms, every airline wants a different style, a different colour – that's really what drives the industry. We've made an effort to offer special mechanical features, as well as any number of custom finishes – paint, polish, plating, powder coating, and bright dip. The key to succeeding with aircraft interiors is problem solving."

One example Satterfield gives is that of a domestic airline intending to use a large monitor that had to deploy in a forward motion. The screen had to come out of the console easily, with minimal force, but also had to be tight enough to stay in position once fully deployed. One seat manufacturer developed its own arm but suddenly ran into problems with tensioning. They called in Satterfield. During the collaboration, Satterfield developed a variable-resistance component that offered very low friction when the customer initially deployed the arm, and progressively higher friction as they moved it fully into place, and remained in the correct viewing position even during flight turbulence.

**Taking on challenges** According to Satterfield, what differentiates his company from competitors is a receptivity to problem applications. "We welcome mechanical problems. It's

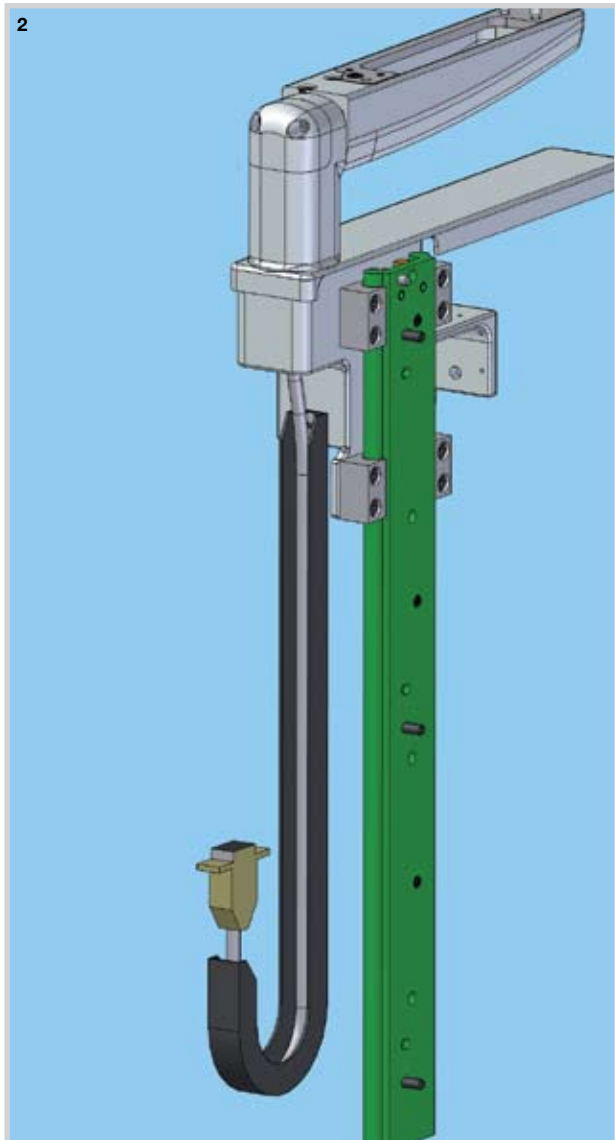
what separates us from those who want to put a standard arm in every application. In one application there was a problem with the release mechanism, and it could only be operated by using two hands. We came up with a method that, because it has very low resistance initially, allowed the arm to spring out a few inches on its own once the passenger pushed the button. Then they could deploy the rest of the way with the same hand. We solve any unusual problems as part of the deal."

**Integrated design** The company's willingness to take on custom-design challenges has fuelled its expansion, and Satterfield Aerospace recently moved to a new and larger facility in Northridge, California. There, as before, John Satterfield is the chief designer and also stays in close contact with all manufacturing processes. The integrated role allows the company to design more efficiently.

"If I'm thinking of a product and how to design it, I'm also thinking of exactly how it will be manufactured. If a component can't be manufactured in a reliable way, I don't design it in.

"Our customers who manufacture seats and cabins have a group of engineers responsible for delivering the design," Satterfield comments. "We don't mind being the company they

**IF I'M THINKING OF A PRODUCT AND HOW TO DESIGN IT, I'M ALSO THINKING OF EXACTLY HOW IT WILL BE MANUFACTURED**



2. The Verti-Glide harness protection system prevents twisting, the biggest cause of harness failure

come to for solutions under tight deadlines. A lot of companies won't do it and we're often the only ones crazy enough to take it on!" When asked how they can respond more quickly, Satterfield explains, "We're a direct-contact organisation, and we specialise in the design and manufacture of video arms only. This gives us a depth and quality of focus you can't get in companies dealing with a wider range of products."

Satterfield believes the aircraft interiors industry revolves around flexibility and the willingness to collaborate. "All our projects are collaborations between S&S, the seat

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manufacturer, and the airlines. That's the key. We are constantly in customisation mode, and we prefer to see the existing seating console and then design around it rather than trying to fit an existing arm or require a heavily modified console."

**The industry is heating up** "The industry has been heating up for certainly the last few years, and it's going to be getting extreme now," says Satterfield. "With the 2008 Olympics in Beijing, airlines want to spruce up their cabins, particularly in the Asian market. The Middle Eastern market has been really going strong for some time. Dubai for example, wants to become the number one tourist destination, so they've ordered a ton of aircraft. This, in addition to the launch of the Boeing 787 and Airbus A380, will make for very busy times in the coming years.

Not every product development has been at the demand of a customer. In response to the industry's overall need for increasingly lighter-weight, ergonomic and easy-to-use IFE systems, Satterfield Aerospace developed its latest video arm product, the Verti-Glide. "We've made video arms with gas springs and pop-up mechanisms, and of course the ultimate would be an electrically powered unit, but with that you'd have motors to maintain – they're heavy, they draw on the power of the aircraft, and they require electrical maintenance. We wanted to come up with something that didn't increase

power loads, yet still produced an elegant effect. This was the rationale behind the Verti-Glide – no electricity, no actuators and no gas springs, make it lighter, more compact, and very low maintenance. It has this simplicity of design, no complex linkages, very few moving parts. And it solved the problem of potential damage to electrical harnesses by capturing them in a way that prevents twisting, eliminating the single biggest reason for harness failures."

The company was started in 1982 by John's father, Jim Satterfield. One of the indicators of where the company is heading in the next 10 years is illustrated by a recent name change to Satterfield Aerospace.

**Some things never change** Looking back at changes in the industry, Satterfield observes: "What keeps us going today is what got us started years ago, this urge to solve problems and be able to do it rapidly. I believe it's a necessary ingredient. There's an endless demand for innovation, and to make it in aircraft you have to enjoy working under pressure. We continue to accept these types of problems for the thrill of inventing and collaborating on the edge of a major deadline. But it's also because it helps cement our reputation as an innovator and, more importantly, as a reliable resource, in an industry that has always depended upon a worldwide network of highly responsive problem solvers." **END**

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