





## spicetime

Airbus is approaching decision time on whether to take its SPICE galley to market as a replacement for the decades-old standards that govern current equipment design

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The SPICE galley, fruit of Airbus's effort to develop a new standard for onboard catering equipment, has progressed from award-winning concept to prototype hardware, already tested with caterers and flight attendants. The next step is full-scale cabin testing to allow complete validation before deciding on offerability.

Designed around the ATLAS tray size, the basic unit of the most widely used of three standards that have defined aircraft galleys for the last 40 years, SPICE stands for SPace Innovative Catering Equipment. And the motivation behind it is not simply the age of the existing standards. By eliminating the traditional service cart and making better use of the volume above the counter, it aims to liberate cabin space, save weight and improve crew productivity.

Instead of the conventional serving trolleys, SPICE uses foldable service carts that remain on board and big loading carts from which standard units slide directly into the galley. A power-assisted lifting device, the transfer table, helps crew move the standard units to and from higher positions, so that they can be stored above as well as below the counter.

In 2007 the concept scooped the inaugural Crystal Cabin award for Comfort and Health. So how has it translated to physical reality, and where does it go from here?



SPICE GALLEYS  
CAN BE LOADED  
IN THE SAME SORT  
OF TIME AS ATLAS  
GALLEYS



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01. SPICE replaces today's meal trolleys with lighter meal boxes, which are then transported in the cabin using a folding serving cart

**PROTOTYPE TRIALS** "We have worked on building a prototype equipment for handling trials, including galley, transfer table and folding service cart," says Jonathan Norris, vice president cabin design, Airbus Operations GmbH. "We have also produced new concepts for galley inserts (GAINs). The prototype is now complete and functional with mock-up galley inserts."

Airbus has also worked with all the major caterers to design equipment to enable them to move SPICE boxes around on the ground. "We produced a simple device called a skater, which effectively just adds wheels to a meal box," explains Norris. "Since this was developed we have completed tests in three flight kitchens to ensure the compatibility of SPICE with their current production processes." The results were very encouraging, he says, uncovering no showstoppers from the caterers' point of view.

The final test focused on aircraft loading using the prototype galley: "The important thing here is that it doesn't take any longer to load an aircraft that has SPICE galleys, something that could impact aircraft turnaround times." The results of trials with three caterers were "excellent", says Norris, showing that SPICE galleys can be loaded in the same sort of time as ATLAS galleys.

Apart from the introduction of the skater, the trials led to only minor modifications of the galley concept itself. Testing with flight attendants, for example, revealed the

need for alignment aids in the form of markings on the galley and the folding service cart to make it easier to put the cart in the right place for loading meal boxes.

Suppliers involved in the production of equipment so far include Aerocat, which is providing lightweight plastic SPICE boxes; and Diethelm-Keller, which is supplying metal SPICE boxes. "We have also worked with DeSter to design new packaging concepts that take advantage of SPICE's 9g compartments," Norris adds. "In terms of the monument itself, we are working with a very well-known supplier of cabin equipment for design and production of both galleys and inserts." Commercial sensitivities prevent him from identifying the galley maker at this stage.

In parallel with the physical trials, meanwhile, Airbus has completed numerous assessments of the value of SPICE to airlines: "The most obvious economic benefits are in the weight saving and increased seat-count," says Norris, "but we have also found that SPICE has great potential for improving crew productivity." The calculations factored in quantified extra costs on both the airline and caterer side as a result of "recatering events" and caterer investment in skaters for example.

Nevertheless, he says, "when we put our conservative numbers into a fleet-plan model to quantify the financial effects over time, we find that SPICE typically generates US\$2.5 million to US\$3.5 million of additional value per



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new-delivery twin-aisle aircraft, depending on how far the airline is prepared to go in embracing SPICE's innovation potential." In retrofit cases, he calculates that payback takes between three and five years, again depending on how much of SPICE's potential the airline embraces.

**SAVINGS SPECIFICS** The SPICE team found that the typical weight saving would be about 600kg on a twin-aisle aircraft and double that for an A380. This is mainly as a result of the fact that SPICE boxes do not need wheels or a 9g-capable structure, since SPICE galley compartments are certified to 9g and allow flexibility in the choice of materials for transportation of service items. "We can use cheap, lightweight plastic boxes weighing 6.5kg in place of today's trolley," says Norris. At the same time, bulk items such as bagged snacks, IFE headsets, blankets and so on can be transported in simple cardboard boxes or even just wrapped in plastic film to keep them dry and clean.

There is also the potential to improve seat count. "We have now compared 3D definitions of SPICE galleys for over a dozen delivered aircraft galley configurations," Norris says. "We found that a typical twin-aisle aircraft can gain two to three economy-class seats. SPICE galleys are much more space efficient than today's galleys because we have harmonised the GAIN and box sizes to the galley compartments, which produces a much more geometrically efficient design."



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Another benefit is that the use of the transfer table will enable airlines to remove health and safety policy restrictions on how many boxes can be stored in the upper part of the galley, because it reduces the need to lift and carry things around the galley. "There are also improvements in GAIN design which enable us to create denser capacity or do away with some GAINS altogether," says Norris. "For example, unlike today's galleys, SPICE's upper storage compartments are all chilled, which means that airlines won't need to provision space for 3-Mode chillers to chill drinks."

**CREW BENEFITS** In terms of improving crew productivity, Norris continues, there are two main areas where SPICE is better than ATLAS: "Firstly, SPICE solves many of the main causes of occupational hazard within galleys, namely the impact of lifting on shoulder and back pain, and the problem of blocked trolleys causing finger injuries." SPICE solves the lifting issue through the use of the transfer table, and avoids the blocked trolley issue because SPICE boxes are moved on rollers that roll only forward and backward, unlike trolleys, which have castoring wheels that can flip around into any orientation like a supermarket trolley.

The second area where SPICE improves crew productivity, Norris says, is by making service delivery

02. Airbus says SPICE greatly improves working conditions for crew
03. The folding service cart



04. Meal boxes weigh as little as 6.5kg

more efficient. For example, SPICE's 9g compartments make it possible to use boxes that both contain drinks and other items for transportation and are used directly during the service: "That means service items can be pre-prepared for service by the caterer, come straight out of the galley for service and slot directly onto the folding service cart." Today, by contrast, everything must first be taken out of standard units then rearranged into Vario drawers before being placed on top of the trolley.

**COST CONSIDERATIONS** Airbus has also been working to quantify the costs involved. The biggest, Norris says, are the recurring cost impacts caused by operating dual galley standards: "The cost here is driven by what we have called re-catering events, when an aircraft needs to be swapped and the airline can only put in place a replacement aircraft with a different galley standard. That means the caterer has to rebuild the catering load, which can take up to three hours."

Fortunately, there are many factors that reduce this cost, mainly the fact that crew type rating considerations usually force airlines to schedule the same aircraft type.

There are likely to be extra costs for the caterers, too, Norris admits: "They will probably be the ones who have to invest in simple devices, like the skater, to move the SPICE boxes around on the ground." They may also need to rent extra floor space in some locations for storage of dual sets of galley equipment: "These are items that are likely to feed back into their pricing, although they themselves say that it is difficult to quantify by how much when competition between caterers is taken into account."



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**WAY FORWARD** The prototype is currently being used for market validation activity with up to 15 airlines, as well as caterers and suppliers. Airbus will use the feedback from this customer focus group to decide on the offerability status of SPICE. Because it has not yet been launched, the galley B/E Aerospace is developing for the A350 is based on the existing ATLAS and ARINC 810 standards.

Given a positive decision on offerability, Norris says, the next step will be to produce full engineering prototypes for galleys and GAINS – an activity that is already under way with the galley supplier.

Ground tests will then be carried out to prove galley performance parameters such as loading, chilling, cooking times and quantities. Then there will be flight tests to examine the behaviour of the galley during flight, establish the maturity of key elements such as the transfer table, and to complete trials with passengers and caterers benchmarked against today's ATLAS performance: "We hope to complete this part of the activity with a willing partner airline."

Finally, he says: "Taking the prototype to production standard for availability next decade means deciding on our strategy for offerability on our individual programmes, then identifying suppliers and clarifying the offer details."

So the reaction of the airline focus group is crucial: "We have yet to meet an airline which hasn't encouraged us to push ahead with SPICE after seeing the prototype, but the devil is in the detail and it is here that we have to prove to our customers that SPICE makes sense" ☑

#### CONTACT

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