The Psychology of Comfort in Airplane Interior Design

Shape, color, patterns and lighting influence how travelers feel

Spanish Version(PDF)

Designers of airplane interiors think first and foremost of the passenger during the design process: What colors and patterns are most restful to weary travelers? What shapes and lighting will make passengers feel most comfortable?

They evaluate these combined elements to determine which will provide the maximum sense of comfort -- especially to passengers on very long flights.

"The idea is to give airplanes a more residential feeling, with relaxing colors and restful designs," said Shelly Zundell, a senior manager with Teague, an industrial design firm in Seattle that consults with Boeing Commercial Airplanes and its customers on airplane interiors.

Designers have found that curved shapes are friendlier and create a more comfortable environment in the airplane passenger cabin.
For instance, a sculpted ceiling with gentle curves, developed for the Boeing 777 and now on other models as well, makes an airplane cabin feel more spacious. The gentle curves are repeated in the design of the overhead luggage bins and the sidewalls.

"Curved shapes are friendlier and feel safer than hard edges," Zundell said.

P.J. Wilcynski, a Boeing airplane interior manager, seconds this notion.

"It has been a consistent philosophy in recent years that we stay away from hard lines or flat surfaces," he said.

The ceiling and luggage bins of most airplanes usually have the same neutral color, but Teague works with airlines to help them select colors for other parts of the cabin that will create the desired mood and atmosphere.

Color psychology plays an important role in developing the overall look. Studies show that people in different cultures associate certain colors with similar emotions or concepts. Blue/green is nearly unanimously associated with peace. Pink and lavender shades connote love, while blue/purple may signify nobility.

Designers who specialize in color psychology have found the value of the color also matters. Lighter colors may make something seem higher, larger, wider and more open. Darker colors give the feeling of lower, smaller, narrower and more enclosed spaces.

"Colors also can influence a person's perception of humidity, temperature and aroma," said Virginia Tripp, a Teague designer who studies color psychology.

Orange, for example, may make a person feel warmer, and blue/green may make them cooler. Green (moist) and orange (dry) can signify extremes of humidity. Blue can send a message of clean or fresh fragrance, while pink may imply something sweet.

Cabin wall patterns also may contribute to a passenger's sense of comfort. Soon, for instance, Boeing will add three new sidewall motifs for airlines to select that repeat some patterns found in nature.

"These designs help create the relaxing environment that people find in the outdoors," Tripp said.

Like in a home, lighting in the passenger cabin plays a role in overall comfort.

Designers of the Boeing 777 found they could place lighting so that it hit the curved surfaces of the cabin in a way that made the ambient light feel softer and the cabin feel much bigger. The result was a less cramped and more relaxing atmosphere. That look was copied when Boeing redesigned interiors for its other models.

Lights along the cabin ceiling have different brightness settings, allowing airlines to create a sense of night and day to help some passengers adjust to the different time zone when they land.

Light technology may be even more helpful in the future.

"We are experimenting with colored lights that subtly change tone according to the time of day," said Rick Fraker, Teague designer. "The idea is that colors will match a passenger's circadian rhythms and help stave off jet lag."

For the past several years, advanced seat and seat-cushion technology has increased passenger legroom on jetliners, a key comfort factor. Airlines now can choose seats with cushions that add inches of legroom.

"Boeing and seat suppliers have worked together to design seats with lower backs and different cushion foam densities that can add up to 3.5 inches (8.8 centimeters) of legroom," Wilcynski said.

Seats designed so that the aluminum frame supports on the bottom of the cushion are moved forward also contribute two to three more inches (five to seven more centimeters) of room for passengers' shinbones.

Also, when the 777 was introduced in the 1990s, the new shape of the airplane's body allowed Boeing and seat suppliers to offer airlines a wider seat width in economy class. That means economy-class passengers aboard a 777 on long-duration flights may enjoy another 1.3 inches (3.3 centimeters) of space than is offered on the competing Airbus A340.

Something as simple as facing fewer hassles when stowing and accessing carry-on baggage in overhead luggage bins can contribute to overall passenger comfort.

When Boeing engineers designed the 767, they made a revolutionary change in the luggage bins, and that has been further refined on the 777. Mechanisms allow the bins to drop low so a passenger can easily place luggage inside, and when closed, rise so high that even a 6 foot, 3 inch (1.9 meter) person can stand beneath them. The versatile bins and new interior now are offered on the Boeing 777 and 767 models and will be introduced on the new 747-400ER that will be delivered to Qantas in October of this year. This new Boeing Signature interior will be basic on 747-400XQLR.

The redesigned interior on the Boeing 737 and 757, inspired by that of the 777, features a luggage bin designed to accommodate more passenger bags than on previous 737 and 757 models.

A big benefit of the new bins on Boeing models is that they hold more luggage than bins on other jetliner models.

"If your carry-on bag can fit overhead, that means it doesn't have to go on the floor in the space where your legs should go," Wilcynski said. "Passengers who can stretch out their legs during a flight are going to be more comfortable."

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