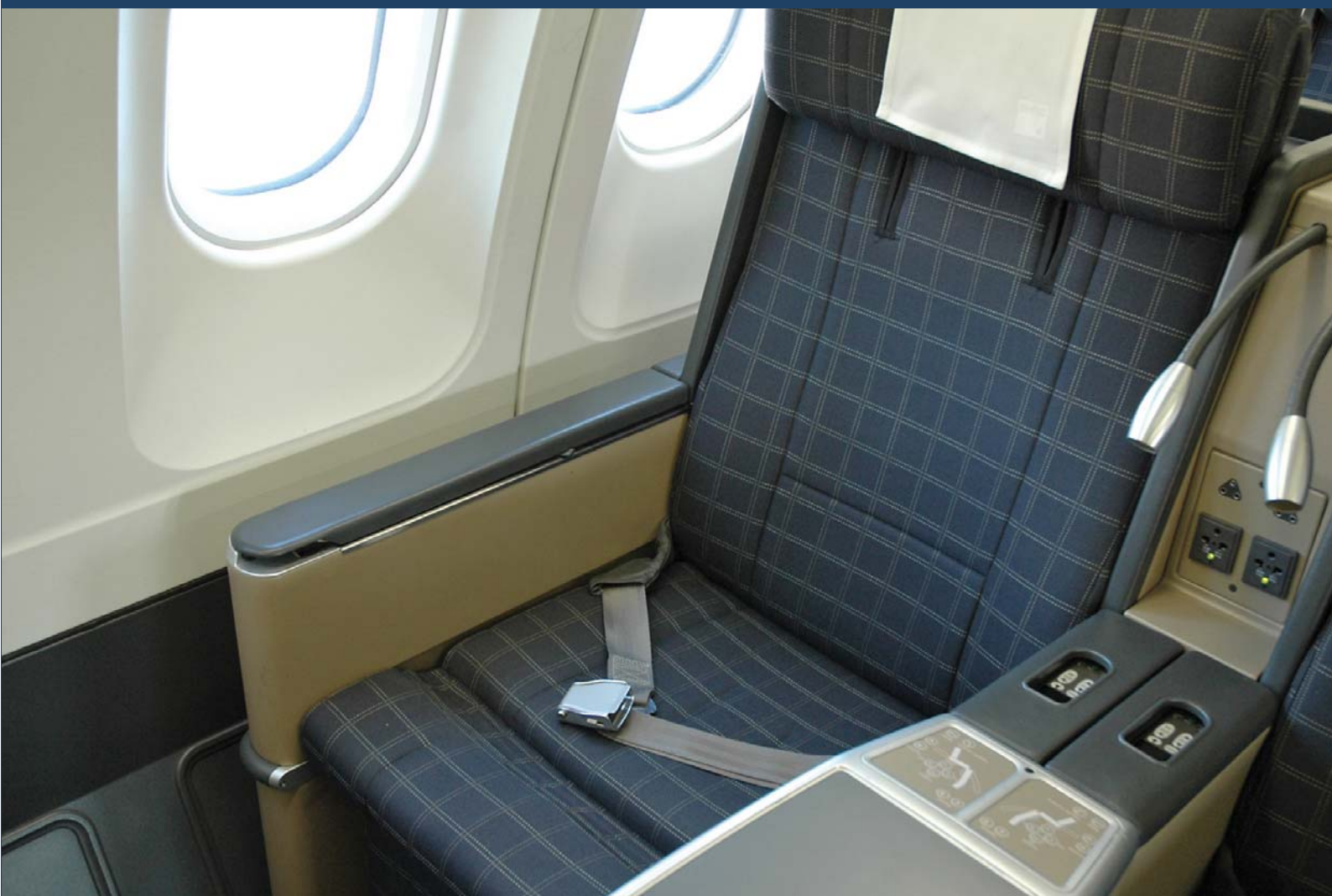


# Aircraft Textiles

Interior fabrics and air cabin fashion  
25 supplier profiles

From the  
publishers of  
**mobileTex**



Geoff Fisher

**tms**  
Textile Media Services

# Aircraft Textiles

Interior fabrics and air cabin fashion

25 supplier profiles

1st edition May 2009

By Geoff Fisher



Textile Media Services

# Foreword

In the early 1990s, Switzerland's Lantal Textiles, which itself only entered the aircraft interior textiles market in the mid-1950s, had a virtual monopoly on aircraft seat fabric. Today, the company still commands a leading share of this sector and has a significant position in aircraft carpets and other textiles.

However, other players have entered the business. Most notably Botany Weaving, which has quickly become the second largest supplier of aircraft seat fabric and has also begun manufacturing and supplying carpets and other soft interior products for the aviation sector.

The rest of the market is divided up between a few smaller specialist companies or other larger producers, whose core business is in contract and residential carpets and furnishings but have relatively minor, although growing, positions in transportation textiles, including the aircraft, automotive, bus, rail, ferry and cruise sectors.

A key strategy for aircraft textile producers is to become a single-source supplier, which includes supplying seat fabrics, carpets, curtains, blankets and leather products.

However, an overdependence on the aviation sector has its risks, as AaBe Textiles of the Netherlands discovered when it went bankrupt at the end of September 2008 after nearly 200 years of trading. The company had latterly attempted to reinforce the manufacture of interior products for the contract furnishing sector, including curtain materials and upholstery fabrics, and also tried to revive its former blankets business.

AaBe's vulnerable position came to light in the crisis in the aviation sector that followed the attack on New York's World Trade Center in September in 2001 and was exacerbated by the global financial crisis, which began to hit the industry hard in the second half of 2008.

The official receivers agreed it was the costs involved in the aircraft sector that caused the company's failure, considering the length of time between initial contact and final contract and the high costs involved in testing.

From a technical viewpoint, the strict quality and regulatory demands of the aviation industry makes textile production in this sector a tough business. Safety factors, such as flame resistance and low static qualities, must meet other physical requirements, such as durability, stain resistance, cleanability and light weight, as well as comfort and aesthetic properties, not to mention price issues.

The hurdle of obtaining certification is the main barrier to entering this market, especially from potential competitors, who mainly sell on price and are only interested in large volumes.

\* \* \*

This first edition of *Aircraft Textiles: Interior fabrics and air cabin fashion* is divided into several sections:

The Introduction provides an overview of the global aviation industry and the wide-ranging use of textile materials in aircraft, including:

- key trends in the global aviation industry;
- principal drivers for aircraft interiors;
- raw materials;
- current and future production methods;

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# Introduction

Textile furnishings, including seat covers, curtain fabrics, carpets, wallcoverings, blankets and headrest covers, are an important element of any aircraft interior. Covering around 55% of the visible interior surface, textiles enable an airline to develop and reinforce its corporate identity and offer much greater scope for customisation than most other interior products. Passengers register an airline's identity within the cabin environment through the stimuli of a number of factors in which textiles have the greatest part to play.

The scope of this introduction is targeted at commercial aircraft with 20 or more passengers, as regulated for fire safety by the US Federal Aviation Administration (FAA); it excludes VIP business jets, government aircraft, military aircraft and helicopters.

## Manufacturers of commercial aircraft

US-based Boeing is the world's oldest aircraft manufacturer, having been established in 1916 in Seattle, Washington. It is also the largest global aircraft manufacturer by revenue, orders and deliveries, and is the largest US exporter. Boeing's commercial aircraft represent three-quarters of the global fleet, with nearly 12,000 jetliners in service. The latest models, seat capacity and cabin floor area are summarised in Table 1. Boeing announced in February 2009 that despite the two-year delay to its B787 programme it is still planning the first test flight for the second quarter of 2009 and to deliver the first B787 in the first quarter of 2010. A Siberian airline cancelled orders for 15 B787s thus reducing total B787 orders from 910 to 895.

**Table 1: Passenger capacity, cabin floor area and interior textiles usage of Airbus and Boeing commercial aircraft**

| Aircraft      | Passenger capacity | Floor cabin area (m <sup>2</sup> ) | Indicative amount of interior textiles (m <sup>2</sup> ) |         |
|---------------|--------------------|------------------------------------|--|---------|
|               |                    |                                    | seat covers  | carpets |
| <i>Airbus</i> |                    |                                    |  |         |
| A319          | 124                | 83                                 | 250  | 83      |
| A320          | 150                | 97                                 | 300  | 97      |
| A330-300      | 295-335            | 263                                | 740-830 <sup>2</sup>                                     | 263     |
| A340-500      | 313                | 278                                | 780 <sup>2</sup>   | 278     |
| A380          | 555                | 622 <sup>1</sup>                   | 1,380 <sup>2</sup>                                       | 622     |
| A350 XWB      | 270                | 250                                | 670 <sup>2</sup>   | 250     |
| <i>Boeing</i> |                    |                                    |  |         |
| B737          | 126-180            | 105                                | 250-360  | 105     |
| B777-300      | 370                | 293                                | 920 <sup>2</sup>   | 293     |
| B747-400      | 416                | 350                                | 1,040 <sup>2</sup>                                       | 350     |
| B787-8        | 210-250            | 220                                | 530-620 <sup>2</sup>                                     | 220     |

<sup>1</sup> based on 328 seats in the upper deck and 294 in the lower deck

<sup>2</sup> based on a split of 5% first class, 20% business class and 75% economy class seats

Source: Airbus, Boeing

Originally a consortium of aerospace manufacturers, Airbus was established as a simplified joint stock company in 2001 as a subsidiary of European consortium EADS and is based in Toulouse, France. The company produces around half of the world's jet airliners and is presently in fierce competition with Boeing. Airbus has delivered 5,303 aircraft from the start of its production up to July 2008 and its recent production models are summarised in Table 1. Production difficulties have delayed deliveries of A380 by nearly one year.

Bombardier Aerospace of Canada is the third largest civil airframe manufacturer supplying the CRJ 100, 200, 700, 900 and 1000 models, each with a capacity of 50-100 passengers. It also manufactures turboprop aircraft (Q100, Q200, Q300, Q400). A total of 327 aircraft were delivered in 2005, 326 in 2006 and 361 in 2007. At the Farnborough International Airshow held in the UK in July 2008, Bombardier announced the new CS series, which is a new "green" aircraft that is claimed to emit 20% less carbon dioxide (CO<sub>2</sub>), consume 20% less fuel and offers a 15% lower overall transportation cost. This is achieved with a new, innovative motor and new lighter-weight composite materials. The passenger capacity is 100-150 and this is the first time that Bombardier could be competing with smaller Airbus and Boeing aircraft.

Embraer of Brazil is the fourth major commercial aircraft manufacturer, offering a range of small-capacity aircraft with less than 100 passengers. In 2005, 141 aircraft were delivered, 130 in 2006 and 169 in 2007.

Aerospatiale of France supplies small, commercial ATR 72 turboprop aircraft for 40-50 passengers. As of January 2007, a total of 323 of ATR 72 aircraft had been delivered worldwide with orders pending for 113 aircraft.

### Competition between Airbus and Boeing

The total orders and deliveries from Airbus and Boeing from 1997 to 2008 are summarised in Tables 2 and 3 and illustrate the intense competition between the two

**Table 2: Total orders for Airbus and Boeing, 1997-2008**

|        | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005  | 2006  | 2007  | 2008             |
|--------|------|------|------|------|------|------|------|------|-------|-------|-------|------------------|
| Airbus | 460  | 556  | 476  | 520  | 375  | 300  | 284  | 370  | 1,111 | 824   | 1,341 | 711 <sup>1</sup> |
| Boeing | 543  | 606  | 355  | 588  | 314  | 251  | 239  | 272  | 1,002 | 1,044 | 1,413 | 551 <sup>2</sup> |

<sup>1</sup> to 31 July

<sup>2</sup> to 6 August

Source: Airbus, Boeing

**Table 3: Total deliveries from Airbus and Boeing, 1997-2008**

|        | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008             |
|--------|------|------|------|------|------|------|------|------|------|------|------|------------------|
| Airbus | 126  | 182  | 229  | 294  | 311  | 325  | 305  | 320  | 378  | 434  | 453  | 286 <sup>1</sup> |
| Boeing | 375  | 563  | 620  | 491  | 527  | 381  | 281  | 285  | 290  | 398  | 441  | 277 <sup>2</sup> |

<sup>1</sup> to 31 July

<sup>2</sup> to 6 August

Source: Airbus, Boeing



# Bute Fabrics

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Bute Fabrics designs and manufactures contemporary wool and wool-blend upholstery, screen and curtain fabric on the Isle of Bute in the Firth of Clyde on the west coast of Scotland. The company was founded by John Crichton-Stuart, the 5th Marquess of Bute, in 1947, and it now collaborates with leading contemporary designers, such as Tom Dixon, Jasper Morrison and Barber Osgerby.

With around 50 employees, the company was originally established as Isle of Bute Industries to provide jobs on the island for service men and women returning from the Second World War, using the wool and skills of the area. In the 1940s and 1950s, the company made its reputation weaving apparel fabrics on hand-loomed for the fashion industry under the name of Bute Tweeds then Bute Looms, supplying couture houses such as Hardy Amies with Donegal tweed designs that were in vogue at the time.

In 1970, powered dobby looms were introduced and the company was renamed Bute Fabrics in 1977. By this time, production had become focused on seating upholstery, with early contracts in this sector for major names in office furniture, such as Steelcase and Herman Miller. By the 1980s, the output of this small but fully equipped mill was exported as far away as Australia and Japan, although the principal markets are the UK and other Europe countries, as well as the US.

Recently, Bute Fabrics has relaunched its image, raised its corporate profile and introduced new collections in collaboration with some of the best talent in the design community. The company produces wool and wool-rich fabrics for the contract, auditoria, hospitality, interior furnishings and residential markets. For example, Bute has supplied materials for such prestigious UK projects as the Royal Festival Hall in London, the Wales Millennium Centre in Cardiff and the Sage Music Centre in Gateshead.

## **Aviation**

For several years, Bute Fabrics has supplied specialist and bespoke fabrics for the commercial and private sectors of the aircraft industry, with the textural weaves and subtle colourings of Bute's fabric range being highly suited to the increasingly classic interiors of aircraft, particularly in business and first class. For example, in 2005 Bute was commissioned to provide fabric for five Thomas Cook aircraft with CF 727 Argyll.

In addition to the traditional use of vibrant colour and pattern in fabrics for aircraft interiors, the standard Bute Collection's textured fabrics and wide range of colours also offer a more tranquil and classic palette of colours and textures for use in contemporary interior schemes.

At the 2008 Aircraft Interiors Expo in Hamburg, Germany, Bute Fabrics in association



with Carter Green Aerospace (page 127) introduced the Island Collection comprising three new patterned fabrics designed specifically for the aircraft market, ranging from an all-over multicolour fleck fabric to more graphic geometric patterns.

Specialist stretch fabrics are woven wide in loom and in finishing the elastane element is activated to produce a fabric with up to 15% stretch both ways. These have been used extensively for the bulkheads of the luxury small private jet market. This fabric has been further developed and is now being launched in a palette of some 18 colours.

All Bute's fabrics for the aircraft market have been tested to FAR 25,853 a and can be supplied to this standard on request. In addition, Bute Fabrics has its own design studio, which enables it to collaborate with other designers, seat manufacturers and airlines to create unique designs or customise existing fabrics. Bespoke textiles can be created to provide solutions for specific projects, enabling companies to create their own signature fabrics.

Additionally, all fabrics can be piece dyed to any RAL or Pantone reference, or colour-matched to a sample piece. Alternatively, yarns can be similarly colour-matched to produce unique fabric colourways.

## **Airports**

Bute Fabrics has also provided fabric for airports all over the world. Busy airports are a stringent test for good-quality fabrics, and the company has proved that its fabrics can stand the test of time.

Bute was privileged to supply the original fabric for Chep Lap Kok Airport (Hong Kong International Airport), as specified by Foster & Partners of London, UK, in 1998. Ten years later, Bute Fabrics was again selected for the refurbishment of this airport.

In the UK, Bute supplies many independent airports, such as Manchester and Bristol, as well as providing fabric for all British Airport Authority (BAA) airports in the UK — London Heathrow, London Gatwick, London Stansted, Glasgow, Edinburgh, Aberdeen and Southampton.

Kuala Lumpur, Singapore and Kirkenes (Norway) airports, as well as United Airlines lounges and Virgin airline lounges, including the JFK lounge, have all benefited with fabrics from Bute.

## **Quality**

In 2003, Bute Fabrics was awarded the ISO 9001:2000 accreditation for upholstery fabrics manufactured to the requirements of severe contract standards.

The company's strict quality procedures guarantee that every single metre of fabric is quality checked many times over at every stage of the production process. Attention to detail both in the manufacturing of fabrics and attention to the customer are of key importance to every employee.

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
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