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**FOR PUBLICATION**

project title  
industry sector  
client company  
design consultancy  
submission date

Vantage XL aircraft seating  
2713 Aerospace  
Thompson Aero Seating Ltd  
Factorydesign  
26<sup>th</sup> June 2015

Design Effectiveness Award entry 2016

# 1.0 Executive Summary

Thompson Aero Seating Ltd is a manufacturer of premium aircraft seats based in Northern Ireland. Starting as an engineering company licencing a seat patent, in 2011 they progressed to become a manufacturer of their own seats, selling products all over the World.

Building on the success of their first product (designed by Factorydesign) called Vantage, they turned again to Factorydesign to help them identify and define the strategic opportunity for a more premium product to address market demands, then to design and develop this new seat, called Vantage XL.

This second seat platform in their catalogue has been designed as a generic, modular product with the ability to be easily customised for different airline customers and multiple aircraft platforms. Vantage XL has opened new markets, won new customers, helped Thompson Aero to be granted factory line-fit approval with Airbus and Boeing, increased export sales and increased employment in the region. The seat provides a crucial combination of enhanced passenger experience and optimised cabin seat count.

Without any advertising spend, from zero in 2011, and with the introduction of Vantage XL in 2013, sales have increased turnover to over £51million, with customers in Europe, USA and Australia.



Thompson Aero Vantage XL

## 2.0 Project Overview

### 2.1 Outline of project brief

Together with Factorydesign, Thompson Aero successfully developed a predecessor aircraft seat; the standard Vantage. The seat was initially licenced for manufacture, prior to Thompson setting up their own manufacturing facility in Northern Ireland in 2011. Where once it was possible to sell business class as a 'Lazy-Z' pair, requiring the outboard passenger to 'step-over' the person next to them to reach the aisle, the minimum requirement for any leading airline has become fully lie-flat beds. A need met by the original Vantage. Now, through the market's continual demands to add benefits for the passenger, direct aisle access has also become an essential minimum requirement. Thompson Aero asked Factorydesign to help them assess how this challenge could be met, to develop a completely new seat offer that would meet this demand by maximising the cabin passenger density, while also providing a fully-lie flat bed and direct aisle access for every passenger. This seat is called the **Vantage XL**.

### 2.2 Description

Based on an enhanced version of the standard Vantage mechanism, the Vantage XL is a completely new product in terms of layout, form and features. Thompson Aero commissioned Factorydesign to assist with the evolution and development of the seat architecture, construction, functionality, overall ergonomics and configuration of the seat, plus the aesthetic design, material selection, colour and trim, and the detailing of this new generic seat proposition.

### 2.3 Overview of market

The aviation seat market has historically been dominated by the two main airframe manufacturers (Airbus and Boeing), plus a small number of large manufacturers who supply them. The complex logistics, financial scale of programmes and complexities of engineering and aviation certification, make it a huge undertaking to set up a manufacturing operation from scratch.

Understandably, there are stringent safety standards and demanding Certification requirements within the aviation industry. In order to supply to airlines, Thompson Aero have been required to gain numerous approvals, including, among many others, EASA part 21G. This is a considerable achievement for the company, made easier by the minimised part count, ease of manufacture, successful supply chain and the organisational controls they have set up.

### 2.4 Project launch date

April 2013

### 2.5 Size of design budget

Factorydesign and Thompson Aero agreed a royalty contract for the provision of design services and for on-going design support. This arrangement for the Vantage XL has so far returned fees of £200,000.

### 3.0 Outline of design solution

The deluxe Vantage XL offers a 23 to 24 inch seat width and 100% direct aisle access. This forward facing, fully horizontal lie-flat bed provides increased living space, a large work surface and a wide range of flexible stowage options.

- Forward facing.
- Fully horizontal lie-flat bed.
- 79" (2m) bed length at 45" pitch.
- 100% direct aisle access.
- Multiple personal stowage solutions.
- Wide range of customisable styling options.
- Consistent passenger seat offer.
- EASA 16g certified.
- Meets Boeing and Airbus fire, smoke and toxicity regulations.

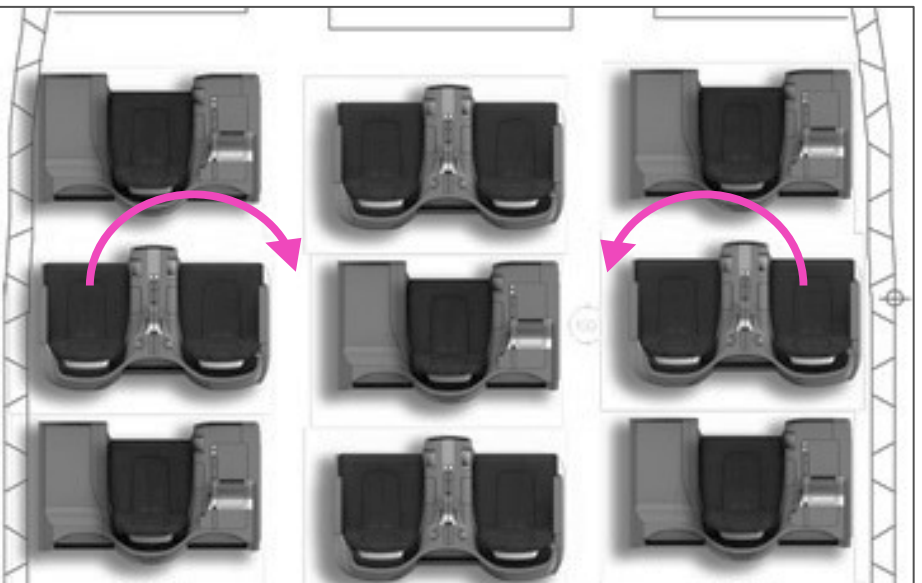
#### **Vantage XL**

No step over  
12 passenger places  
Consistent product offer



#### **Vantage (standard)**

Two step overs  
13 passenger places  
Variable product offer





## Outline of design solution (continued)

A strategic evolution of the successful standard Vantage platform, XL offers additional personal space with direct access to the aisle for every passenger, increased seat and bed width, and a wide variety of customisable stowage options.

The development of a generic new seat product is a significant step for Thompson Aero being only their second seat platform. Different customised versions of the standard Vantage have been sold and the ambition for Vantage XL was the same. That is, the development of a seat with a standard 'core' – the mechanism and base underlying structure – with carefully controllable areas that can be customisable to offer the airline customer a unique, brand relevant seat maintaining all the known commercial attributes and features.

Easy to adopt modifications have enabled Thompson to offer variations to the core seat product including: styling options, stowage options, different IFE solutions, seat cushion customisation, all of which provides each airline customer with their own version of the Vantage XL, and not simply through colour change, without major impact on the supply chain, production processes and, therefore, lead times.

**Customisation creating difference that is vital in the airline world.**



Scandinavian Airlines Business Class

## 4.0 Summary of results

### 4.1 Increase in sales and strong profit margin

From when they started manufacture, Thompson Aero's sales have increased year on year, from zero in 2011 to £20.7m in 2013 and on to £51.8m in 2015, with a consistent gross profit margin of over 20%.

### 4.2 New customers

The introduction of the generic Vantage XL has had a direct result on the successful sale to new customers. Firstly, encouraging Qantas to buy XL (styled by MNL), then Scandinavian Airlines (designed by Factorydesign the subject of this entry), and recently to one of the major USA carriers.

### 4.3 New aircraft platforms

The modularity and adaptability of the seat design enables efficient changes to be made to allow installation on multiple aircraft platforms increasing market opportunity, including : A330/340, A380, A350, B767, B777 and B787.

### 4.4 Increase in market share

Thompson Aero are selling seats into a demanding market, during a period of global financial challenges. The rapid increase in turnover is consistent with an equally rapid increase in market share. This is expected to continue, particularly, having been granted factory line-fit approval by Airbus and Boeing, provoking 'market pull' leading to multiplied opportunities for seat sales. Market share data unavailable.

### 4.5 Export : balance of payments surplus

Being an international market, aviation customers are based all over the world. Vantage XL international sales show a significant export surplus.

### 4.6 Environmental advantage

In the design of Vantage XL, the use of known manufacturing techniques has enabled Thompson to maximise the potential of their existing supply chain, and also to invest in bringing processes in-house. In doing so they have far greater control over quality, timing and cost, and also minimises the transport of components from overseas limiting their CO2 footprint.

### 4.7 Employment increases

The success of the seat sales and therefore the growth of Thompson Aero as a direct result of seat sales has required a huge increase in employment. Since 2011, staffing levels have risen from 15 to 270 bringing new jobs to the region.

### 4.8 Reduction in part count

Vantage XL has fewer seat variations in a cabin than it's predecessor. The reduced part count resulting from the standardisation of the design brings many benefits to Thompson Aero and customers. Less parts mean fewer suppliers, lower stock holding, minimum administration and an easier to manage supply chain.

## 4.0 Summary of results (continued)

### 4.9 Reduced assembly time and time to market

The generic/SAS Vantage XL seat through reduced part count and attention to detail of manufacture, has a 20% production and assembly line efficiency compared to peer products. This optimised assembly time and manufacture enables a rapid time to market of typically 12 months.

### 4.10 Improved maintenance

Proven reliability and easy maintenance mean the total cost of ownership of a Thompson seat is amongst the lowest in the industry. The low part count also benefits airlines with a lower stock and spares holding requirement.

### 4.11 Impact on market / competitors

While lie-flat beds existed in first class, prior to the introduction of the Vantage platform, premium business class seat products were, at best, a 'Lazy-Z' offer (à la Le Corbusier). Some premium seats were configured differently to improve cabin density (for example, British Airways 'ying-yang'), but the Thompson Aero Vantage was the first in the market to introduce and exploit the principle of part of one passenger seat overlapping with another (evidenced by their Patent WO2005/014395 A1).

This overlapping is a certain way to optimise the available space and features for the passenger while maximising the seat density (that is, number of passenger places) in a particular cabin. It is this delicate balance of space versus seat count that has made the Vantage and Vantage XL so popular with airlines. Since its introduction, numerous new products have been introduced by competitors that adopt similar overlapping principals, albeit often in compromised ways.

### 4.12 Industry recognition

Recognition from aviation industry is illustrated through sales.

For a new manufacturer, small in relation to competitors, to be awarded orders from Qantas (a Tier 1 airline), quickly followed by Scandinavian Airlines and a large Tier 1 North American carrier, speaks volumes for the success of the seat offer and the company's attitudes to quality, service and customer requirements. The aviation market is not influenced by broad advertising campaigns, so as a business to business purchasing decision, the product's success is measured by its sales.

*'Our airline customers are extremely satisfied with the results of our collaboration with Factorydesign.'*

*Gary Montgomery, Managing Director, Thompson Aero Seating*



Scandinavian Airlines Business Class cabin

*'Factorydesign has a very deep understanding of the intricate aspects of the Vantage XL seat geometry which is a very practical knowledge base on which to build styling flair and branding opportunities.'*

*Gary Montgomery, Managing Director, Thompson Aero Seating*

*...since they began manufacture, Thompson Aero's sales have increased year on year, from zero in 2011 to £20.7m in 2013 and to £51.8m in 2015...*



*...proven reliability and easy maintenance mean the total cost of ownership of a Thompson seat is amongst the lowest in the industry...*

*'Factorydesign has interpreted our requirements and our brand characteristics with care and intelligence. The results are fantastic and will be a huge step forward in our Business Class cabin.'*

*Senior Manager Product & Communication, , Scandinavian Airlines*

Scandinavian Airlines Business Class cabin





# Thank you

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