

NEW HORIZON

Hamburg has overcome planning hurdles and earmarked €650 million in its determination to ensure expansion of the city's Airbus facility

JUSTIN WASTNAGE / HAMBURG

Before Airbus had even named its 555-seat ultra-large aircraft the A380, the Hamburg state government had already begun fighting planning battles to reclaim part of the River Elbe to free land for expansion to Airbus Deutschland.

The state was so determined to convince Airbus of the city's obvious advantages over Toulouse and award the site the then-A3XX final assembly line, that it earmarked €650 million (\$578 million) for the 140ha (300 acre) expansion of the firm's facility at Finkenwerder, 30km (20 miles) from the city's central business district.

Linked by sea to Airbus UK at Broughton and the cockpit production line in St Nazaire in France, Hamburg would have made the logistics of bringing the large parts of the airliner together simpler. Yet despite this, after much political in-fighting, Toulouse was chosen by Airbus as the site for final assembly, which involves the manufacturer using canals and oversized road transporters to get components to the new Aéroconstellation assembly hall.

Already committed to the site expansion, Hamburg was awarded the consolation prize of undertaking major component sub-assembly (forward and rear fuselage) and interior completion. Additionally, all A380s destined for European, African and Middle Eastern customers will also be delivered from Hamburg, rather than Toulouse.

Hamburg currently assembles the A319, A321, and the new A318. Curiously, the fuselage for the other single-aisle family member, the A320 itself, is transported in the A300-600ST Beluga to a second A320 family final assembly line, again in Toulouse. This is not national politics, as most onlookers suspect, but rather sound economics, insists Stuart Mann, director of product marketing for the A320 family. It will only be changed "once the program

is dying and there is a requirement to slow production down", he says.

But despite the knock-back of not having won the final assembly line for the new airliner, Hamburg is still the largest of five Airbus sites in Germany and second only in importance to Toulouse.

The extension will almost double the total size of the site to 270ha. Such a large site is difficult to accommodate anywhere with little disruption and, without knowing the outcome of the freight location talks, the city of Hamburg considered several other possibilities for the facility, including a former submarine factory to the east of Airbus's current location. But after feasibility studies, the best solution was considered to be land reclamation and work began on expanding the location in early 2000.

When completed next year, Airbus will have spent \$10.7 billion on new facilities on the site. This includes four hangars of 1,000m² (10,800ft²) each for the ultra-large aircraft. There will be a cabin furnishing hall and the fuselage production lines, housed in the Major Component Assembly (MCA) hall, in addition to two paintshops. Airbus is confident that it will paint most of the A380s in-house, as other paintshops will be unable to accommodate it.

Despite not winning final assembly for the A380, Hamburg is still the largest of five Airbus sites in Germany



Airbus has pioneered a "light assembly" technique after years of political compromises have left subassemblers with more responsibility than their US counterparts. Described as "centres of excellence", each facility produces complete subassemblies, equipped with electrical and hydraulic cabling. This system means that the Toulouse assembly line accounts for only around 5% of the total production effort. This is indicative of national governments' desire to retain skill bases.

Challenges

With each hangar standing 37m (107ft) high at the tallest point, and measuring 100m², the challenge is to reduce the volume, says Ulrich Weber, head of A380 final assembly line activities at Hamburg. Ventilation is a major cost, as the facility has to have scrubbed air to avoid polluting paint particles. This has been achieved architecturally.

The hangar is suspended from an external skeleton and has volume minimisation compartments in the ceiling put in place once the aircraft is in the hangar. These contribute to a 30% volume saving compared with a traditional hangar. This external structure was first used on the A340 final assembly line in Toulouse and is an example, says Weber, of applying successful techniques across the company.

The equipment used inside the hangars will also benefit from shared knowledge. The A320 family completion is done in stages, a luxury not available to the massive A380. Instead, new jigs that permit