

SUPER BLIMP

Defying superlatives, this colossal new airship shed extends the tradition and technology of hangar design.

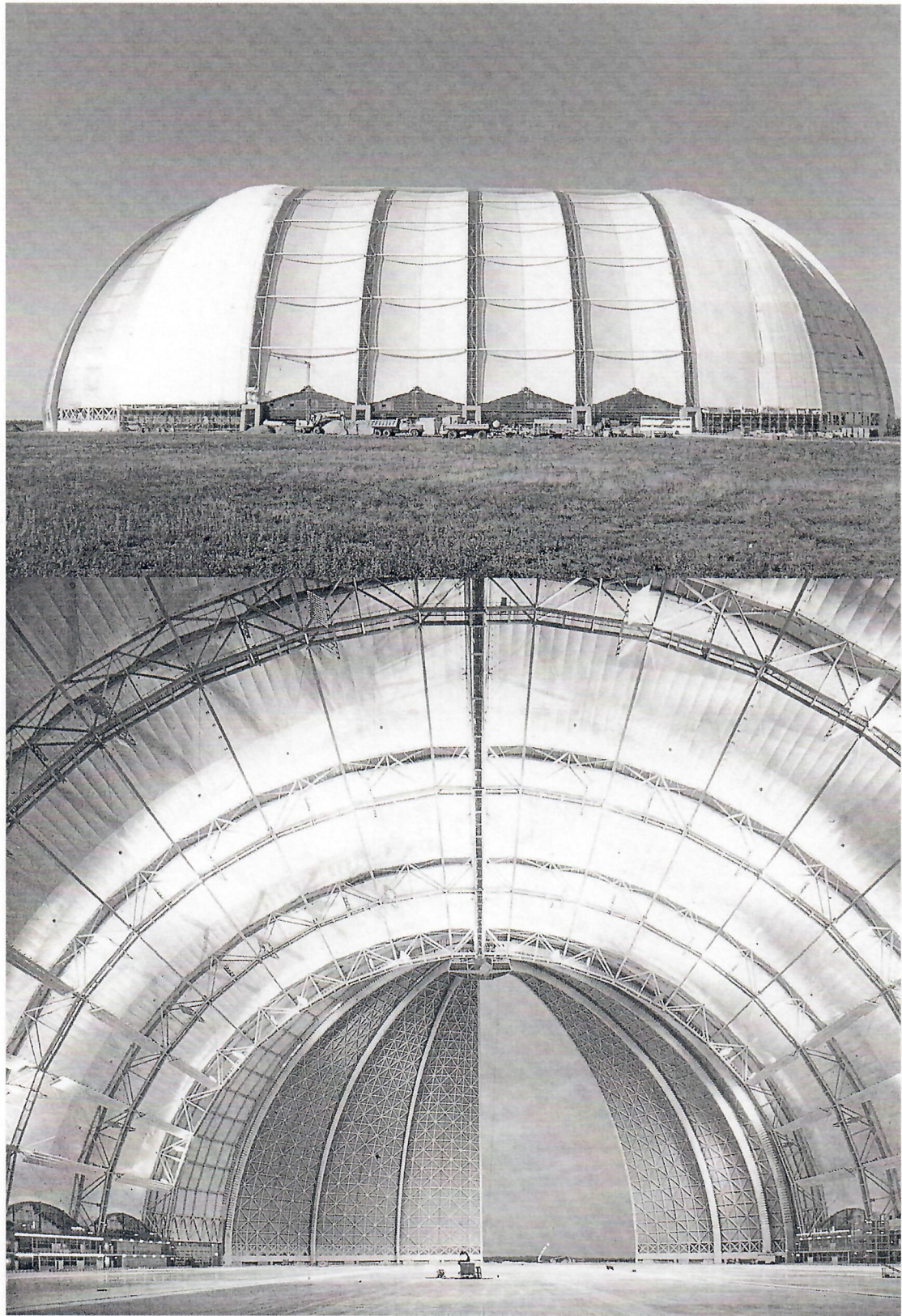
**AIRSHIP HANGAR,
BRAND, GERMANY**
ARCHITECT
SIAT

Like railway stations, bridges and exhibition halls, airship hangars induce a romantic fascination with architecture as engineering, pure form generated by the rational imperatives of structure and economics. This latest addition to an ancestry that includes mighty Zeppelin sheds and the famous Goodyear Airdock is no exception. On a former Soviet military airfield in Brand, just south of Berlin, the CargoLifter hangar has the distinction of being the world's largest single span structure. Eight football pitches could be accommodated in its

Brodingnagian interior and the Eiffel Tower easily stored on its side. At 363m long, 225m wide and 107m high it dwarfs the Goodyear Airdock hitherto thought to be the world's largest airship hangar. (Built in 1929 in Akron, Ohio, Goodyear was 358m x 99m and a mere 34m high.) Designed by SIAT architects and engineered by Arup, CargoLifter looms over its flat site, its translucent membrane skin stretched taut over an arched steel structure. Huge segmented 'clamshell' doors at each end take 15 minutes to open or close.

Germany has a strong historical connection with the airship. Early last century, numerous hangars were built across the country for fleets of Zeppelins employed for military and commercial purposes. Count Ferdinand von Zeppelin's inspired idea was to make airships rigid, so superseding the early blimps, which were fatally vulnerable to leaks from the inflammable hydrogen used to inflate them. On a July evening in 1900, the first Zeppelin drifted skywards from a floating hangar at Friedrichshafen on Lake Constance, presaging the era of

- 1 Massive segmented clamshell doors at each end of the hangar take 15 minutes to open or close.
- 2 Brodingnagian in scale, the hangar dwarfs its surroundings.
- 3 Tubular steel arches support a lightweight membrane skin.



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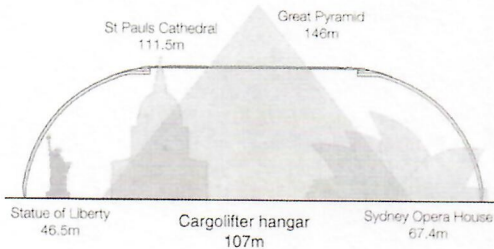
airship supremacy which lasted until the Hindenburg disaster of 1937. Nowadays airships are largely reduced to the status of flying billboards, but there are plans to revive them as environmentally sustainable carriers of cargo and people. CargoLifter intend building an 260m long 'super-airship' (three times the volume of the Hindenburg) capable of carrying up to 160 tons of cargo rapidly and economically. Unlike the Zeppelins, this new generation of helium-filled airships will have no internal skeleton, reducing self-weight and increasing load capacity.

The hangar's aerodynamic outline represents the clearance required for two airships moored side by side. It also minimizes wind loading on the structure. The cylindrical central section is divided into four bays supported by five trussed tubular steel arches at 35m centres springing off concrete plinths that also act as covered entrances. An 8m deep truss connects the arches along the ridge line and takes up the huge compression forces between the two end arches and the massive

doors. Strips of glazing inserted between the top chords allow daylight to percolate down into the interior. Ranged along both sides of the production floor, two-storey high concrete buttresses house offices and lab spaces. The huge volume of the hangar (a staggering 5.2 million cubic metres) is heated from underfloor sources and a series of radiant panels hung from the steel structure.

None of the early German airship hangars survives and documentation on their construction is scarce, nevertheless the CargoLifter represents a clear extension of the lineage, drawing on contemporary developments in the design and detailing of large span structures. As the airship is reinvented for the new century, so the form of its hangar also continues to evolve, with awesome results. C. S.

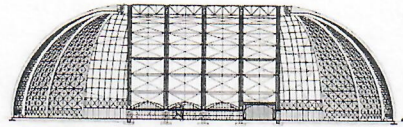
Architect
SIAT Architektur + Technik, Munich
Structural engineer
Arup
Landscape architect
Cordes + Partner
Photographs
Palladium



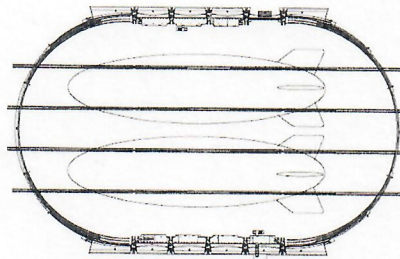
comparative scale diagram

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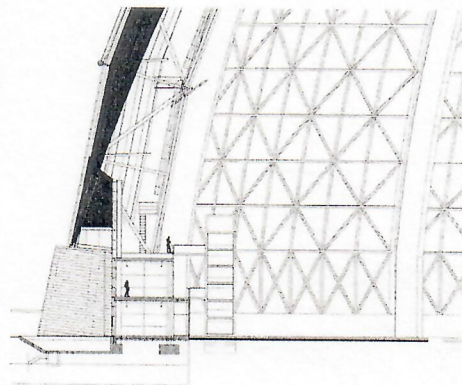
- 4 Light filters down through glazed sills in the huge roof.
- 5 Concrete buttresses at the base of the external wall house office and lab spaces.
- 6 Detail of roof structure.



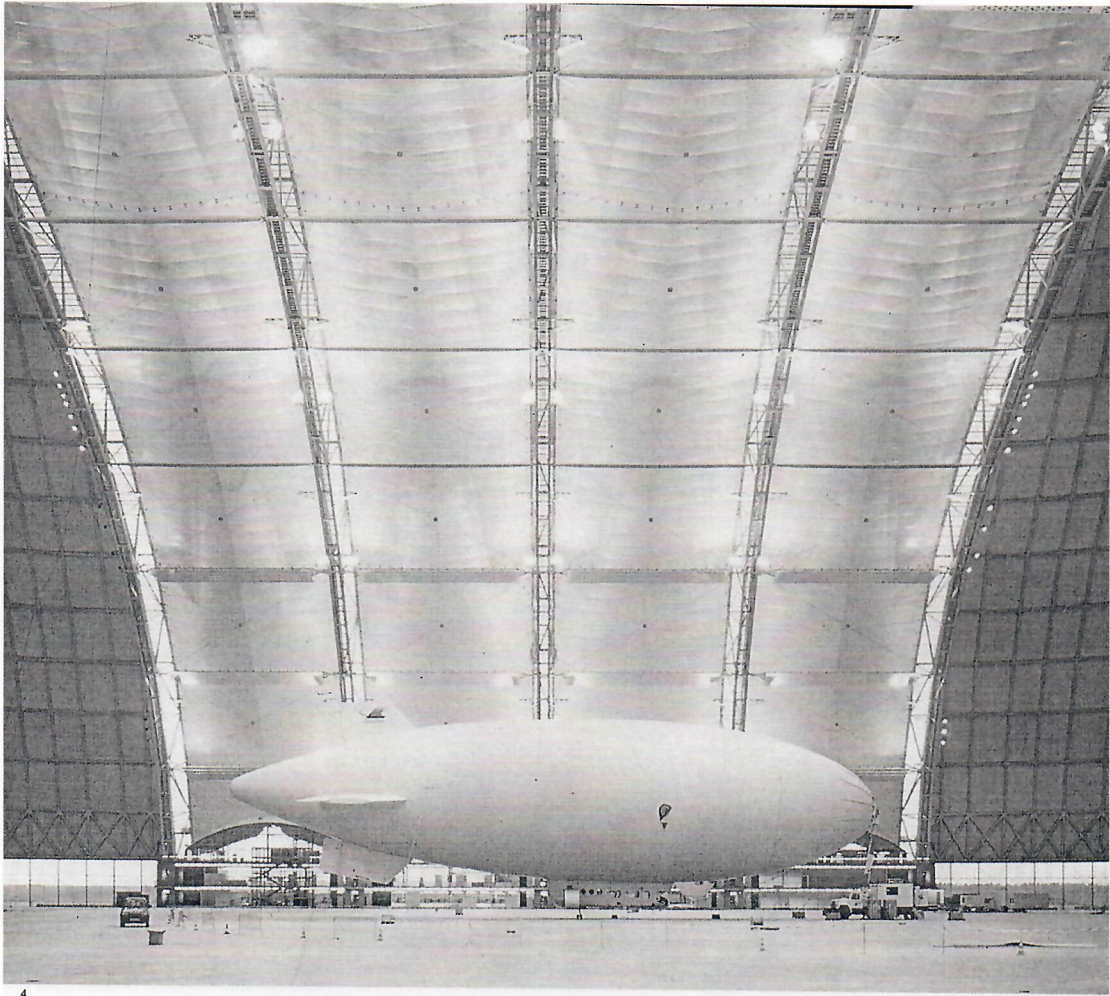
long section



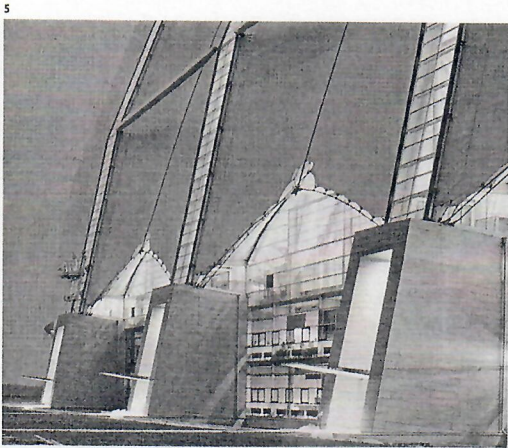
ground floor plan (scale 1:5000)



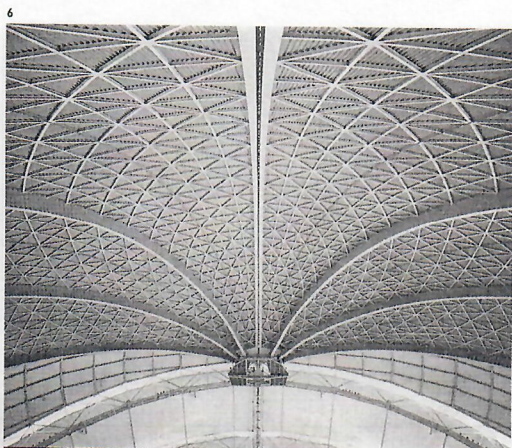
detailed section through base of external wall



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