Schwarzmann Aircraft Hangars

schwarzmann

Hangar case studies

MRO hangar at Berlin Brandenburg – Germany

Vienna Aircraft Handling – Austria

Adria Tehnika – Slovenia

Flughafen Graz, Austria

Croatia Airlines - Croatia

Benefits of choosing Schwarzmann

Double MRO hangar at Berlin Brandenburg

Client requirements:

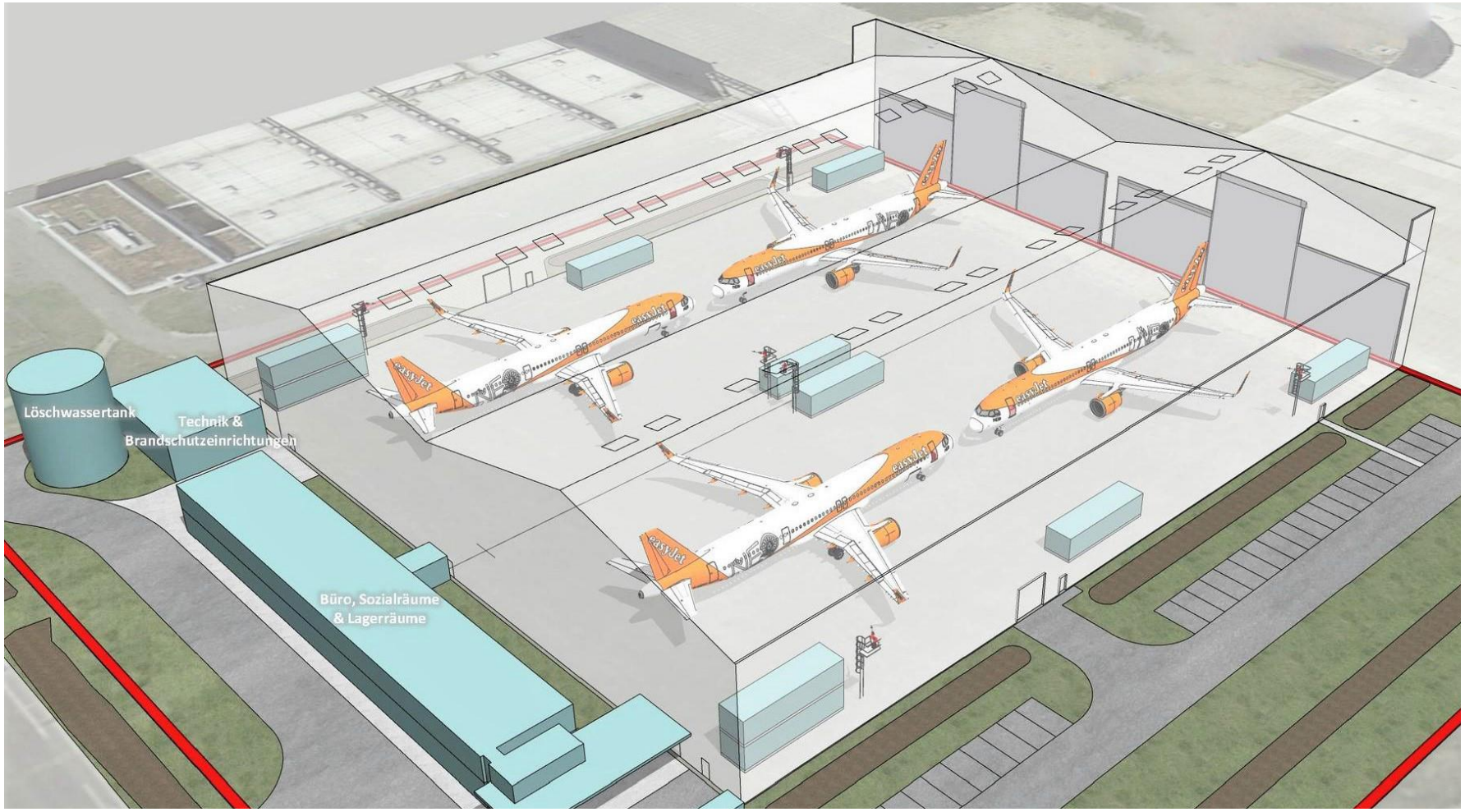
- Double MRO hangar for simultaneous maintenance of four A320 aircraft
- Insulated facility - controlled environment for aircraft servicing
- Maximum gable opening for easy aircraft manoeuvring
- Fire safety requirements

Solutions:

- Double hangar measuring 2x 46 x 108 x 15,5 m
- Two bay structure joined at the long side - no dividing wall
- Insulation of 120 mm PIR sandwich panels
- Design and structural analysis
- Technical characteristics compliant with local standards - DIN

3D visualization – Berlin Brandenburg

3D visualization – Berlin Brandenburg



Construction – Berlin Brandenburg

Construction – Berlin Brandenburg

Construction – Berlin Brandenburg

Finished Double MRO hangar – Berlin Brandenburg

Finished Double MRO hangar – Berlin Brandenburg

Vienna Aircraft Handling hangar

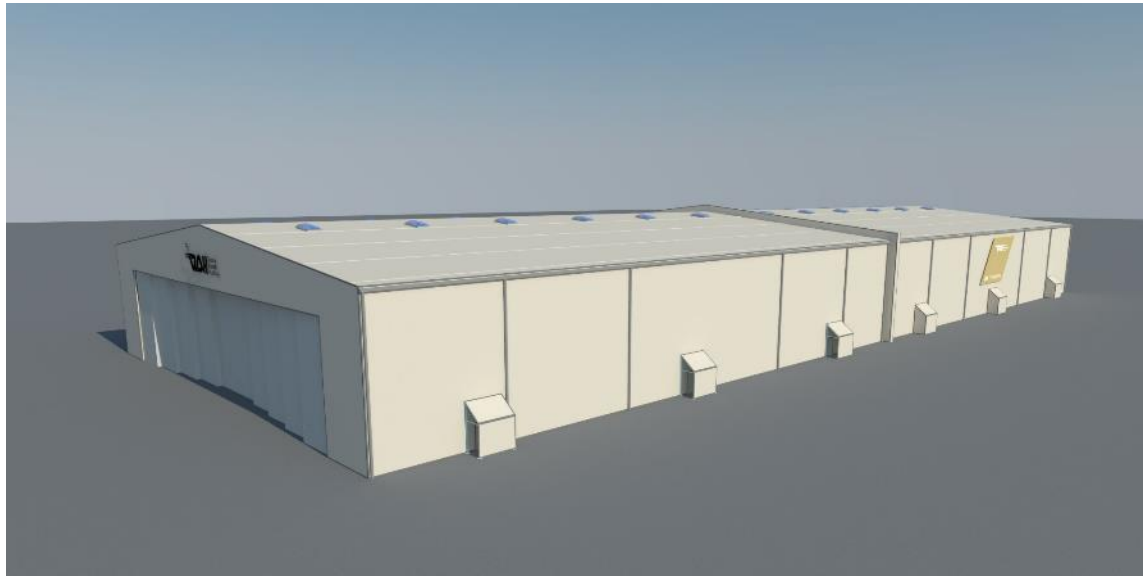
Requirements:

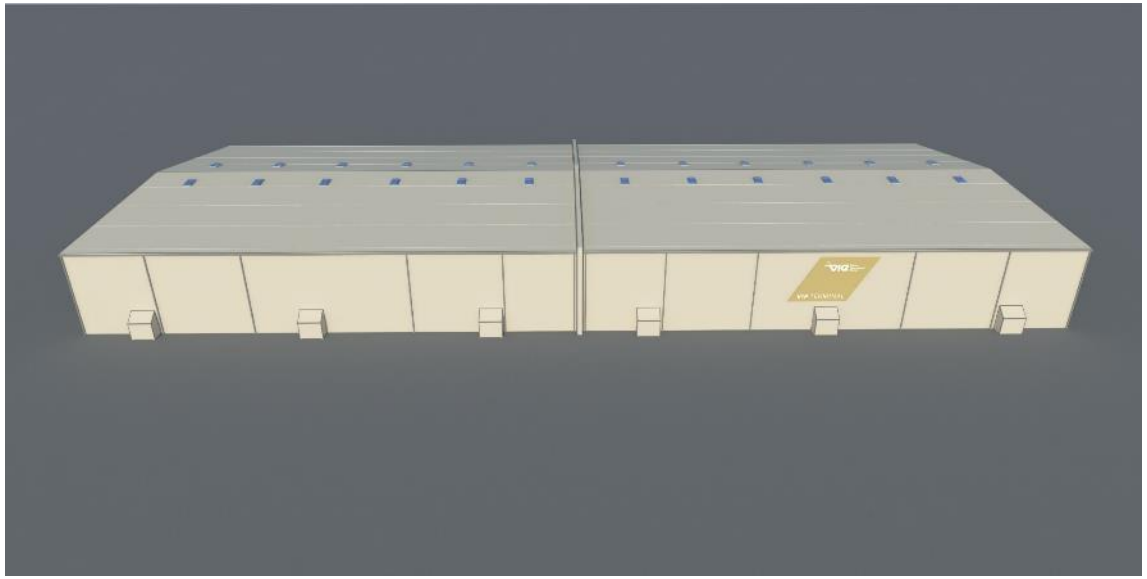
- 8050 m^2 of aircraft parking space
- Fire safety requirements
- Controlled environment for aircraft servicing
- Gable opening as large as possible for easy aircraft manoeuvring

Solutions:

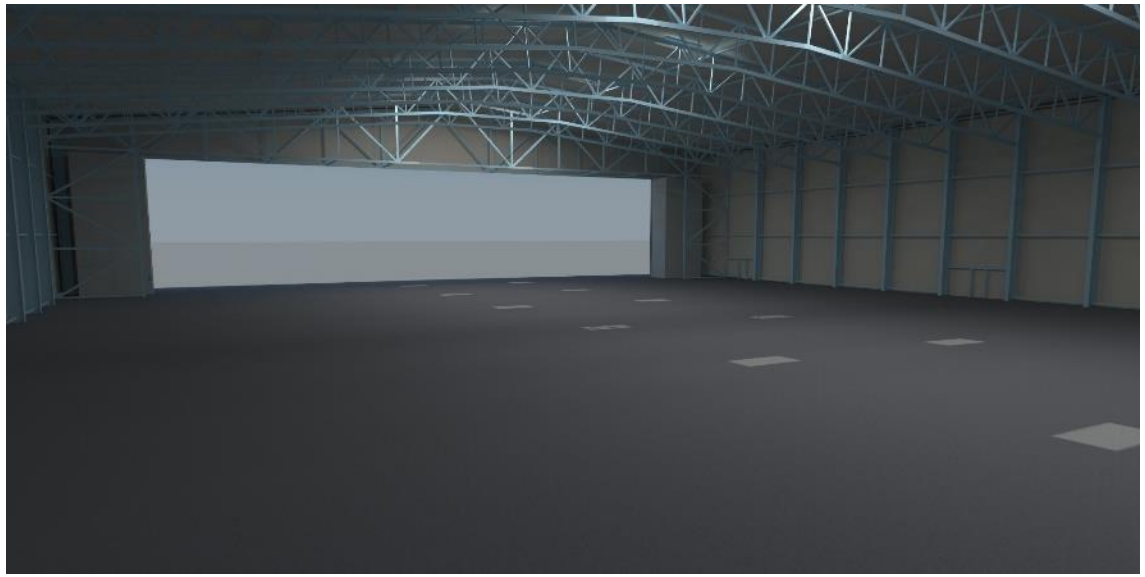
- Two identical hangars measuring 56,7 x 71 x 10 m
- Mirrored hangars joined by a concrete firewall
- Installation of 100 mm PUR insulated sandwich panels (partner company Brucha)
- Incorporation of fiberglass panel sliding doors (partner company Butzbach)

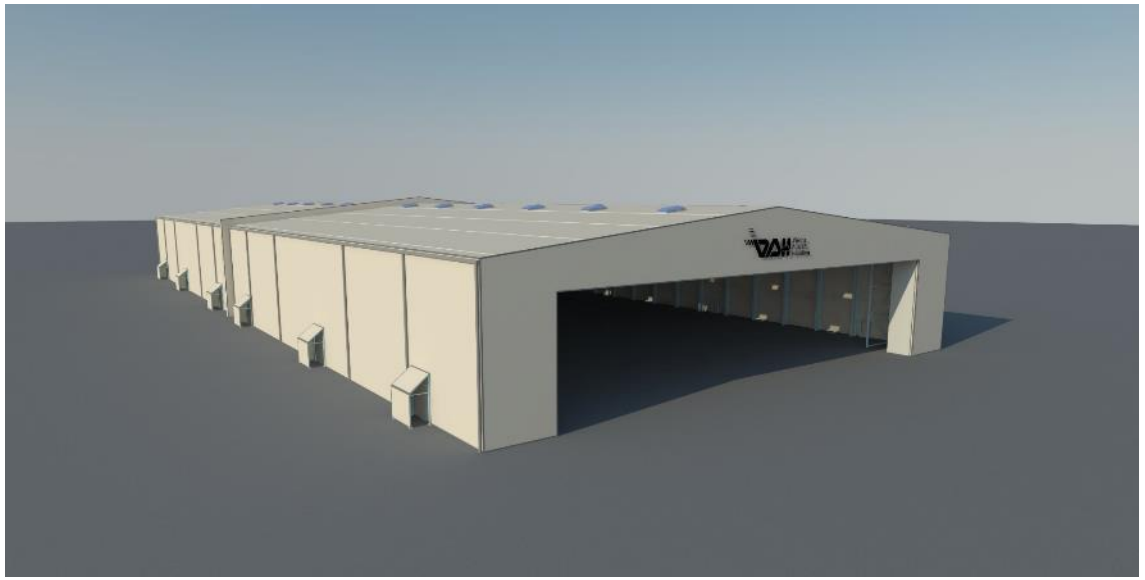
3D visualization – Vienna Aircraft Handling





3D visualization – Vienna Aircraft Handling





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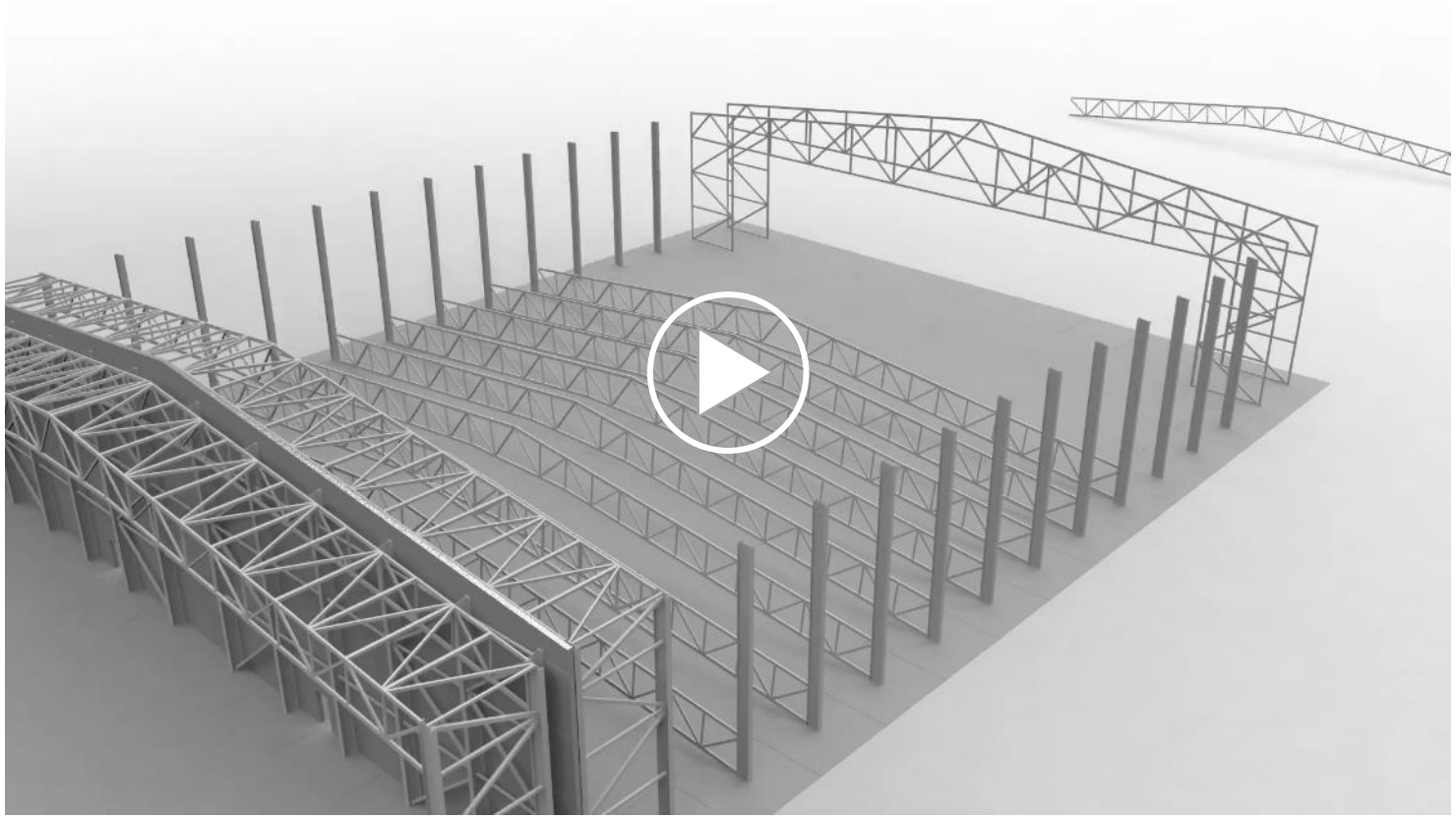
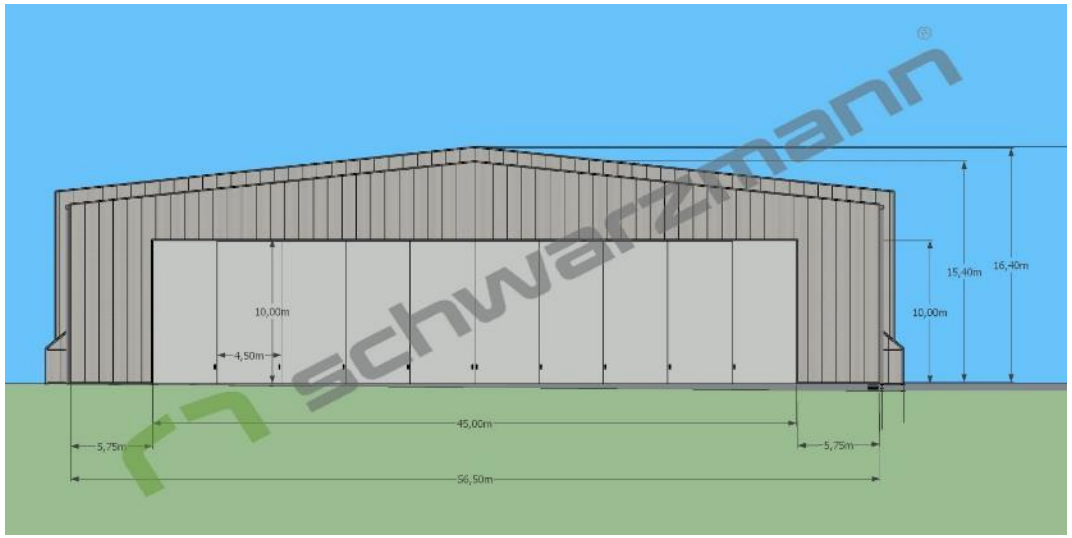


3D visualization – Vienna Aircraft Handling



Installation – Vienna Aircraft Handling

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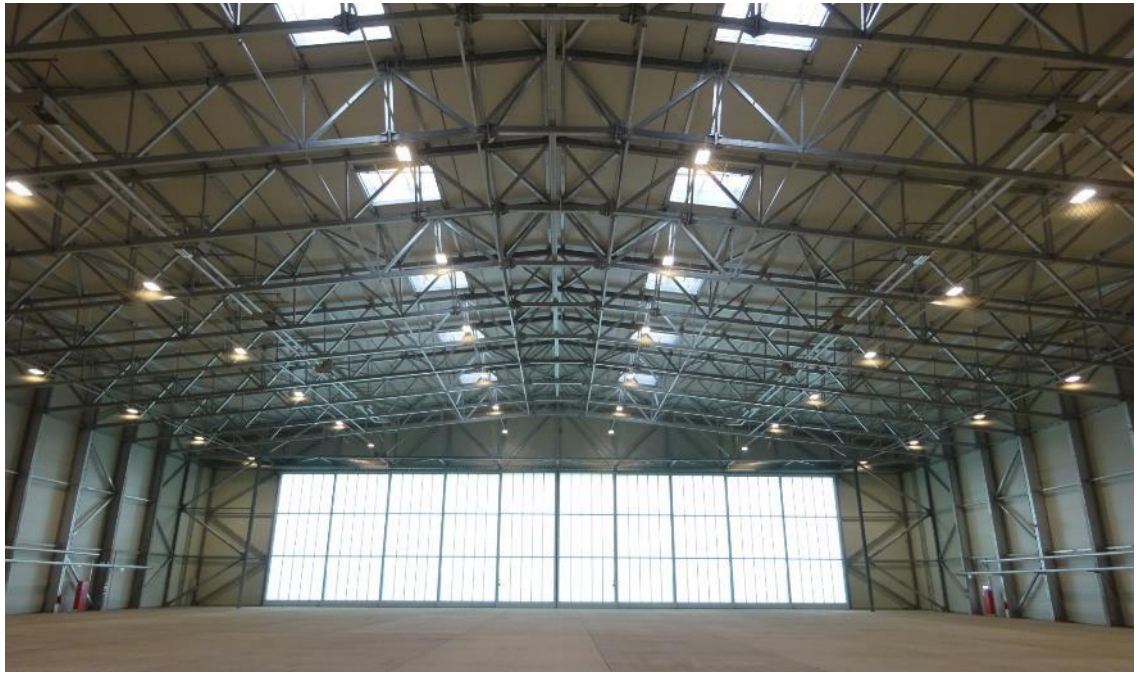


Finished hangar – Vienna Aircraft Handling

Finished hangar – Vienna Aircraft Handling

Project specifications: steel structure

1. Aircraft hangar steel structure dim. 2x 56,7 x 71 x 10 m

- The steel structure made of welded and hot galvanized steel profiles.
- Zinc coating thickness corresponds to the standard SIST EN ISO 1461: 2009, meaning 324 g/m^2 or more for steel thicker than 3 mm.
- The structure is attached to the concrete slab with chemical anchors.
- Permitted load of the hangar:

  - snowload 1,10 kN/m^2
  - windload 1,14 kN/m^2

Project specifications: insulated panels and PVC membrane

2. Cladding: insulated panels

The roof of the hangar is covered with a roof panel Brucha DP-F 100 mm thick. Metal sheet roofing in the shape of a trapezoid. Insulation - PUR, covered with galvanized + painted sheet 0,5/0,6 mm, the outside is additionally coated and protected with 25 microns of UV-protected high-quality colour according to RAL 9002 or 9006.

- All joints are treated with an additional cover.
- Gutters and snow guards are included in the offer.
- Thermal conductivity of the panels is 0,37 W/m^2 K.

Project specifications: automatic sliding doors

3. Butzbach automated sliding doors

- Total opening measuring 45 x 10 m
- 10 door panels - aluminium profile with vertical fiberglass panels (colour emerald green)

- Permitted windload for open doors: 70 km/h
- Permitted total windload 150 km/h
- U Value 1,1 W/m^{2}K

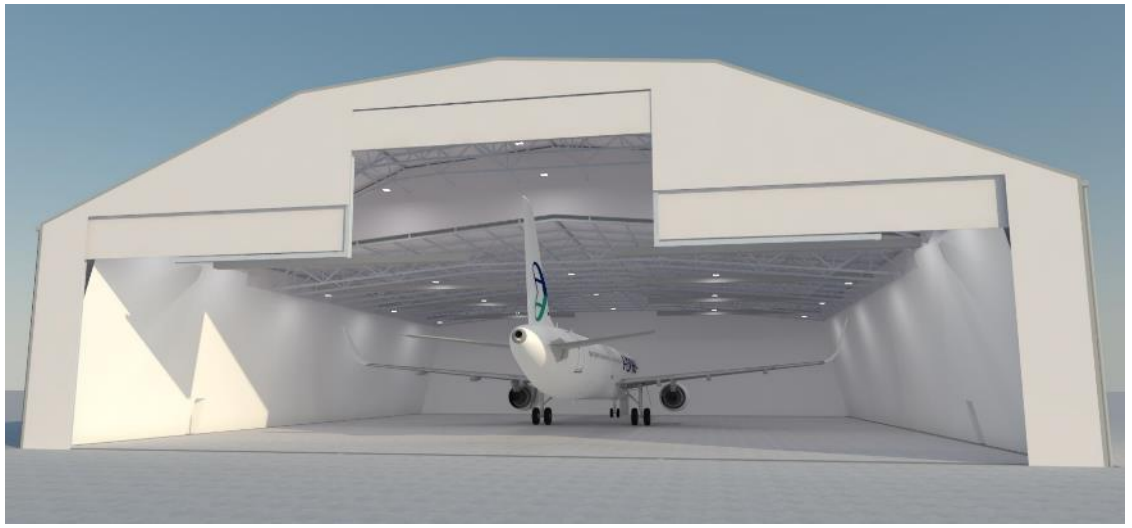
Case study Adria Tehnika hangar

Requirements:

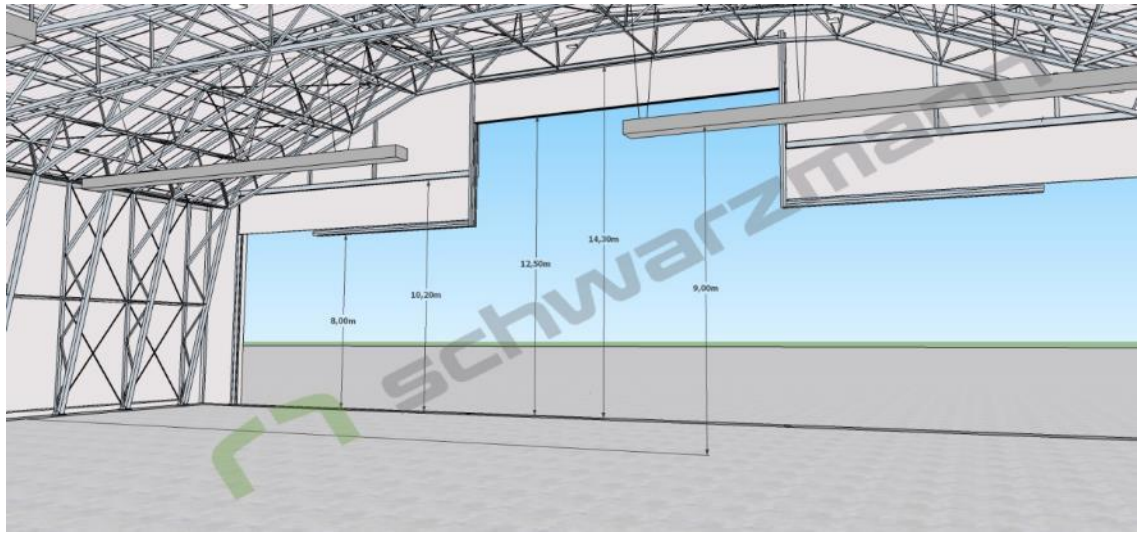
- Limited height
- Air control / traffic
- Walls in PVC membrane with insulation
- Existing area + new concrete foundation

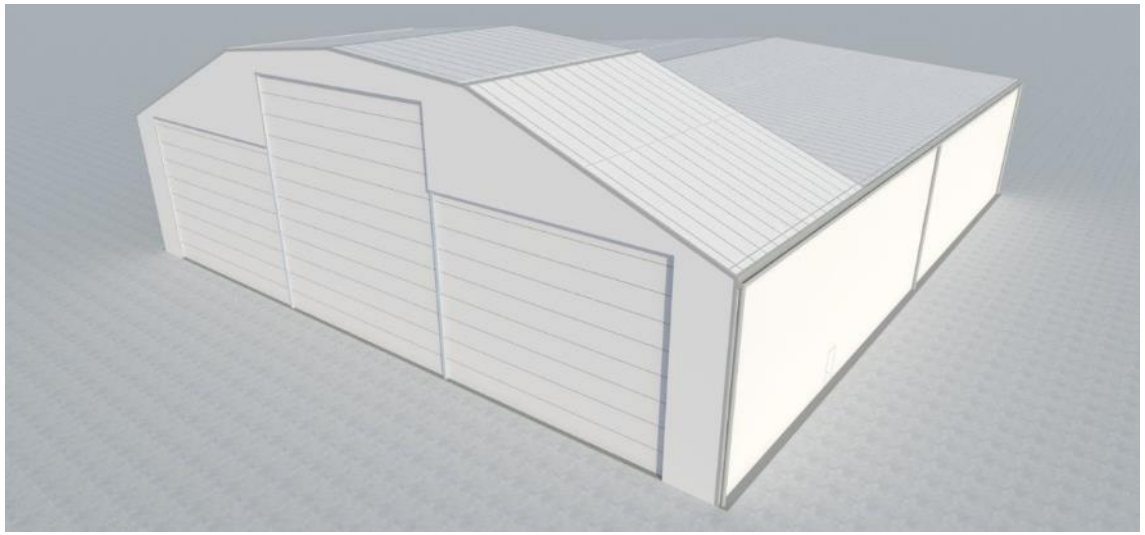
Solutions:

- Roof with very little slope
- Two different roof shapes, due to small inclination with roof panels
- Double PVC membrane with trapped air
- Height compensation with steel spacers



3D visualisation – Adria Tehnika





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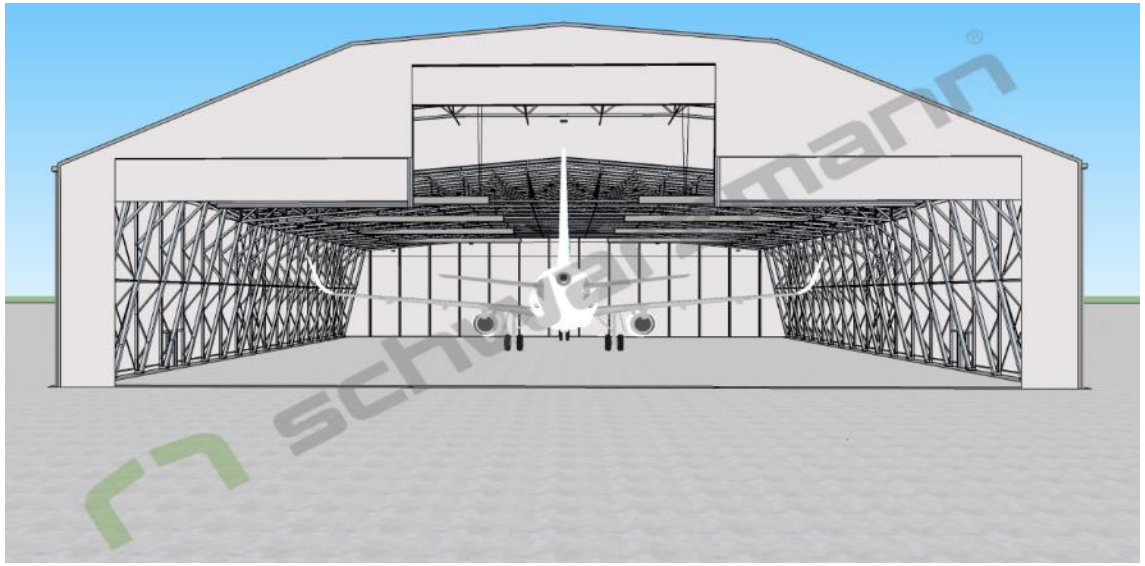
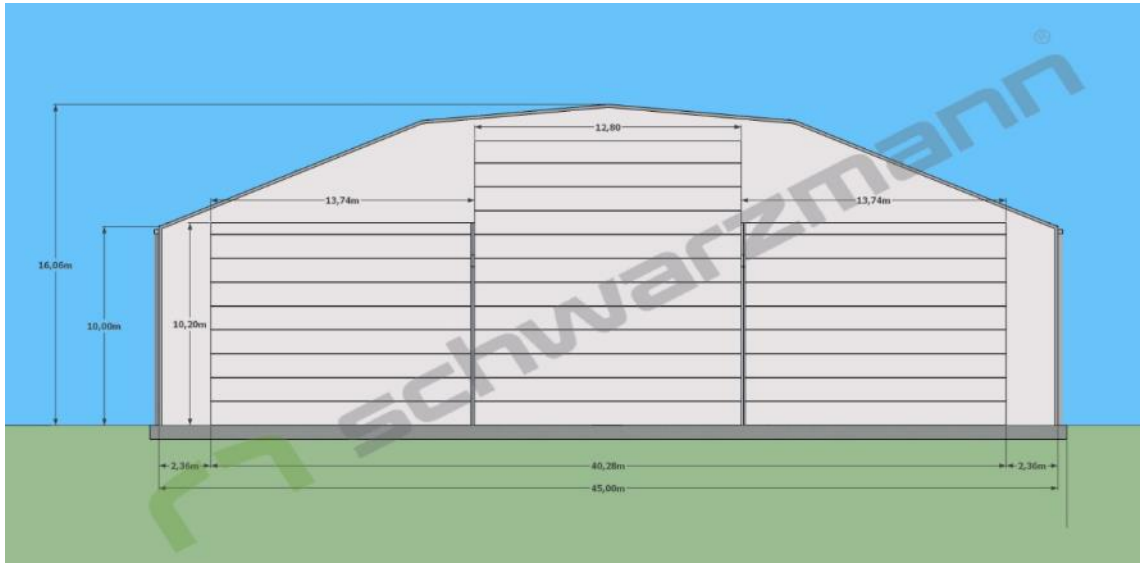
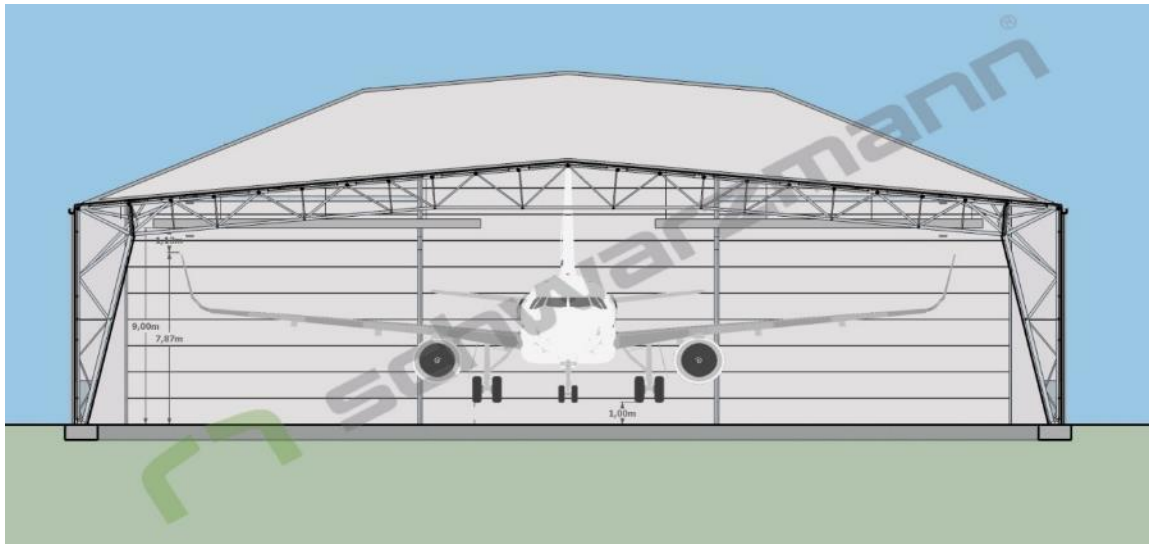


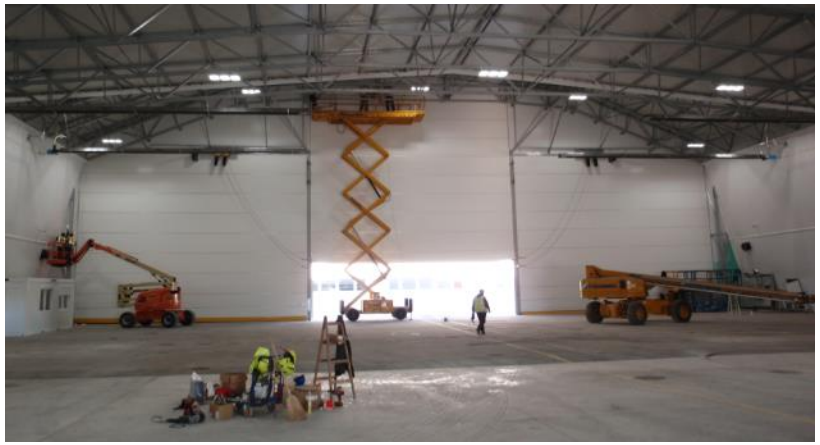


3D visualisation – Adria Tehnika



Installation – Adria Tehnika

Installation – Adria Tehnika



Finished hangar – Adria Tehnika

Project specifications: steel structure

1. Aircraft hangar steel structure dim. 45 x 52,5 x 9 m

- The steel structure made of welded and hot galvanized steel profiles.
- Zinc coating thickness corresponds to the standard SIST EN ISO 1461: 2009, meaning 324 g/m^2 or more for steel thicker than 3mm.
- The structure is attached to the concrete slab with chemical anchors.
- Permitted load of the hangar:

  - snowload 1,67 kN/m^2
  - windload 0,65 kN/m^2

- Personal doors are built in, measuring 1 x 2.2 m.
- Ventilation of the hangar is provided within the heating system. The ventilation factor is 0.25.

Project specifications: insulated panels and PVC membrane

2. Cladding: insulated panels and PVC membrane

The roof of the hangar is covered with a 100 mm Brucha DP-F roof panel. Metal sheet roofing in the shape of a trapezoid. Insulation - mineral wool, covered with galvanized + painted sheet 0,5/0,6 mm, the outside is additionally coated and protected with 25 microns of UV-protected high-quality colour according to RAL 9002 or 9006.

- All joints are treated with an additional cover.
- Gutters and snow guards are included in the offer.
- Thermal conductivity of the panels is 0,37 W/m^2 K.

Both end and side walls are covered with double PVC membrane as well as the wall between the higher and lower roof sections. The outer membrane layer is Sattler 900 g/m^2, whereas Sattler 490 g/m^2 is used for the inner layer; both materials comply with EN 13501 (B S2, d0).

Project specifications: triple automatic doors

3. Triple automatic doors Championdoor

Automatic vertical door dimensions:

Middle section: 12,8 x 12,5 m
Left and right sections: 13,5 x 8 m
Total opening width is 40 m.

The door is covered with double UV and a fireproof PVC membrane in gray colour. Vertical aluminium brackets are 280mm wide. Aluminium guides in the middle are raised by means of electric motors to allow free passage.

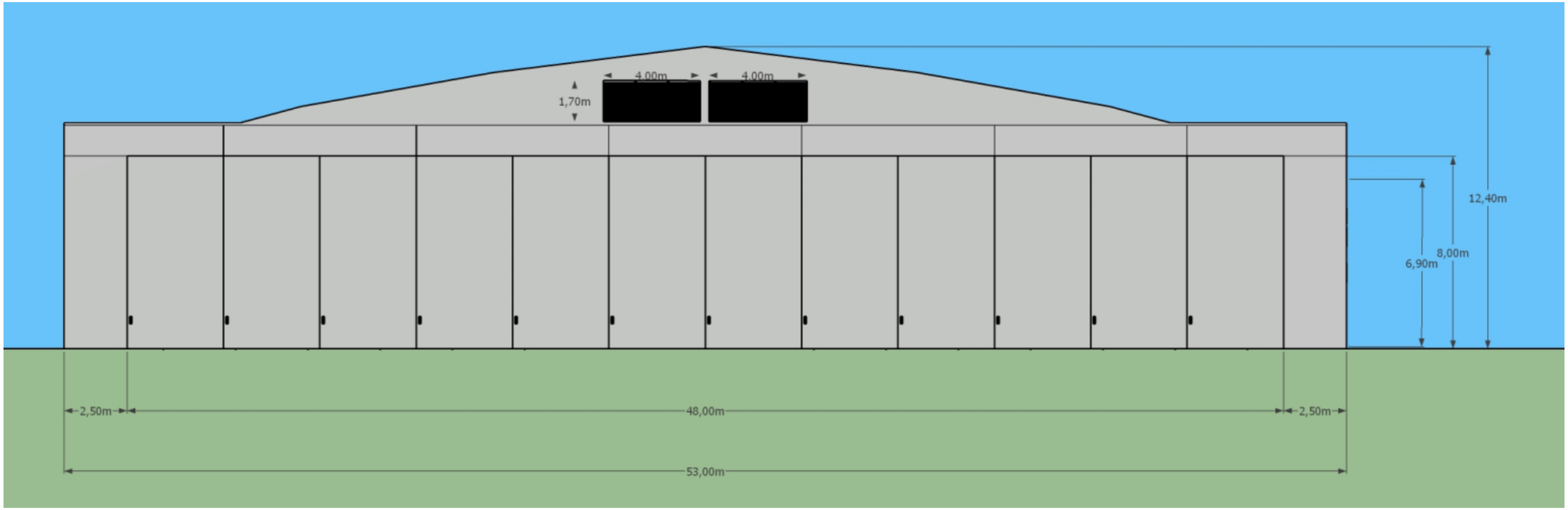
Permitted windload: 0,65 kN/m2
Opening speed: 0,2 m/s
Power supply: 400 V, 18 kW 3PH

Case Study Flughafen Graz – Graz, Austria

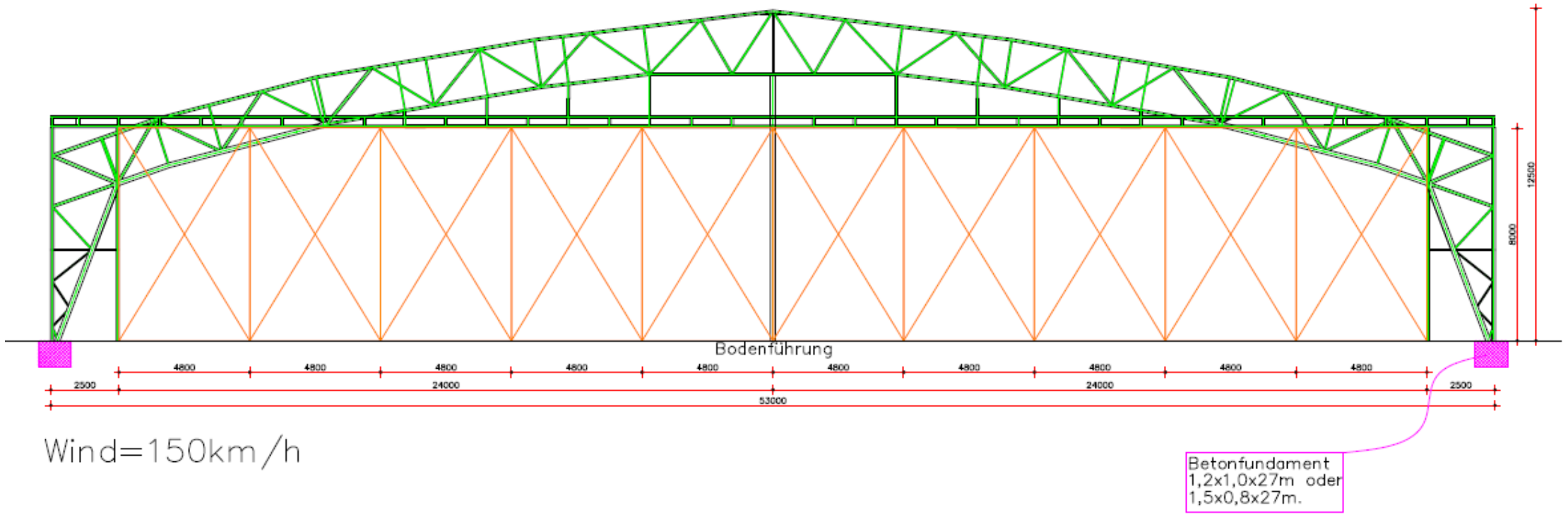
Client requirements:

- Width of 53 m with limited height
- Wind-resistant steel structure with concrete foundations
- Protection against condensation
- Smooth-running hand-operated gate
- Requirements according to fire case study
- No disturbing floor rails, no obstacles for aircraft wheels
- No need for snow removal from the roof
- Master key system at all emergency doors

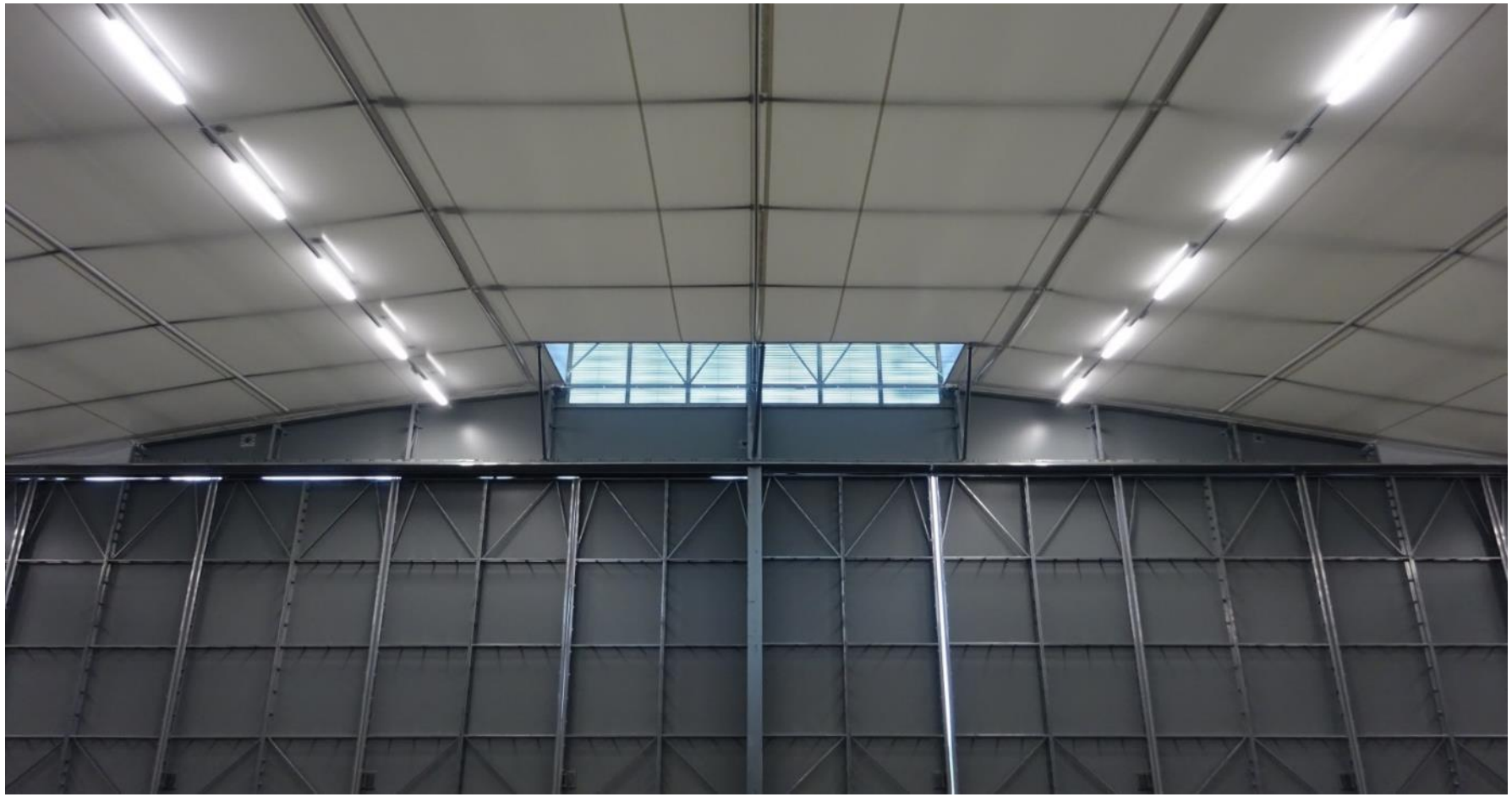
Width of 53 m with limited height



Wind-resistant steel structure with concrete foundations



Protection against condensation



Easy-running hand-operated sliding doors

- The door is covered with UV and flame retardant PVC tarpaulin
- First-class guide rails and special wheels
- The surface of the doors can be divided into sections according to the client‘s requirements
- The doors run across the railing smoothly and only require one person to open or close

Flush door railings

Heated steel railings are level with the concrete foundation.

Gap width of less than 10 cm means no additional interference / stress on the aircraft wheels.

Roof-snow removal is not necessary

The complete steel structure is engineered so that the entire amount of snow according to Eurocode (197 kg/m2) is allowed to stay on the roof without causing any damage to structure or cover.

Installation – Flughafen Graz

Installation – Flughafen Graz

Case Study Croatia Airlines – Zagreb, Croatia

Client requirements:

- Width and height suitable for aircraft models A318-A321
- Heating capable - insulated (double PVC membrane)
- Heating system (heating oil)
- Automatic folding doors - electrically operated
- Lighting

Installation – Croatia Airlines

Benefits of choosing Schwarzmann

Tailor-made

Each company has specific limitations and needs when it comes to looking for more covered space. In order to maximize the efficiency of the investment, we make sure to provide the suitable surface, volume, shape and cladding for your location and purpose. Our project managers have experience from practically all fields of business and can advise the client on the most appropriate solution.

Benefits of choosing Schwarzmann

Price-lock - we stick to the budget!

We provide turnkey solutions, which means that there will be no additional surprises in terms of costs once all the details have been agreed upon and the order has been placed. No surcharges, that’s our guarantee.

Benefits of choosing Schwarzmann

Dedicated project managers

Each project is entrusted in the hands of our experienced project managers who guide the clients throughout the investment process, from enquiry to project completion and beyond. They closely cooperate with the client regarding their specific requirements to devise an offer a facility tailored to their needs. They prepare project schedules and advise on how to comply with the relevant legislation. Their job is to make sure the project is running as smoothly as possible for the client.

Benefits of choosing Schwarzmann

Post-purchase services

As our clients are high-performing companies, they may in a couple years' time outgrow the production or storage facilities they envisioned for their first expansion stage. We are more than happy to help them adapt, extend, insulate, repurpose or relocate their existing facilities as well as build new ones that fit the style of clients' existing architecture.

Other projects

Manufacturing facility, Austria 35x81 m

Waste management facility, Switzerland 27x72 m

Other projects

Recycling centre, Switzerland 29,8x36,1 m

Waste management centre, Slovenia 53x81,2 m

Other projects

Multi-storey industrial facility, Slovenia 40x85x6m

Manufacturing and business facility, Slovenia 24x50 m

Other projects

Warehouse, Slovenia 25x48 m

Multipurpose business facility, Slovenia 15x55x9 m