



25 years of design,
engineering, fabrication and
installation of steel structures

Inovation and development since 1993

Company Schwarzmann from Polhov Gradec, Slovenia is the leading prefabricated steel structure manufacturer in the region. Founded in 1993 by brothers Jožef and Tomaž Schwarzmann, the company originally produced and installed greenhouse structures. Since then, it has grown into a team of civil and structural engineers, project managers, certified welders and experienced installation technicians, who in close cooperation design, engineer, fabricate and install steel structure industrial buildings, aircraft hangars, indoor sports facilities along with complex corporate and manufacturing facilities.

In the last three years, we have invested heavily in expanding our production capacities and modernizing our production facilities, so that today we can supply even the largest projects within a reasonable time. Our experienced team of project managers guides investors through the entire process - from the idea, the preparation of the offer and facility implementation.

By adopting a personal approach and being mindful of the wishes and needs of our clients, we have successfully obtained references from various

industries, from aviation to the food industry. The quality of our products and services has also been recognized in demanding Western European markets. We have delivered numerous major projects in Austria, Switzerland, France, UK and Germany.



Design and engineering in 3D planning software are the drivers of development

We used to base the entire preparation of production plans and documentation on the use of AutoCAD, first in 2D and partly in 3D representation. Introducing the HiCAD software, our modelling method has completely changed. The entire model is being prepared in a 3D environment into which structural inputs can be imported, equipped with key material data and used as a basis for planning of the building.

Essential advantages of such a method are simultaneous design of 3D elements and assemblies, precise lists of built-in materials and joints, and automated synthesis of workshop documentation - bill of materials for assemblies and subassemblies. The result is a faster creation of a 3D model of the entire building, decrease in errors and faster production of quality workshop documentation, which is the basis for ongoing work during the production phase.

HiCAD software is designed to be compatible with BIM technology, which allows us to connect and collaborate with partners around the world. BIM or Building Information Modelling enables the creation of intelligent 3D models, project data management, stakeholder coordination and project simulations at all stages of the project lifecycle: design and planning, engineering, fabrication, construction, efficient use and maintenance. BIM is the way of the future, a modern and efficient approach to design and planning.

Information about the planned building is collected in one place and in a format that allows use by other participants. The design and construction methods are more modern and smarter, while making it possible for the team to work effectively and collaboratively on the same 3D model. The BIM process facilitates the exchange of accurate and coherent information from the various stakeholders and disciplines involved in the project.

BIM can detect and correct errors from the very beginning of the design phase, which can significantly reduce the chances of problems occurring during construction and which could add to additional costs. Data exchange between programs is made possible by the .ifc file format, which transfers of all key data contained in the 3D model.

BIM:
preferred choice for modern
and efficient approach to
project development in
construction industry

Benefits of using BIM in projects:

- more efficient and quality solutions in the design phase;
- easier and better coordination between participating members of the project - provides a platform for collaboration between all disciplines;
- planning with a comprehensive view of the project - a BIM model shared by all those involved in the project;
- better quality and more accurate project documentation;
- the inventory and investment appraisal can be more accurate;
- the BIM project provides the investor with many benefits already in the design phase;
- it has a positive impact on the value of the project and consequently on the speed of implementation.



Introducing: fabric structure Schwarzmann X

Fabric structures have been steadily increasing their share of all industrial facilities over the last 50 years. There are many reasons for this: shorter delivery times, anchoring system which allows fastening on tarmac or gravel, simpler licensing procedures, the possibility of relocation, and the cost of investment. The modern business environment requires a rapid response to market changes and the increased demand for new covered spaces for production and storage.

Over the course of 25 years, Schwarzmann has developed and produced many different types of fabric structures. At this opportunity, we are presenting a technical innovation on the market: a flat-roof fabric structure, called the Schwarzmann X.

Schwarzmann X is a result of our company's R&D and represents an innovation on the market and we have therefore protected it under the EU provisions of Design protection.

Schwarzmann X width options:
10 to 20 m

The benefits of fabric structure X:

- The only fabric structure on the market that can be erected right next to the fence, parking, driveway and other facilities, because the snow remains on the roof. Snow load is calculated according to EUROCOD by location.
- The Schwarzmann HB-FP roof system prevents condensation and dripping. All Schwarzmann X fabric structures are standardly equipped with this system.
- Flat roof with flat walls provides greater useful volume of the building and better efficiency than all other types of roofs.
- Schwarzmann X is the only fabric structure on the market that can be proudly erected next to all types of modern industrial buildings with flat roofs or flat roof look - pitched roofs with parapet box gutter solutions.
- Standard metal foundations anchoring system allows for an easy and efficient attachment directly to gravel or tarmac surfaces. The adequacy of the measurements was repeatedly confirmed by the Igmat Institute for Building Materials JSC.





Putting Schwarzmann on the map: Vienna Airport twin hangar project successfully completed

In September, we completed the twin airplane hangar – a prefabricated steel structure insulated with sandwich panels at the Vienna airport.

We have acquired the order from the largest Austrian airport through an internal tender which was open to bidders from all over Europe. Schwarzmann won the bid because of our flexibility and short delivery time, as well as a wide range of industry references, as we have in recent years erected large-scale hangars at Graz, Ljubljana and Zagreb airports.

The Vienna airport project needed additional covered areas for business aircraft storage in a short time with very specific requirements. A team of engineers, in cooperation with an in-house structural engineer, designed the mirror steel structure of the hangars, joined by a fire-proof concrete wall.

Wind load of 150 km/h at the building site did not present a particular challenge as Schwarzmann have a lot of experience with strict requirements due to extreme weather conditions. For instance, in 2015, we delivered a transitional warehouse for logistics designed for gusts up to 284 km/h in Australia, and in 2018 we delivered a reinforced warehouse with a snow load of 345 kg/m² to Knauf Austria.

The Vienna airport project had the prescribed measurements: 58 m wide, 72 m long and 10 m side height without intermediate columns. Due to the specifics of the industry, many other hangar adjustment requirements have also emerged, such as the need for automatic sliding doors that allow the entire end wall to be opened and enable easy access for the aircraft.

Our bid contained complete project management service: from coordination with the contractor of construction and preparatory works, design and production to the final installation of the facility with electrical and mechanical installations and insulating sandwich panels cover.

The installation of both hangars has been carried out in roughly 18 weeks since the completion of the preparatory construction works, which was a great advantage for the investor compared to typical delivery schedules in traditional buildings. The construction was carried out by several groups of installation technicians under the supervision of the project manager, who was in charge of communication with the client as well as technical and other coordination with subcontractors for additional equipment (Butzbach doors, Atmos light domes...).

Despite the complexity of the project and large dimensions of the structural components, the Schwarzmann team completed the work 1 month ahead of schedule with the astute organization of lifting equipment and machinery.

Business jets in the first of the two hangars were able to be garaged after nine weeks from the start of installation. In a very short time, both hangars combined allowed the client to increase their garaging capacity by 100% to a total of 16,000 m². This places the investor Vienna Aircraft Handling GmbH, a subsidiary of Vienna, among the ten largest business aviation service providers in Europe.

The satisfied client along with a positive testimonial opens our company to opportunities in the aviation sector globally.





Fabric structure facilities for waste packaging management for the City of Ljubljana, Slovenia

In order to increase the storage and packaging capacities of collected waste packaging, investor City of Ljubljana launched a public tender for the installation of a fabric covered steel building. Schwarzmann's experience and numerous successful projects in the field of steel structure facilities have contributed to the right turnkey solution service package for the investor.

A large 50 m clear span of the building, without intermediate columns and an adequate useful height of at least 6 m, was required to obtain a sufficiently large volume of the covered space and to manipulate the packaging waste. The hot-dip galvanized steel structure is covered by PVC membrane on all sides. The length of the building is 40 m.

We have also designed and assembled double sliding doors measuring 7 x 5.5 m on one end wall, which enables the access of machinery for waste manipulation. Rainwater drainage grooves have been installed along both lengths of the building.

In addition to the fabrication and installation of the facility, the City of Ljubljana project included the preparation of documentation for obtaining a building and operating permit according to the local legislation, as well as the preparation of terrain (tarmac surface of 60 x 50 m). Utilities like oil separators, a tank for waste water collection, fire water pool and a seepage drainage were also constructed.

The total duration of the works was three and a half months, from the first 3D simulation of the project on the desired location to the handing over of the finished facility to the investor and obtaining a valid permit. The ongoing progress was closely monitored by the designated project manager, who coordinated all the work of the subcontractors, the preparation of all necessary documentation, and provided technical coordination with the investor, as well as supervision. With a large-scale project, communication and appropriate technical knowledge are crucial to the successful completion.

The completed facility thus presented a solution for investors requirements for suitable packaging surfaces for pre-collected waste. Alternatively, long-term storage of packaging waste in the open air reduces its usability and sales value, because of the negative influence of UV rays, ozone and precipitation water, which results in degradation of polymers, which make up a large part of municipal waste packaging. As a consequence, unsheltered waste packaging materials stored can no longer be recycled, but most often can only be thermally treated.

Especially in the summer, as the risk of fire increases, the accumulation of packaging on unpaved areas presents a burden on the environment, as precipitation water can flush substances and residues from stored packaging into groundwater.



Kop Commerce

Kop Commerce is a Slovenian company that engages in mechanical machining of metals using CNC turning and milling technology. They required new manufacturing and business facilities to increase the capacities for manufacturing of metal products for the automotive, fine mechanics, and mechanical and electrical engineering industries. Their architect had already prepared a conceptual design for the building. Through introductory stage coordination with the investor and their architect. By carefully considering the desired design and investor requirements in the introductory stages of project planning, we were able to offer a suitable solution.

The facility is made entirely of hot-dip galvanized steel structure, to which insulation roof and wall panels of 100 mm are attached (filling: mineral wool). The building has two transverse partitions. Most of its plan is single storey with two storey section of 6.5 m in length and full building width. There are four light domes on the roof and windows in different designs on the walls. There are two personal entrances and freight entrances (automatic sectional doors) at the front and side of the building.

All phases of the project were completed within the stipulated timeframe, which was crucial for catching the deadline for moving the client's business to a new location. After the works were completed, structure and the built-in equipment were inspected.



Rant metal turning company

In close cooperation with the client, we custom designed, manufactured and erected a business and manufacturing facility in the form of an insulated steel structure. The building is made of two parts in an L-shaped floor plan. The measurements of the two parts of the building are: 24 x 50 m and 12 x 36,6 m. In the business part, we also created a hi-bond platform and external steel structure stairs. In addition to freight entrance to the production premises, we also made sure that the facility was drained properly through grooves and gutters.

In the conceptual design of the business facility, the project architect envisioned anthracite grey panels, window frames and gutters in the same colour. Consequently, together with automatic doors in a lighter grey shade and glass surfaces, the building has a homogeneous appearance and also showcases the development of the company. On the other hand, the sandwich panels on the separate manufacturing part of the building are light grey, while the windows and gutters remain in the anthracite shade, thus making the colour scheme of the entire building cohesive.

For the client, the new multi-purpose facility thus represents a significant expansion of operations from production to sales and facilitates further growth and development of the company.



Mercedes Moser

Since 2015, the Austrian car dealership Moser Mercedes has already trusted us with five separate projects with the aim to expand their operations.

We delivered the Mercedes Moser showroom in the form of a Schwarzmann steel structure in 2018. The insulated showroom had a combined envelope of sandwich panels and glass walls which was designed and built in collaboration with the investor's architect. Three Schwarzmann car park canopies have been installed to cover larger parking areas and protect vehicles from rain, snow or hail and to enable unimpeded sales process even in unfavourable weather conditions.

In 2019, we expanded our services with a car wash project, which was implemented in the form a combination of steel construction and insulating panels. The car wash has two service areas, for internal and external vehicle cleaning. There is also a smaller adjoining space for storing the necessary materials and cleaning equipment.

All of Mercedes Moser's facilities have been designed to correspond to existent corporate identity of the company and the brand they represent. Our collaboration with the architect produced a visually cohesive and modern set of facilities, much to the investor's satisfaction.



Sečnik Transport



To accommodate company growth and acquire new partners' accounts, transport and logistics company Sečnik Transport from Slovenia needed a larger logistics hub in a short timeframe.

We prepared a design for the hot-dip galvanized steel structure facility, fastened to the tarmac plateau with metal anchoring system and enveloped with insulating sandwich panels. Both end-walls were covered with PVC membrane with company logo print. Windows were installed on both sides along the entire length of the building, with two freight entrances on one side.

The facility was equipped with appropriate drainage through the gutters and a fan with ventilation grille.

Implementation of this facility presented two main benefits for the investor. Speedy installation of the building and maximum utilization of its surface area and volume, enabled the investor to manipulate of all types of goods and use various methods of transshipment.

Hella Saturnus



Hella Saturnus, subsidiary of Hella Group manufactures lighting and electronic components and systems for the automotive industry. They were planning to optimize the use of a 5000 m² surface facing two existing buildings for storage purposes. We presented them with several possible solutions, and the client ultimately opted for a 41 m clear span high-bay warehouse facility. With the height raised to 10m and due to the consequent increase in volume, total storage capacity for the area of 5000 m² was increased by an additional 50%.

The challenge for the installation of the new facility and the dismantling of the old facilities was to coordinate removal and relocation of stored goods, so we devised a two-part implementation plan. This method made one half of the warehouse available to the investor at all times, so that shipping and delivery could take place throughout the construction process without any hindrances. Such an approach took a great deal of coordination and many adjustments had to be managed to achieve completion within the agreed deadline.

Seven Refractories



In Divača Slovenia, a fast-growing export company Seven Refractories needed a new logistics hub for the distribution of refractory materials for the steel, iron and cement industries.

Schwarzmann technical team has devised an affordable and feasible solution that would ensure the optimal utilization of space and completion of the project within the desired time.

The facility was designed as a three-bay building with a hot-dip galvanized steel structure. The outer two bays were covered with insulating sandwich panels, while the roof of the central bay was covered with a white PVC membrane. All three bays are interconnected, and the spacing between the pillars was tailored to enable Euro-pallet manipulation over the entire surface.

Indoor athletics facility, Austria

One of the largest Austrian construction companies Swietelsky Baugesellschaft m.b.H. entrusted our company with the indoor athletics facility project for their investor, the Upper Austrian Athletics Association. The construction company carried out the preparatory ground works, whereas we were responsible for custom-designing, engineering, manufacturing and building the steel structure and cover.

The double PVC membrane cover protects the interior of the building from condensate and partially insulates the facility with an intermediate layer of air. It also gives the interior a sleek appearance because it conceals structural elements. In the daytime, the white membrane permeates enough light that no additional lighting is required, therefore not adding to operating cost.

The steel structure itself is hot-dip galvanized with a span of 48.5 m and a length of 90 m. It is equipped with a running track and other athletics equipment, which enables athletic training in any weather condition, extending the training season throughout the year.

The ventilation system consists of roof fans and side wall vents. It is operated from the control box and allows for different ventilation settings depending on the time of year and the outside conditions, providing an optimal training environment.



Toll Group logistics hub, Australia

A large PVC membrane project was recently erected in Australia. The logistics hub commissioned by a global logistics company Toll Group measures 1825 m² with the height of 13.5 m.

The site is located in the Gladstone region, which lies on the east coast of Australia, 500 km north of Brisbane. A special project requirement was to adapt the steel structure to the conditions of a location with extremely strong winds - gusts up to 284 km / h. Building design had to undergo structural reinforcement modifications according to local regulations and local wind loads.

The entire project, from conceptual design, structural analysis, technical documentation to production and installation, were carried out by Schwarzmann. Two experienced installation technicians travelled to Australia to oversee and lead the construction process guaranteeing Toll Group's acquisition of the new cargo handling facility in an extremely short time



Stora Enso warehouse relocation

Stora Enso is a leading global provider of renewable solutions in packaging, biomaterials and paper. The investor wished to relocate their 2016 Schwarzmann steel structure warehouse to a plot about 100 m away.

Relocation took place within the company area, with enough space between the original and new location, making it possible to relocate the entire facility using mobile cranes, without removing PVC membrane from the structure.

Two installation technicians with experience in larger building relocations travelled to the site to carry out the assignment. Foundations were prepared at the new site, then two 200-tonne mobile cranes lifted and incrementally moved the facility 8 times until the team finally installed it at the new site.

With this method of deinstallation and reinstallation, we saved the investor both time and reduced the cost of reorganization, all with minimal impact on the environment.

