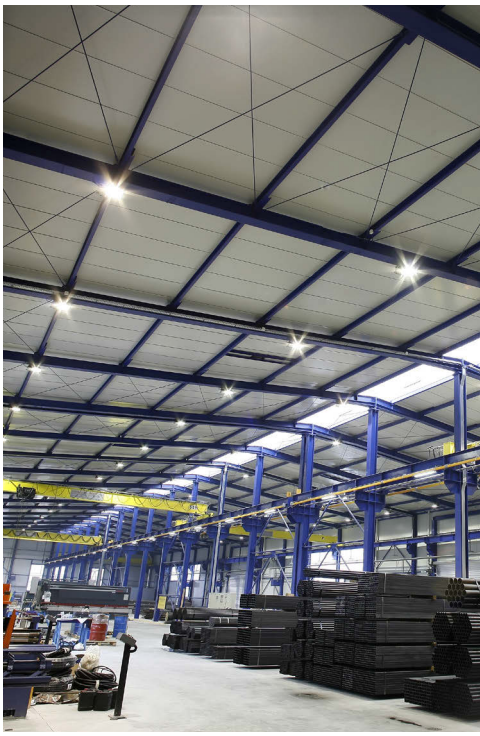
SWEDSTEEL



Product range

Lightweight steel products and complete solutions with complex services

About Swedsteel - Metecno

Swedsteel is the Hungarian business branch of Metecno Group. Metecno Group is the world leading company of prefabricated composite sandwich panel production since 1963. It operates production units in 15 countries and as it supplies 30 countries with insulated composite sandwich panels, which products represents the best quality all over the world. Swedsteel as a regional centre provides its worldwide recognized products for the whole Central and Eastern Europe. Metecno Group plays a determinative role with its continuous research and development in field of the quickly and economically constructed halls. Halls built up from excellent quality Metecno products and systems provides an economically operated and durable building solution for every customer.

Swedsteel halls

Swedsteel is a specialist of the steel lightweight hall systems, its experts have more than 20 years professional experience in field of development, research, manufacturing and application of lightweight structures. The most important advantage of the Swedsteel halls is the flexibility of load-bearing system considering the dimensions and functions. Thus, the halls can be realized with short construction time and economical operation in case of any building function, such as agricultural, industrial, commercial, logistical or sport halls.

Our company provides complex service pack for the hall systems, which includes an extensive professional support (e.g. architect, structural engineer assistance), even during whole construction as needed. Beside of this, we work with a reliable construction company network which has decades of experience.

Swedsteel lightweight hall systems, thanks to the continuous professional development, serve the required economic, functional and technological needs on the highest level. Thus, Swedsteel technological innovations and customized solutions meet the builder's specific needs and expectations. As a result, investors, designers and contractors also enjoy working with this complex, yet highly diverse system solution.

Customized technical solutions

The business activities of every company and enterprise are unique, different from each other. Accordingly there are no two completely identical halls or buildings, because the needs are different, and they demand different technical solutions, too. Therefore the appearance and construction of Swedsteel halls are always unique, customized and they equally take into consideration the builder's requirements, functional needs and technical regulations.

Optional dimensions

The continuous, uninterrupted daily operations and activities require certain building sizes, what basically determine the main dimensions of the hall (width, length, clear span, clear height, etc.). The Swedsteel lightweight structures are designed to satisfy the builder, customer, technology, construction or functional needs, thereby the structures can adjust to any construction span and dimension. Swedsteel can either offer structural constructions with smaller built-in area for the Small and Medium Size Enterprises (SMEs) sector (halls with ~250m2-1500m2 area) or buildings with larger area (more 10.000m2) for companies, firms which needed bigger space and spans to their appropriate, continuous business operating.

Wide range of applications, variable functions

Swedsteel halls provide extensive choices and possibilities for builders and customers in the world of lightweight structures by the unlimited dimensions and construction solutions. They are appropriate for several business areas or functions, e.g. industrial halls commercial or agricultural buildings, repair shops, service buildings, assembly plants, warehouses etc. Systems based on lightweight building technology are not only suitable for construction of new buildings, but they provide perfect solutions in case of renovations, restorations and building additions, extensions.

Excellent quality materials, products

One of the basic requirements of an appropriate and good building is to use high-quality and durablebuilding materials and products. The base material of the lightweight Swedsteel constructions is the currently highest quality, up-to-date manufactured, high strength steel. This ensures the high load capacity of the hall structures, low material consumption, thereby low dead load, fast and easy construction.

Smart, complete system

Swedsteel hall construction build up from the following main- and sub elements, according to the hierarchical structure system:

- Primary load-bearing system (steel primary load-bearing frames together with bracing system)
- Secondary load-bearing system (Z/C profiled purlin- and wallbeam system, or high profiled trapezoidal sheet)

Complete **solutions**

- Roof- and wall cladding system (low profiled trapezoidal sheet, prefabricated sandwich panels)
- Additional elements (raingutter system, skylight elements, gates, doors, windows, etc.)
- Accessories (fasteners, screws, bolts, underlay foils, flashings, sealing profiles, etc.)

By the optimized structural design and using the various construction possibility of these components and system elements, Swedsteel hall buildings can always maximally satisfy the functional needs, as well as the technical and regulatory requirements.

Special application of lightweight structures

With the application of hot-dip galvanized, thin-walled steel profiles and the Eurocode design standards there is a possibility to construction more special structures than the usual, standard hall systems made of hot-rolled steel profiles. These special system solutions can ensure high load-bearing capacity, great corrosion resistance, low dead weight, quick and easy transport and construction.
These special lightweight structures can satisfy mainly the functional and dimensional needs of small- and medium sized enterprises (SME buildings) economically.
The Swedsteel special, tailor-made, thin-walled lightweight structures can be the following types:

- Primary load-bearing framing hall system
- Trussed roof structures
- Floor beam structures
- Load-bearing wall framing system

Additional advantages of these hot-dip galvanized, thin walled special lightweight structures are the economically, quick and easy construction in case of new buildings, renovations and building additions, extensions, too. These structures can provide high-level technical and economical solutions for the builders and customers.

Sandwich panels

The pre-fabricated, self-supported sandwich panels (composite panels) are excellent choice for heat insulated roof and wall cladding of industrial and commercial buildings.
Swedsteel-Metecno sandwich panels can be used with load-bearing structures of steel or reinforced concrete in case of industrial buildings for external and internal use (indoor and outdoor wall panels, roof panels). The broad range of panels regarding type, infill core, thickness and colour allows optimal choice in respect to aesthetics, function and technical requirements (load-bearing, heat insulation capability, fire resistance and soundproofing).

Components of sandwich panels

The main components of the sandwich panels are the double-sided facing (steel sheets) ensuring external surface protection and the infill heat insulation material (insulation core), from which the pre-fabricated composite building product is made and controlled under safe indoor circumstances. Basically the material of the facing is hot-dip galvanized steel sheet, but in case of special higher corrosion requirements there is possibility to manufacture the panels with aluminium or stainless steel sheets, too. The infill heat insulation material can also be of various types: polyurethane foam insulation (PUR or PIR) or fibre insulation (mineral wool). Panels with PUR/PIR infill core perform better in terms of thermal insulation properties and low specific weight, while panels with mineral wool infill have better parameters for fire-protection. PIR insulation with fire retardant additives (self-extinguish) can provide higher fire classifications, that's why it is more advantageous than PUR insulation.

Wide range of application

Fast and easy mounting is allowed with pre-fabricated, long-board, self-supported sandwich panels (longitudinal grooved joints and fastening with self-drilling screws) which is an economic solution in case of covering large, homogenous surfaces. As a complex product, sandwich panels can solve equally the partitioning, water- and air-tightness and heat and sound insulation at the same time. Sandwich panel is the most widespread roof and wall cladding solution of industrial, agricultural, commercial and other type of hall buildings.

Technical aspects

Mechanical resistance, load-bearing performance

The load-bearing capacity of the sandwich panel is the function of the mechanical properties of the individual component parts and the cohesion and adhesion between them. It is complicated and has lots of uncertainty to define the load-bearing capability with solely theoretical calculations, therefore the design values are determined on the base of laboratory tests made according to the EN14509 harmonised product standard. The typical impacts of sandwich panels are meteorological loads, changes in temperature and live roof loads during construction phase.

Heat insulation capacity

The heat insulation capability of the sandwich panel depends on the specifications of the infill core material. The best thermal insulators are the panels with PUR and PIR foam infill with low thermal conductivity. The appropriate, airtight sidelapping and connections are necessary for efficient heat insulation and energetics of the whole roof or wall surface (with sealing tape factory produced or applied on-site).

Water-, air- and vapour tightness

The sandwich panel itself is absolutely water-, air- and vapour tight, thanks to the metal base material. The final properties of sandwich panel claddings are influenced by the sidelappings, overlappings and closing edges, penetrations in a right way.

Fire characteristics

- **The fire class** of panels ("reaction to fire") shows the burning properties of product. The polystyrene (EPS) has the worst fire resistance attributions, panels with PUR filling perform better, and PIR insulation with flame retardant additives (self-extinguish) can provide even higher fire class (even B2-s1, d0). Panels with fibre insulation material core (e.g. mineral wool) can insure the highest fire class(A2-s1, d0)
- **The fire resistance** of sandwich panels expresses the time of resisting to fire as regards different types of physical characteristics. Generally panels with PUR/PIR insulation can perform 15..45 minutes, while panels with mineral wool filling can reach even 90..120 minutes.
- A **The external fire spreading** can be measured in case of roof panels. The metal faced sandwich panels can be classified in the highest category (B,Roof) without applying any special analysis.

Acoustic properties

- **Sound insulation** is a physical value what shows the rate of sound energy decrease on the one side of a surface, while the noise source is on the other side. Mineral wool core have better sound insulation than PUR or PIR core due to its density and weight.
- **Sound absorption** value also expresses the sound energy decrease, when the noise source and the noise sensor are on the same side of the surface. The sound absorption values of panels can be increased by applying perforated internal steel facing and mineral wool insulation core.

Brief product range:

Roof panels

Product name	Insulation core	Panel width	Other
Glamet	PUR/PIR	30..120	
Hipertec Roof	mineral wool	50..150	
Hipertec Roof Sound	mineral wool	50..150	perforated facing inside

Wall panels

Product name	Insulation core	Panel width	Other
Monowall	PUR/PIR	30..200	visible fixing
Superwall ML	PUR/PIR	50..150	hidden fixing
Hipertec Wall	mineral wool	50..150	visible fixing
Hipertec Wall Sound	mineral wool	50..150	visible fixing, perforated facing inside
Superwall HF	mineral wool	50..150	hidden fixing

Other **products**

Thin-walled Z-/C-/U-profiles

Construction elements manufactured from light-gauge steel sheet by cold rolling technology represent a separated and special group of load-bearing structures. These elements can resist against the corrosion effects without any additional surface protection, because of the hot-dip galvanized steel base material. The high-strength steel base material and the optimized profile sizes provide high load-bearing capacity, low dead weight, fast and economical installation for the whole system. Thin-walled galvanized profiles are manufactured with different thicknesses and profile sizes, as well as with optional production length between minimum and maximum limits. It is possible to manufacture pre-punched beams according to the structural connection plans thereby ensuring quicker and simpler installation. The most common application area of thin-walled profiles is the secondary load-bearing system of hall-type buildings (roof purlins, wall beams, wall columns). These structural elements support the roof and wall cladding directly and transmit the loads impacting on the building to the primary

load-bearing framing structure. The wide range of profiles and optimized construction systems always ensure economical solution, giving optimum material use and design. Due to the special construction solutions the thin-walled elements are suitable for several type of claddings (e.g. trapezoidal sheets, sandwich panels, building boards, etc.) and primary structures (made of e.g. steel, timber or concrete material).

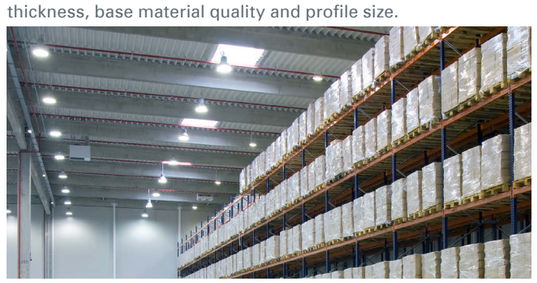
Roof and wall cladding trapezoidal sheets

A typical industrialized type of cladding elements made of high-strength, galvanized thin steel sheet are the trapezoidal sheet profiles (also called “corrugated” sheets). Actually these profiles form the first generation of watertight self-supporting roof- and wall cladding systems of hall buildings. Considering the aesthetic needs and economic viewpoints the most optimal product can be chosen from the wide colour and geometric range (coating, colour, profile height, thickness, rib dimensions). The multi-layered coating system on galvanized base material ensures perfect corrosion protection, surface resistance and the large choice of coating colours provides possibilities to choose the ideal aesthetic look.

A main application area of the low profiled, coated trapezoidal sheets is the non-insulated “cold” halls with single-layered roof- and wall cladding. The other one preferred area is the insulated halls with double-skin roof- and wall cladding system, where the low-profiles are as the external and internal sheets of the “sandwich” structure, assembled on site. Special types of the low-profiles are the trapezoidal sheets with pre-glued anti-condensation felt layer on its internal (back) side and trapezoidal profile made of perforated sheet, which can provide great sound absorption values in a double-skin insulated construction.

High profiled trapezoidal sheets

Trapezoidal floor deck profiles with high load-bearing capacity (“high profiles”) are mainly used for load-bearing structure of the intermediate or top roof floor of industrial halls. These profiles with bigger profile height and thickness are able to bridge higher spans in such a way that they are laid on the primary load-bearing structures directly. The high profiles can function as a secondary load-bearing structural element, so the application of purlins or secondary beams become unnecessary. The main application of high profiles is the part of flat or low sloped top floor system. In this case the construction is a multi-layered soft warm roofing, with waterproofing. On the load-bearing high profiles there are one layer of vapour barrier foil, heat insulation and waterproof membrane. In case of application in intermediate floor system the high profiles work as remaining formwork of intermediate, in-situ reinforced concrete floors (“wet construction floor”) or the high profiles are applied as a definitive final load-bearing decking sheet of the floor system (“dry construction floor”). In such applications, the high profiles can be used for internal use only, therefore the corrosion protective system of sheet is optimized for lower corrosion effects. The selection of the suitable load-bearing high profile is a structural engineer task in any case, because the definition of the necessary sheet thickness, base material quality and profile size.



Elements, accessories

The main elements of the lightweight building or cladding systems (primary and secondary-load bearing elements, low and high profiled trapezoidal sheets, sandwich panels) are not enough to build up a complete hall. The lightweight structures need a lot of further accessories, fittings, additional elements and products what ensure the global complexity of the building. Finally the complete hall can be in compliance with the functional and technical requirements and regulations for a long time (water- and air-tightness, ventilation, fire protection, etc.).

Swedsteel hall solutions include other additional lightweight building products and sub-elements as the raingutter system, skylight elements (polyester or polycarbonate trapezoidal sheets, barrel or dome skylights) and doors, gates, windows. One of the most important elements of a lightweight structure building are fasteners (e.g. bolts, self-drilling screws with watertight EPDM sealed washers), underlay foils, sealing profiles and flashing items.

Services

Price offer

Preliminary, informative offer

Are you thinking of building a hall? You have fix idea about size, function or appearance, but you don't know where to start? Send us your data, your sketch-plan, or fill our offer form out. Our technical colleagues will contact you and will prepare the preliminary price offer according to your demands.

The preliminary price offer is always referential regarding the level of technical definition. According to the precision of the requirements and authorities and the technical description, the price offer can be estimated or precise. The first step is to entrust a responsible designer, who prepares the building permit drawings according to concerning requirements and the price offer can be finalized based on these official drawings.

Precise, detailed price offer

If you have precise plans (or at least building permit drawings), technical description, or a bill of quantities or exact consignation, material list and would like to get price offer for particular products, send us your data and you will get the price quotation.

If possible we examine another alternative, but more economic and efficient technical solutions, structure and product options and will make an optional price offer, as well.

Our goal is to serve you with the best suiting, most customized products and tailor-made solutions with the most optimal price-to-value ratio.

Designer contact

It is really important to work with the appropriate professionals in case of building or reconstructing a hall building. It is possible to ask for preliminary price offer and make estimated budget, but the first official step is always to get in contact with a registered responsible designer who knows the relating authority rights and technical requirements. The designer prepares the plans for unique demands with precise calculations on the actual necessitated level (preliminary sketch, building permit drawings, final construction drawings). In the most of cases, the investors or builders do not have enough time and energy to keep the contact with every participant of the process. It is recommended to work with general designer and constructor companies that can provide deep technical experience and safe realization. Swedsteel can help in providing You such professional contacts.

Technical consultancy

Professional support and technical information can be necessary anytime from the first idea to the finishing, or even already during the operation – the engineer colleagues from Swedsteel team are at your service!

We are offering on-site, personal consultation if there is a demand for it at the construction site or at your office. Contact our colleagues on any of the given availability!

Suggestion of construction company

It always has to be emphasized that choosing a construction (builder, installer) company with appropriate professional competence is really important. The best worked-out and most detailed design plans and the best quality building products on-site are still not enough, it is necessary to give them into the right hand.

We are willing to help you by recommending construction companies that have appropriate technical knowledge and experience, reference works (in quantity and quality), adequate equipment and qualification, as well as being registered officially to realize such project.

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