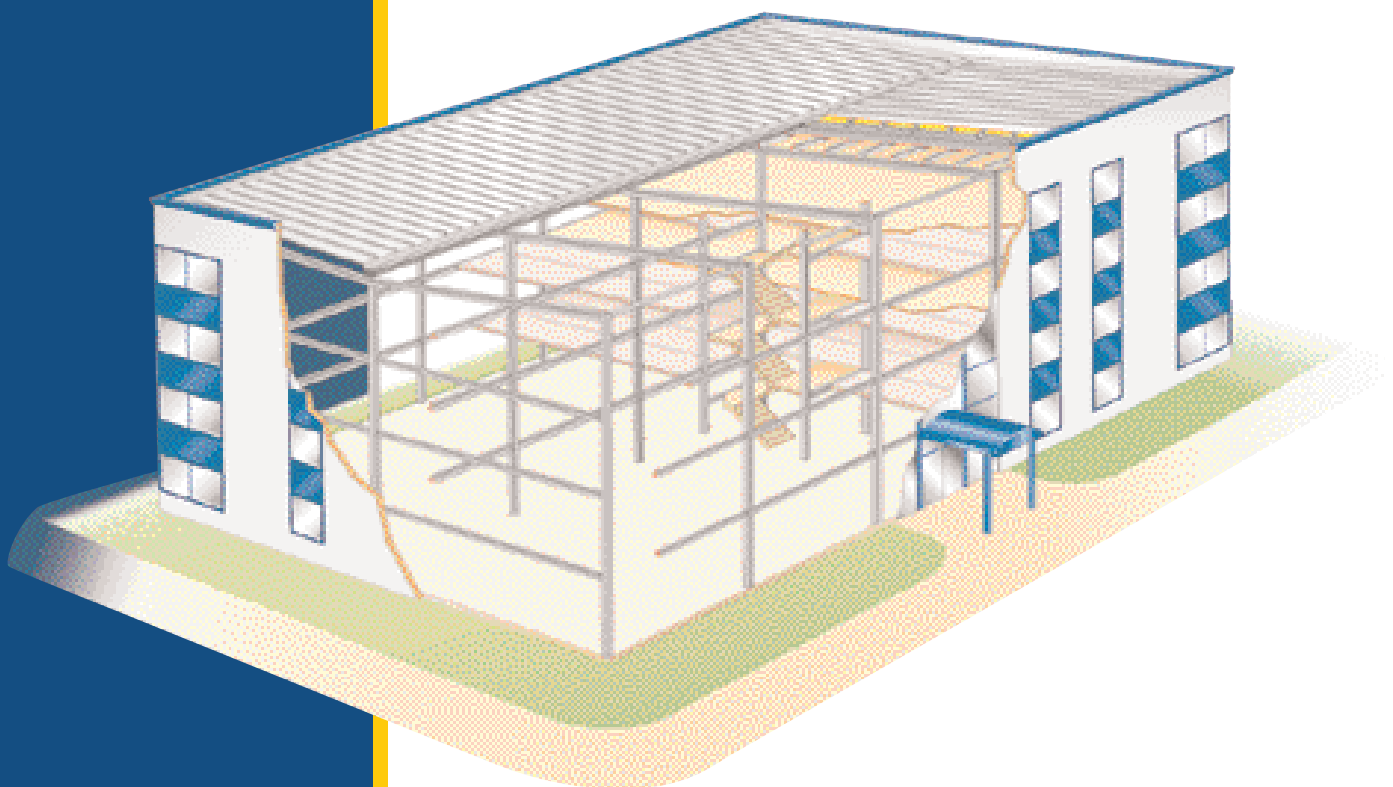


ASTRON

MULTI-STOREY BUILDINGS



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ASTRON MULTI-STOREY BUILDINGS

BUILDINGS FOR INDIVIDUAL REQUIREMENTS



ASTRON - THE EUROPEAN MARKET LEADER

- More than 40 years of experience in steel buildings for industry, commerce and trade
- a track record of more than 30 million m² of constructed buildings
- A production output of 70 average-sized buildings per week from two European plants
- Specific solutions for industry, commerce and trade, logistics, sports and leisure.

DISTRIBUTION BY AUTHORIZED BUILDERS

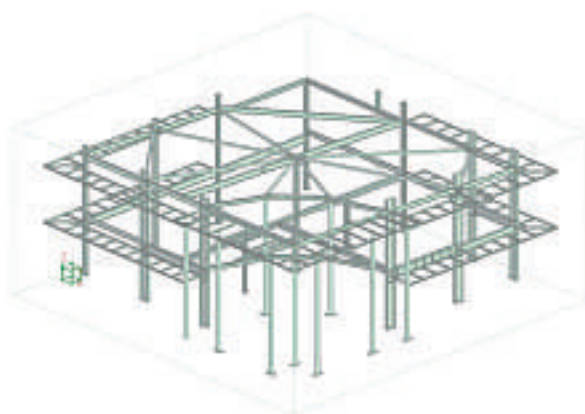
ASTRON buildings are marketed via a Europe-wide network of more than 300 regional building experts.

These competent professionals offer creative building solutions while providing a permanent local service, thus ensuring a direct contact between customer, architect and Builder.

ASTRON Builders are experts in local standards and codes and will gladly show you reference buildings in your vicinity.

ADVANTAGES:

- Turnkey solutions by authorized Builders
- Fast completion
- Wide free spans without the interference of internal columns
- Easy extensions
- Certified according to ISO 9001:2000





TAILOR - MADE BUILDINGS

The ASTRON Multi-Storey system is geared towards individual design solutions. Most technical requirements, as well as wishes regarding aesthetical and functional aspects, can be accommodated. Large internal volumes without the interference of internal columns allow maximum freedom to plan inside layouts.

ADVANTAGES:

- Wide free spans
- Great flexibility regarding the inside layouts
- Reduced overall building height
- Rapid erection
- No disturbing floor beams



ASTRON-MULTI-STOREY BUILDINGS:

The system combines, in a most ideal way, the flexibility of steel with the solidity of concrete.

A special feature of the ASTRON Multi-Storey system can be found in the innovative INODEK floor system. Since its steel beams are integrated into the floor system, the overall height of the building can be considerably reduced.

Different roof and wall systems are available, allowing for individual preferences and adaptation to local building requirements.

Dividing walls can be constructed either in masonry or by using prefabricated elements.

Thanks to the combination of functionality and aesthetics, ASTRON Multi-Storey buildings are perfectly suited for commercial, trade and industry premises as well as for offices or administration buildings.

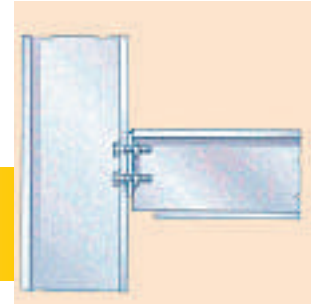
The ASTRON Multi-Storey system is also an intelligent solution for car parks and similar structures.

THE DELIVERY INCLUDES:

ASTRON Multi-Storey buildings basically include:

- The steel structure
- The floor system
- Different roof systems
- Various wall systems

STEEL STRUCTURE



The structure consists of columns, beams and stabilization elements. Beams and columns are made of hot-rolled or welded profiles, purlins and rails from cold-formed, galvanized profiles .

STEEL STRUCTURE:

Columns are fixed to the foundations by anchor bolts embedded in the concrete.

Construction elements are connected to each other with galvanized, high-tensile steel bolts.

Steel quality is according to EN 10025 (corresponding to S 355 and S 235 respectively). All welded and hot-rolled construction elements are shot-blasted according to SA 2.5 and have an 80 μ anti-corrosion coating in either red, blue or grey. Optionally, elements can be supplied hot-dip galvanized.

INODEK FLOOR BEAMS:

The floor elements are laid on INODEK beams connected to the columns by buttplates.

STABILIZING ELEMENTS:

The diaphragm effect of the floor elements as well as the wind bracing in the roof ensure the horizontal stability of the building.

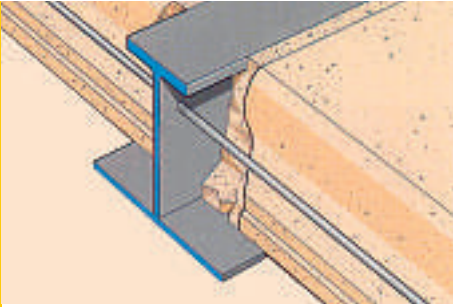
Depending largely on the arrangement of the façade, but also on the building use, vertical stability is provided by additional elements, combined under specific conditions; these may be:

- rod bracing (the basic option, low cost and highly effective)
- a stabilization frame, which allows greater flexibility in the installation of doors and windows
- concrete walls or concrete cores such as lift wells or staircases

ADVANTAGES:

- Few columns, thus wide free floor spaces
- Low building height due to integrated beams
- Wide free spans
- Quick and simple erection thanks to bolted connections





INTERMEDIATE FLOORS

The INODEK intermediate floor system consists of pre-stressed hollow-core concrete elements which rest on the lower flanges of non-symmetrical beams.

ADVANTAGES:

- Factory produced, high quality elements of steel and concrete
- Quick erection due to dry construction, almost independent from weather conditions
- Reduced overall building height due to integrated floor beams (INODEK)
- Easier and lower- cost installation of heating and ventilation systems
- Free spans up to 13 m



INODEK-BEAM:

Integrated steel beams with a wider, non-symmetrical lower flange, on which the hollow-core concrete elements are laid, are used as floor beams.

Steel quality according to EN 10025, corresponding to S 355.

Fire protection is easily achieved, at lower cost, by protecting only the lower flange of the floor beams.

HOLLOW-CORE ELEMENTS:

Floor decking is made-to-measure and offers a smooth underside finish.

- Concrete quality: C 55 according to EN
- Thickness : 20, 27, 32 or 40 cm
- Width: 1.20 m (cut-to-length on demand)
- Spans: up to 13 m
- Fire resistance: 30 -120 min.

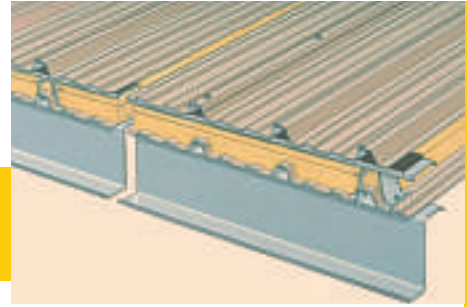
Openings for staircases and lift wells, or for technical installations, (heating/ventilation/electrical ducting, etc) can be planned on request and made-to-measure.

INSTALLATION:

Precast hollow-core elements are installed directly from the truck without intermediate storage. The elements are placed on the lower flange of the INODEK beams by means of a special lifting equipment.

The diaphragm action of the concrete slab is assured by installing a peripheral tie beam: either by reinforcement bars that are laid into the factory prepared channels or by steel beams.

DOUBLE SKIN ROOF SYSTEM



The double skin roof consists of two steel panels; the lower is fixed directly to the roof purlins with omega spacers and ASTROTHERM insulation installed below the outer panel.

DOUBLE SKIN ROOF SYSTEM:

The double skin roof employs a PR roof panel (trapezoidal panel) as the inner skin plus a standing seam CF panel as the exterior skin.

The PR (or alternatively, a PS roof panel) is always used as the interior skin. The easy installation of these panels allows the building to be made weather-tight quickly and thus speeds up the interior finishing and occupancy .

TECHNICAL DETAILS:

Cold-rolled Z-profile purlins are bolted to the rafters on a 1.5m spacing. To these are fixed the inner skin and Omega spacers.

The height of the Omega spacers depends on the thickness of the ASTROTHERM insulation to be installed (nominal thicknesses: 100, 120, 200 mm).

The inner steel panel serves as a vapour barrier, allowing the use of an insulation without facing and achieving a fire classification of A2.

A continuous rail is fixed to the Omega spacers over which the exterior skin of the roof is installed.

Using ASTROTHERM insulation with nominal thickness of 200 mm, an U_m value of $0.20 \text{ W}/(\text{m}^2\cdot\text{K})$ can be achieved.

ADVANTAGES:

- **Fulfills highest energy saving requirements**
- **Low heating costs**
- **Excellent acoustical performance**
- **Good fire rating**
- **Quick and easy erection**
- **Early start to the interior finishing of the building**
- **Large range of accessories**



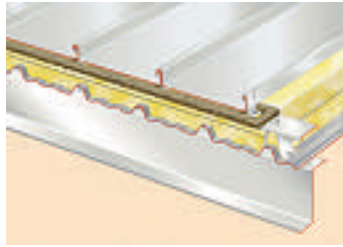


OTHER ROOF SYSTEMS

According to building plans and regulatory and/or other requirements, alternative roof systems can be employed.

ADVANTAGES:

- Attractive aesthetics of a standing seam roof
- Hidden fasteners; fixed from the inside
- No piercing of the roof skin
- Extremely long lasting
- Optimum weather-tightness
- Free thermal expansion/contraction of the roof



CF ROOF SYSTEM:

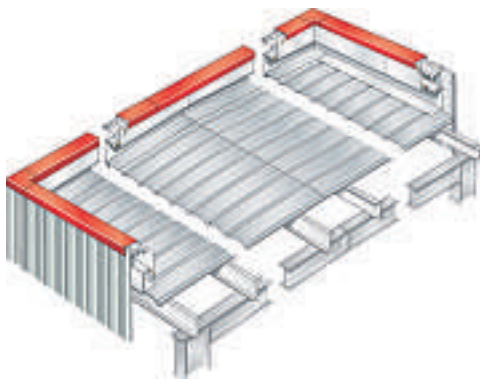
The CF profile is a standing seam roof panel that can also be employed as the exterior skin of a double skin roof.

A clip, integrated into the standing seam longitudinal connection, is fixed to the omega rail and the roof panels without any piercing of the roof skin.

This standing seam connection, which includes a factory-installed butyl sealant, ensures an excellent fit and weather-tightness. The clips are designed to compensate for any eventual thermal expansion/contraction of the panels.

ADVANTAGES:

- Low peak height
- Simple and low cost parapet
- Can be used for complex roof shapes
- Simple and economical rainwater drainage
- High degree of thermal insulation (depending on the specification of the built-up roof system)



MULTITEC-ROOF SYSTEM:

The MULTITEC roof system is based on cold-formed, colour-coated or galvanized ribbed steel panels.

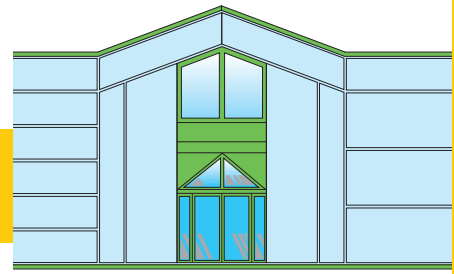
It is designed for a built-up roof and is therefore particularly suited for low slope roofs (flat roofs) and for roofs with simple, low cost parapets.

The degree of thermal insulation depends on the type of built-up roof.

The panels of the MULTITEC system are fixed to the purlins by means of self-drilling steel screws and are also secured to one another longitudinally.

The Z-profile purlins are fixed to the structure on a 1.5 m spacing.

WALL SYSTEMS



Various possibilities for the design of the façade can be employed, such as lightweight concrete elements or various ASTRON steel panels. All can be combined together as well as with traditional materials such as stone, wood or glass.

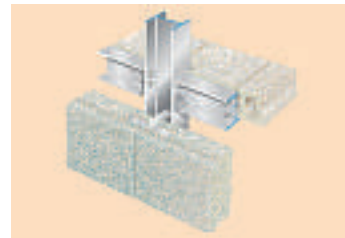
LIGHTWEIGHT CONCRETE ELEMENTS:

Those lightweight, insulated façade elements include factory installed fixation bolts which are directly welded to the substructure without intermediate frames.

The exterior side of the lightweight concrete elements is covered with a water-repellent, breathing plaster layer, while the inner side can be provided with either a porous pumice structure that guarantees a good acoustic performance, or with a smooth plaster finish, comparable to an usual interior wall.

ADVANTAGES:

- Flexible architectural layout
- Façade elements with large dimensions
- Excellent acoustic and thermal insulation
- Fast erection without intermediate structure
- Fire rating F 90



STEEL WALL SYSTEMS:

ASTRON offers a large range of attractive, economic and high-quality wall systems made of steel. Single and double skin systems are available as well as sandwich or cassette wall systems. ASTROTHERM insulation and a range of compatible accessories round off the supply.

Additionally, other wall systems or traditional building materials can be employed.

ADVANTAGES:

- Individual design
- Various shapes, colours and layouts
- High quality coatings
- Simple erection
- Combination with other building materials



REFERENCE BUILDINGS



Office and informatic supplier, Luxembourg



Aviation subcontractor, France



Cold storage, France



Pharmaceutical industry, France



Delicatessen, Luxembourg



Pharmaceutical storage, Switzerland



Hydraulic technology, Poland



Retail, Luxembourg



Administration and restaurant, Spain



Fire brigade, Luxembourg



Sales & Training Center, Germany



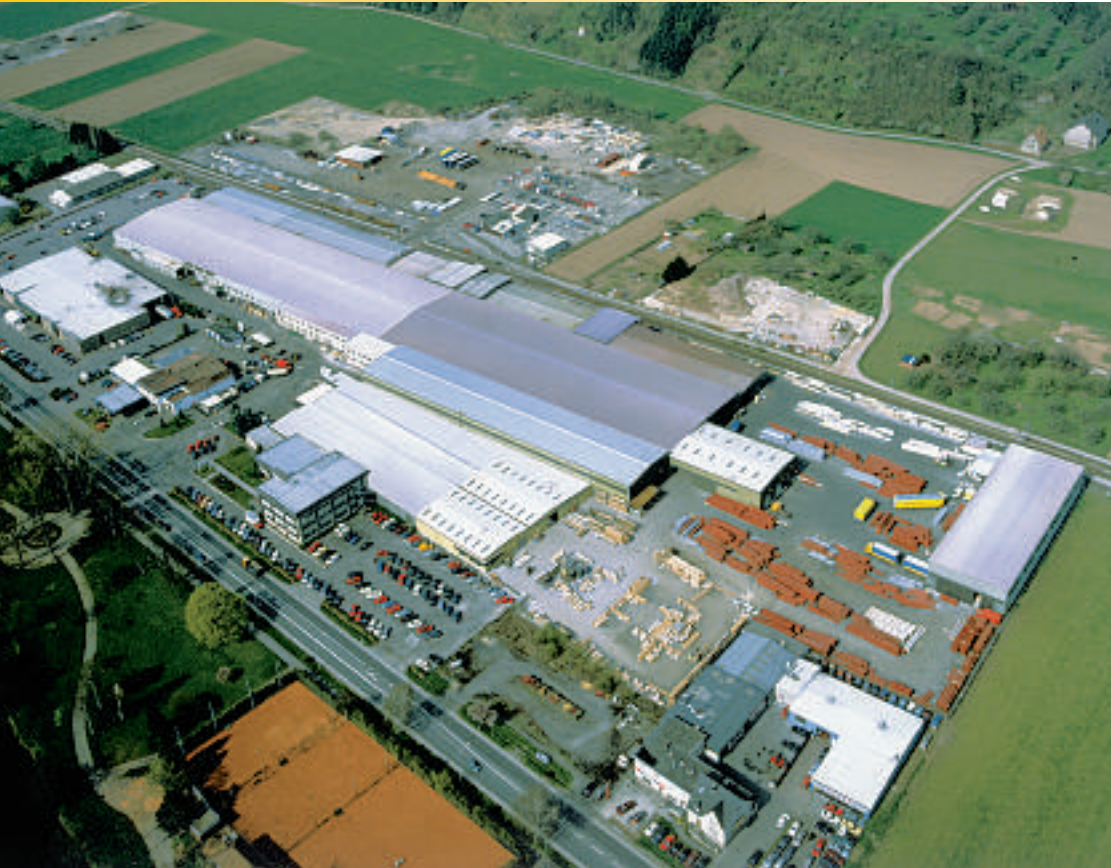
Clothing manufacturer, France



A member of the Lindab Group

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