



Multi-Storey Buildings

A flexible and complete solution

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TAILOR - MADE BUILDINGS

The Astron Multi-Storey Buildings (MSB) system is geared towards individual design solutions. Most technical requirements can be accommodated, large volumes without the interference of internal columns allow maximum freedom to plan internal layouts.

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 Buildings 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 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, administration buildings or hotels.

The Astron Multi-Storey Buildings system is also an intelligent solution for car parks.

AN ASTRON MULTI-STOREY BUILDING INCLUDES:

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

ADVANTAGES:

- Wide free spans
- Great flexibility regarding the inside layouts
- Reduced overall building height
- Fast completion
- No disturbing floor beams
- Cost efficient construction
- Trustworthy architectural and flexible buildings



CYPRION MSB MANAGEMENT TOOL:

MSB management tool conceives and prices multi-storey buildings and generates an instantaneous visualisation of the project. This Astron specific calculation software not only calculates the price, the weight, the transportation requirements, erection man-hours, crane time, foundation reactions of the multi-storey building but also provides an efficient optimisation of the entire building.

CYPRION MSB calculates the price for buildings up to 4 floors, with dimensions up to 60m in length and can handle various building shapes, roof types and floor configurations.

As a real innovation, the programme is able to quickly optimise the entire building taking roof types and façades into account by calculating all possible building grids and structural layouts, prices them, and proposes the ideal building. With a simple "click" a graphic layout of the different alternatives is shown.

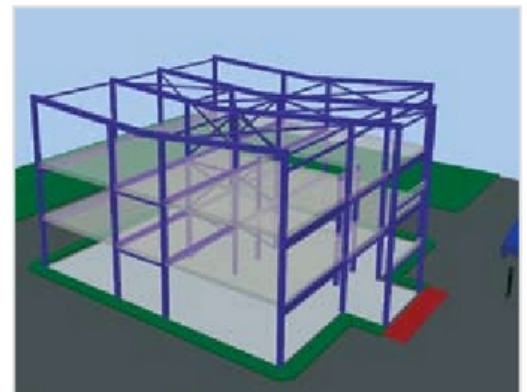
CYPRION MSB-ALLPLAN:

ALLPLAN generates a realistic 3D model of the proposed building. Thanks to the animation programme, all aspects and outside and inside views of the project, all its details and colours can easily be visualised and the virtual building can be imported into the overall photo of the site. This gives a realistic idea of what the project will look like.

Many solutions, one ideal building!

ADVANTAGES:

- Evaluates several building options and prices to determine the best building solution (grids optimisation)
- Quick and reliable quotations
- Easy generation of realistic 2D and 3D views
- Link to architectural softwares



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 of 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. All welded and hot-rolled construction elements are shot-blasted according to SA 2.5 and have an 80 micron primer coating in either blue or grey. Optionally, elements can be supplied hot-dip galvanized.

The design based on a 3 dimensional approach allows various structure options using narrow columns to meet customer requirements and optimised costs.

INODEK FLOOR BEAMS:

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

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:

- Cross 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 and narrow columns, thus wide free floor spaces
- Low building height due to integrated beams
- 3D design for an optimised conception
- 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.

INODEK FLOOR:

Beam:

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

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.

- Thickness: 20, 27, 32 or 40cm
- Width: 1.20m (cut-to-length)
- Spans: up to 13m
- Fire resistance: 30-120min

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

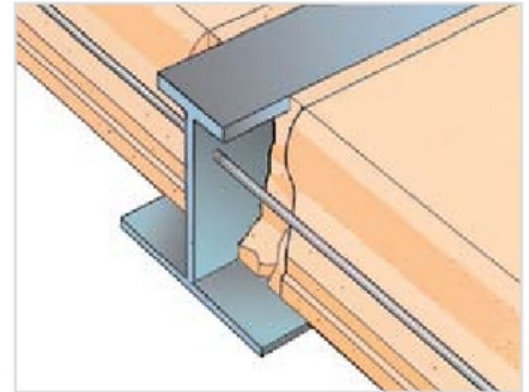
Installation:

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 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.

MONODEK - MULTIDEK FLOORS:

Other floor solutions are available, see our brochure *Mezzanines and Crane Rail 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 13m



ROOF TYPES

Depending on building plans and regulatory or other requirements, different roof systems can be employed.

SCREWED DOWN ROOF:

LPR1000

Ribbed steel panels, externally fixed to the secondary framing with stainless steel self-drilling screws.

Watertightness is achieved by pre-formed closures and tape sealants.

The LPR1000 is used in three effective systems:

- Single skin roof with or without Isobloc
- Single skin roof with bridge
- Double skin roof (inside panels plain or acoustical)



STANDING SEAM ROOF:

LMR600

Standing seam panels internally fixed to the secondary framing by special sliding clips, allowing free expansion and contraction, thus avoiding any stresses in the roof system.

The LMR600 is used in three effective systems:

- Single skin roof with and without Isobloc
- Single skin roof with bridge
- Double skin roof with inside panels plain or acoustical



SANDWICH ROOF:

POLAR

Composite, sandwich panel, consisting of galvanised, colour-coated steel inner and outer skins, encompassing an expanded CFC free polyurethane core. Provides high insulation values. Several panel thicknesses are available.



BUILT-UP ROOFS:

Multitec

Consisting of ribbed steel panels, fixed to the purlins. The roof includes all necessary parts (and parapet structures) to receive a built-up roof system with reduced roof slope (2-3%).

Spacetec

Purlin-free roof consisting of deeply corrugated steel panels fixed directly to the primary framing. It allows the application of various built-up roofs with reduced roof slope (2-3%).

ADVANTAGES:

- Perfectly adapted and designed to the Astron structure
- Simplified and fast erection
- Large range of integrated accessories
- Extensive range of colours and coatings
- High thermal and acoustical performances



WALL TYPES

Various Astron steel panels combined with the Astrotherm insulation for building plans and architectural requirements of the façade can be employed. All can be combined together as well as with traditional materials such as stone, wood or glass.

LPA900 / LPD1000:

Vertically installed ribbed steel panels fixed to the secondary framing with self-drilling screws with composite nylon heads, colour matching the sheeting.

The LPA900 / LPD1000 are used in three effective systems:

- Single skin wall with or without Isobloc
- Single skin wall with spacer bridge
- Double skin wall with internal sheeting
(as an option, acoustical panels are available)

SINUTEC:

Horizontally installed sinusoidal steel panels fixed to a vertical substructure connected to the secondary framing with self-drilling screws.

POLAR:

Vertically installed sandwich panels fixed with nylon-head screws or hidden fasteners to the secondary framing.

SINUTHERM:

Horizontally installed sandwich panels fixed to a vertical substructure connected to the secondary framing by means of self-tapping screws, which are hidden in the longitudinal overlaps.

CASSETTE:

Horizontally installed liner cassette panels fixed directly to the exterior flange of the portal frames. The outside cladding can be erected vertically or horizontally.



ADVANTAGES:

- Different wall panels for different architectural aspects
- Horizontal or vertical profiles
- All flashings and connecting parts
- Extensive range of colours and coatings
- High thermal and acoustical performances
- Optional inside sheeting to hide secondary structure
- Large range of accessories developed especially to ensure their perfect integration to each panel system





6 out of 40,000 Astron reference buildings





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Astron is the brand name of the products sold by the Building Systems Business area of the Lindab group, Europe's largest manufacturer of steel building systems for industrial, office and commercial use.

Lindab-Astron produce up to 1,000 buildings a year, distributed either through a network of 400 certified independent Builders, spanning nearly 40 countries or through our Key Accounts Unit. Our headquarters is located in Diekirch (Luxembourg). Lindab's concept is clear and simple:

We simplify construction

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