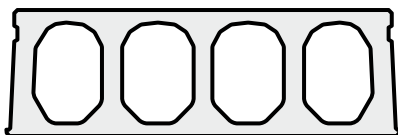


Hollow Core Slabs

Applications



Hollow Core Slabs

HOLLOW CORE SLABS



FIELD APPLICATIONS

RESIDENTIAL, SOCIAL, INDUSTRIAL, COMMERCIAL
INFRASTRUCTURE CONSTRUCTION

PRODUCED BY

EXTRUDER **evo** - SLIPFORMER **sf**

ELEMENT DIMENSIONS

CAN BE CUSTOMISED

EXTRUDER **evo**



SLIPFORMER **sf**



Hollow core slabs are prestressed concrete elements that have a constant cross section. They are manufactured using high tensile strength prestressed strands or single wire which are embedded within the element.

The production of these elements is achieved using our Extruder and Slipformer machines that cast in one phase along a production bed without the need of any formworks.

Hollow core slabs are highly developed structural elements and are used all over the world due to their many advantages and diverse applications.



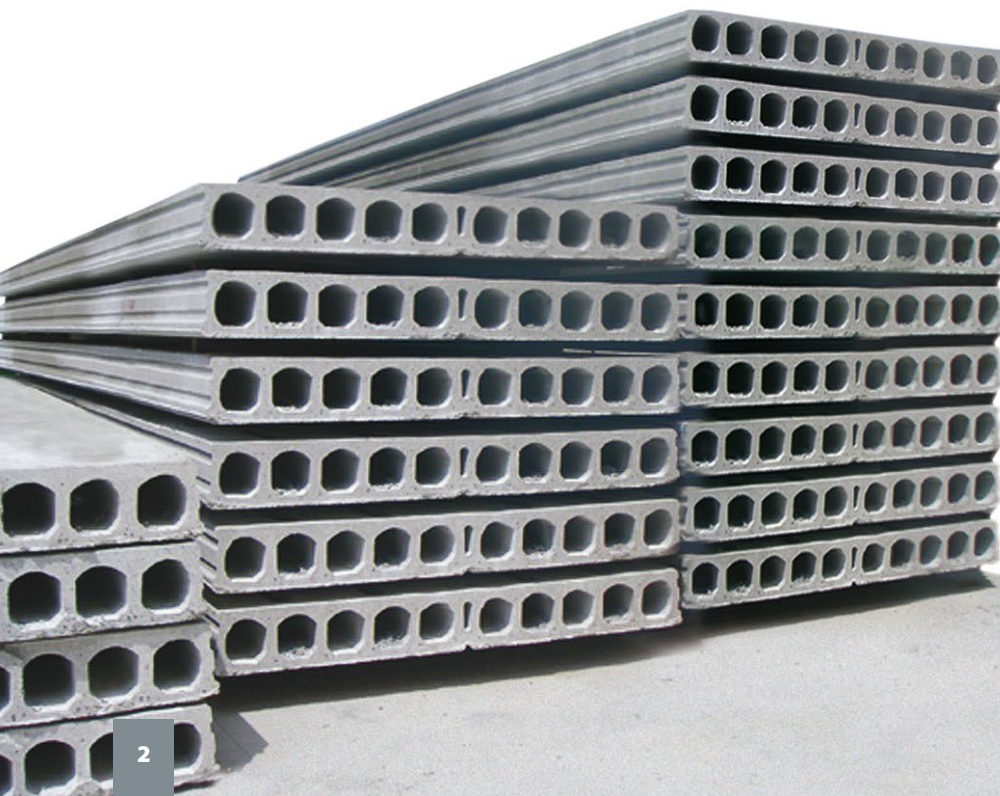
Today they are one of the most well known prefabricated elements because of their technical and economic characteristics.

Hollow core slabs are widely used for flooring and wall panels in industrial, commercial, residential and infrastructure construction.

Hollow core slabs can be used with different supporting structures: concrete constructed walls, brick built walls, steel structures, on-site concrete cast structures, prefabricated beams etc.

For infrastructure hollow core slabs are used extensively to protect roads from natural dangers. They are used to construct anti-landslide and avalanche guards as well as the road decking itself, all elements requiring high loading specifications.

Moreover hollow core slabs possess certifiable fire resistances and offer an economic solution to construct fire stop walls for warehouses, industrial buildings and car parks.



**Concrete
Experience**



Prestressed Hollow Core slabs

produced by the best quality casting machines available

TOP 16 ADVANTAGES OF HOLLOW CORE SLABS



- ASSURED QUALITY
- EXCELLENT LOWER SURFACE FINISH READY TO PAINT
- QUICK AND EASY INSTALLATION
- EXCELLENT FIRE RESISTANCE
- HIGH LOAD CAPACITY AND RIGIDITY
- EASY PROJECT IMPLEMENTATION GIVING DESIGNERS GREATER VERSATILITY
- EASILY ADAPTED TO ENABLE MOUNTING OF ANCILLARY BUILDING SYSTEMS
- REDUCED SELF-WEIGHT
- BIG COST SAVINGS
- EFFICIENT SPAN/DEPTH-RATIO LEADING TO REDUCED STOREY HEIGHT
- HIGH DURABILITY AND LOAD RESISTANCE
- LONG SPANS WITHOUT THE NEED OF TEMPORARY SUPPORTS
- EXCELLENT THERMAL PROPERTIES AND ACOUSTIC INSULATION
- GREEN PRODUCT REDUCED USE OF RAW MATERIAL
- CAN BE USED IN SEISMIC ZONES
- PRODUCTION FLEXIBILITY



1) ASSURED QUALITY

By using specific equipment for the manufacture of the concrete elements and a high end quality control system.



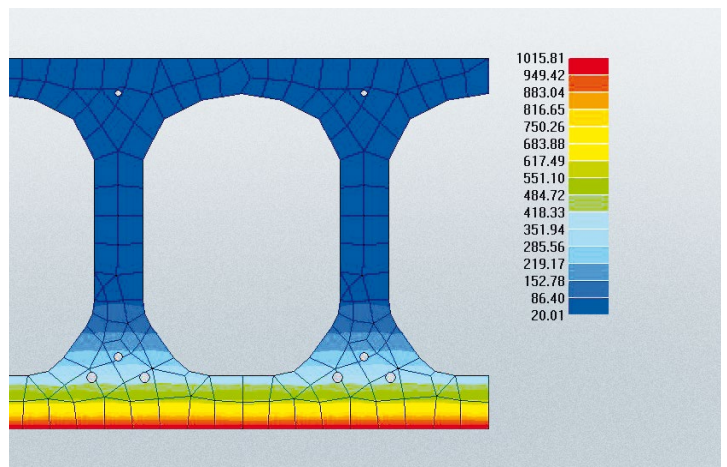
2) EXCELLENT LOWER SURFACE FINISH READY TO PAINT

The lower surface of the element is smooth having a steel formwork finish. Generally this surface can be left as seen or can be simply painted.



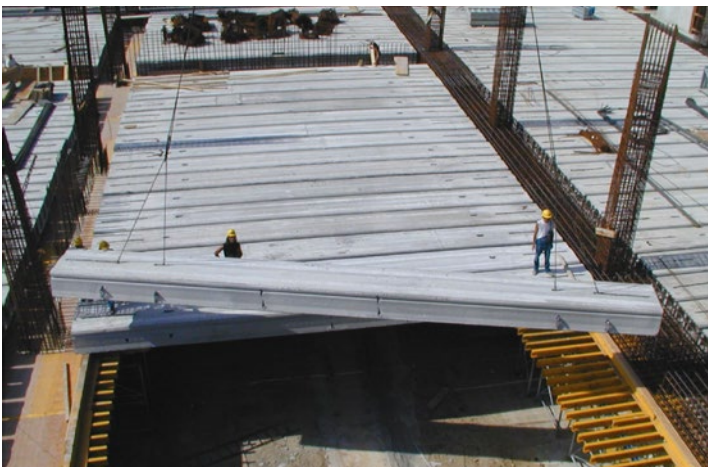
3) QUICK AND EASY INSTALLATION

With only 3-4 workers it is possible to install more than 500-600 m² of floor per day.



4) EXCELLENT FIRE RESISTANCE

Through the choice of the different thicknesses of the lower part of the element, floors can be produced with a high fire resistance up to 180 minutes.



5) HIGH LOAD CAPACITY AND RIGIDITY

Hollow core slabs have minimal deformation even with high slenderness ratios due to the transversal load distribution and even when the elements do not have any concrete topping.

The produced elements have high load resistances thanks to a low water/cement ratio of concrete from 0.32 to 0.38. Higher water/cement ratios cannot be employed for the production of desired cross sections without the use of expensive formworks.

Even though the low water/cement ratio employed makes the concrete hard to work, NORDIMPIANTI's machines have no difficulty producing particular element shapes with high levels of reliability.

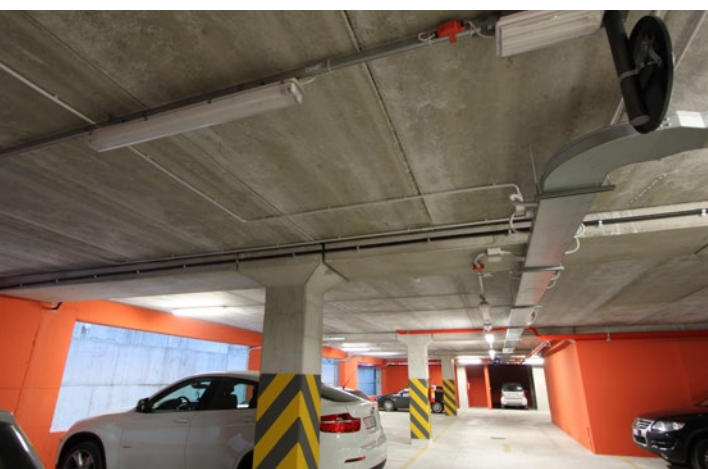


6) EASY PROJECT IMPLEMENTATION GIVING DESIGNERS GREATER VERSATILITY

Hollow core slabs have a wide range of applications. They can be produced up to 25 m long.

They are very common in the residential, healthcare, education, industrial and commercial markets and also in seismic zones.

It is possible to manufacture elements with end openings that are then filled on-site in an orthogonal direction to the floor creating solid ends to increase shear resistance.



7) EASILY ADAPTED TO ENABLE MOUNTING OF ANCILLARY BUILDING SYSTEMS

Hollow core slabs are ideal for the mounting of ancillary plant such as electrical trays, water sprinkler and HVAC systems.



8) REDUCED SELF-WEIGHT

The presence of longitudinal voids in the cross-section leads to approx. 50% saving in concrete compared with a plain cast in-situ reinforced slab, and at the same time cuts the amount of prestressing steel by 30% because of the lower self-weight.



9)) BIG COST SAVINGS

Large production volumes with uniform cross sections even with different cable reinforcement configurations. Once the concrete elements have been produced they can be removed from the casting beds after just 6-8 hours.

The use of high tensile strength prestressed strands, wires or single wire means that the prestressed elements have smaller cross sections using concrete more efficiently and thus achieving elements of the highest quality. Smaller cross sections mean lighter panels reducing the cost of transport and allowing easy handling both on-site and in the production plant.



10) EFFICIENT SPAN/DEPTH-RATIO LEADING TO REDUCED STOREY HEIGHT

Precast prestressed hollow core floors offer maximum efficiency to the user. Due to the slenderness of the products and long span capacities, they allow for maximum exploitation of the available building space.

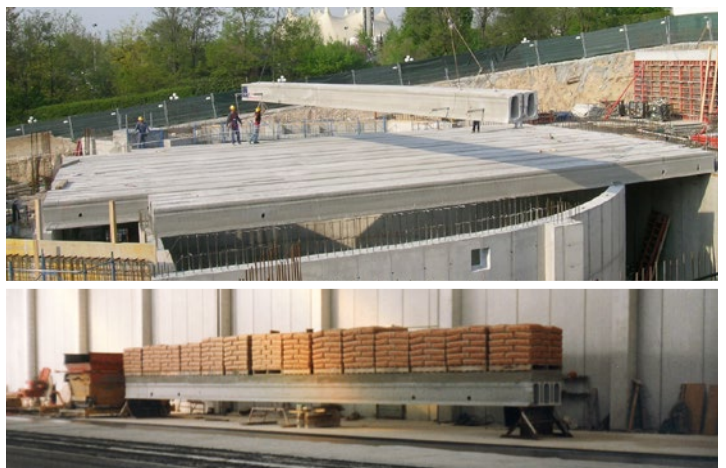
The figure shows a vertical section through a tower building of 37 floors. The total floor slab and topping is only 40 cm. Compared to the classic in-situ construction, it has been possible to add one more storey within the maximum building height imposed by the town planning directives in San Paolo, Brazil.



11) HIGH DURABILITY AND LOAD RESISTANCE

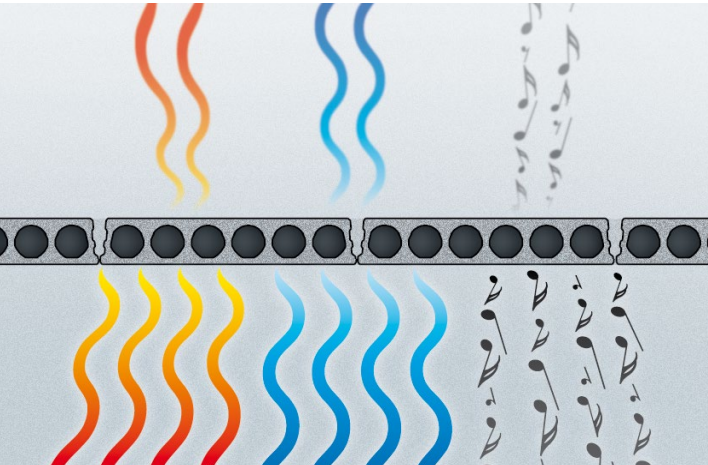
The element guarantees high fire resistance because of the Extruder and Slipformer technologies used for element production and also due to the low cement/water ratio used in the concrete mix.

The quality of the casting machines guarantees a high compaction level and impermeability combined with a high mechanical resistance



12) LONG SPANS WITHOUT THE NEED OF TEMPORARY SUPPORTS

Applicable to all loads and spans meaning that there is no need for supports during installation. It is possible to load the floor immediately after installation, even without any in-situ concrete casting.



13) EXCELLENT THERMAL PROPERTIES AND ACOUSTIC INSULATION

Hollow core slabs have good sound insulation properties, especially against airborne sound transmission, reducing noise from the external environment and in providing sound separation between rooms below and above.

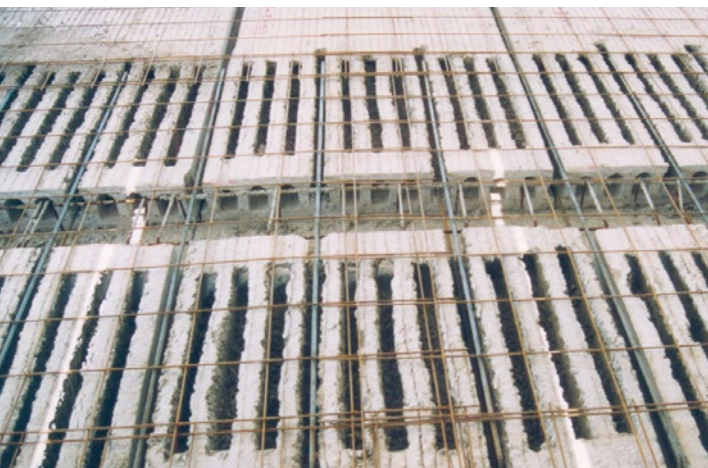
Impact sound insulation properties are similar as with other solid slabs and depend merely on the type of floor covering. A better and more fundamental solution is to use structural methods such as raised floor or floating floors. The raised floor system is however seldom used in residential buildings.



14) GREEN PRODUCT REDUCE USE OF RAW MATERIAL

Hollow core slabs are economic with their use of materials. One reason is that the precaster normally uses fairly high concrete and steel grades, consequently the products use less materials to achieve the same load bearing capacity as cast in-situ structures. The smaller dimensions result in less dead load to carry.

Hollow core slabs are better than other types of floors, because of their efficient use of materials. The presence of longitudinal voids in the cross-section leads to about 45% saving in concrete compared with a plain in-situ cast reinforced slab, and at the same time cuts the amount of prestressing steel by 30% because of its lower intrinsic weight.



15) CAN BE USED IN SEISMIC ZONES

Hollow core panels fully satisfy the anti-seismic standards of the most developed countries. For this specific purpose the floor elements can be connected to each other using steel reinforcement during construction in order to create floor continuity even without the concrete topping.

This gives the floor the correct static characteristics required for seismic zones.



16) PRODUCTION FLEXIBILITY

Possibility to change the dimensions of the concrete elements and the prestressed steel wire configuration according to the technical specifications of the element required. It is a simple and quick operation to change the necessary parts of the forming insert of the casting machine to vary the height and the thickness of the concrete elements.

For the most demanding applications or in case of high concrete elements, the lower part of the element and the vertical ribs are reinforced with steel mesh and connection bars.

FIELD APPLICATIONS

THE DIFFERENT APPLICATIONS OF HOLLOW CORE SLABS



Hollow Core Slabs have many applications in residential, social, industrial, commercial and infrastructure construction where elements with high loads and up to 180 minutes of fire resistance are called for.



INDUSTRIAL ROOF COVERINGS



CAR PARKING



UNDERGROUND CAR PARKING



LARGE COMMERCIAL ROOF COVERS



FLOORS FOR MULTISTOREY BUILDINGS



GRANDSTAND PANEL

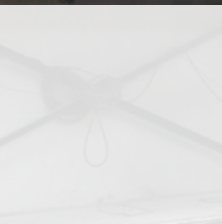


USED WITH STEEL STRUCTURES



CONTINUOUS FLOORING

It is possible to connect the floor elements using steel reinforcement during construction in order to create floor continuity giving the floor the correct static characteristics required for seismic zones.



Extruder Technology

Hollow Core Slabs



HOLLOW CORE SLABS PRODUCED BY EXTRUDER

EXTRUDER EVO e60, e120, e125, e150, e240



The hollow core slabs produced by NORDIMPIANTI's evo Extruders offer cost-effective solutions for companies who are looking for a flexible approach to produce hollow core slabs in various sizes.

Standard heights range from 150mm to 520 mm while the widths available are 600 mm, 1200 mm, 1250 mm, 1500 mm and 2400 mm.



The extruder machine casts elements in a single phase using the extrusion method without the need for vibration thus keeping the noise of the machine to a minimum.

Concrete is pushed into place around the forming tubes by the Archimedean screws ensuring an excellent level of compaction at every point along the element.

The forming tubes and the side formers create the shape and the voids of the element.

The heights of the elements, as well as the thickness of the vertical ribs can be varied within certain limits according to the application and the element specifications required.

Extruder EVO e60, e120, e125, e150 and e240

600-2400 mm wide, 150-500 mm high

The key features of the NORDIMPIANTI EVO Extruder are:

High level of concrete compaction

- All the motors are INVERTER driven allowing precise control of the machine;
- Excellent surface finish;
- Precise control of the dimensions of the slab;
- Function to control the level of compaction adjusting the machine to suit the type of concrete and the elements being produced.

Production flexibility

- Slab heights from 150mm to 520mm;
- A vast range of standard or customised cross sections to meet any technical requirement;
- Extruder evo machines can be supplied to produce slabs with widths 2 x 600 mm, 1200 mm, 1250 mm, 1500 mm, 2 x 1200 mm or 2400 mm.

Proven reliability

- Heavy-duty construction;
- NORDIMPIANTI Extruder machines are Internationally proven;
- Most of mechanical parts are galvanized for durability and easy maintenance;
- Third party components are sourced from the world's most renowned suppliers.

User friendly

- New operator control panel;
- Production data acquisition to analyse machine use and production costs;
- Wear materials designed for long service life;
- Wear parts engineered to be changed with the minimum of down-time;
- Rapid production changeover to manufacture different profiles and slab heights;
- Machine noise kept to a minimum.

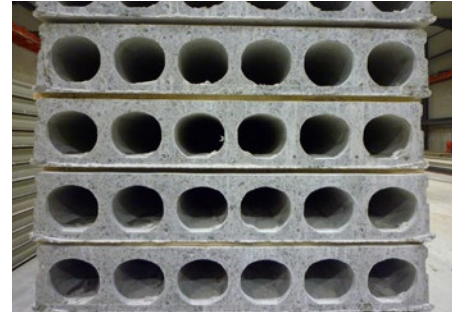
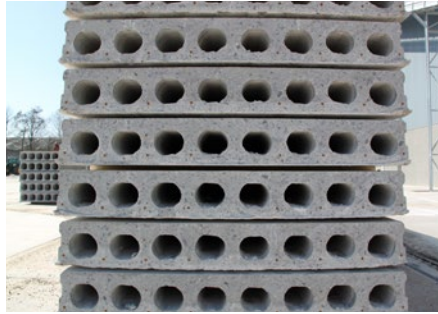
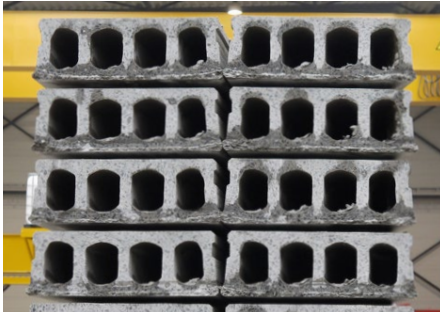


The hollow core slabs can be produced with certifiable fire resistances up to 180 minutes without changing any components on the machine.





We have a range of machines capable of meeting all your needs



THE CHOICE IS YOURS!

e60evo

2x600 mm wide

	h150 mm • Kg/m ² 220
4 hole	
	h180 mm • Kg/m ² 241
	h200 mm • Kg/m ² 263

e120evo

1200 mm wide

8 hole	
	h150 mm • Kg/m ² 224
6 hole	
	h200 mm • Kg/m ² 242
5 hole	
	h265 mm • Kg/m ² 303
	h320 mm • Kg/m ² 378
4 hole	
	h400 mm • Kg/m ² 432
	h500 mm • Kg/m ² 521

e125evo

1250 mm wide

8 hole	
	h150 mm • Kg/m ² 216
6 hole	
	h200 mm • Kg/m ² 248
5 hole	
	h265 mm • Kg/m ² 304
	h320 mm • Kg/m ² 379
4 hole	
	h400 mm • Kg/m ² 424
	h500 mm • Kg/m ² 504



Extruder **eUO**® Modular and Interchangeable

e150cvo

1500 mm wide

7
hole



h220 mm • Kg/m² 267

e240cvo

2x1200 mm wide or 2400 mm wide

6
hole



h200 mm • Kg/m² 242

5 or 5+5
hole



h265 mm • Kg/m² 303



h265 mm • Kg/m 708



h320 mm • Kg/m² 378



h320 mm • Kg/m 916

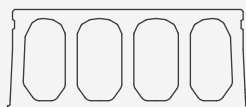
4 or 4+4
hole



h400 mm • Kg/m² 432



h400 mm • Kg/m 1037



h500 mm • Kg/m² 521



h500 mm • Kg/m 1257



nordimpianti
ITALY

Slipformer Technology

Hollow Core Slabs

nordimpianti
ITALY

HOLLOW CORE SLABS PRODUCED BY SLIPFORMER

SLIPFORMER SF120



The hollow core slabs produced by NORDIMPIANTI's sf Slipformers offer cost-effective solutions for companies who are looking for a flexible approach to produce hollow core slabs for floors and walls in various sizes.

Standard heights range from 80mm to 1000 mm while the width can be up to 1200 mm. Different widths are available according to customer requirements.



The sf Slipformer casts elements in a single phase using the vibration method without the need for formworks.

Concrete is delivered from the main hopper by feeding tables into delivery hoppers mounted on the forming insert. From here the concrete is delivered to the production bed and the voids are formed by a set of forming tubes. Special vibrating groups provide a two stage vibration process ensuring an excellent level of compaction at every point along the element.

The heights of the elements, as well as the thickness of the vertical ribs can be varied within certain limits according to the application and the element specifications required.

Slipformer *sf*

600-2400 mm wide, 80-1000 mm high

The key features of the NORDIMPIANTI *sf* Slipformer are:

High concrete compaction

- The Slipformer vibration motors are specially designed for continuous working;
- The machine is available with two or three vibration stages in order to attain the best concrete compaction;

Production flexibility

- Element height from 80 mm up to 1000 mm;
- The Slipformer is able to produce a wide range of prestressed concrete elements such as hollow core slabs for floors and Walls, inverted T and I-Beams, inverted double T slabs, vineyard posts, lintels, solid slabs, half slabs and grandstand panels;
- It is possible to insert steel wire mesh reinforcement;

Reliability

- Heavy-duty construction;
- NORDIMPIANTI Slipformer machines are Internationally proven;
- Most of mechanical parts are galvanized for durability and easy maintenance;
- Third party components are sourced from the world's most renowned suppliers;

User friendly

- The use of anti-wear materials to extend their working life.
- Wear parts designed to be easily changed reducing downtime to a minimum.
- The forming inserts can be quickly changed to enable production of slabs with different profiles or heights;

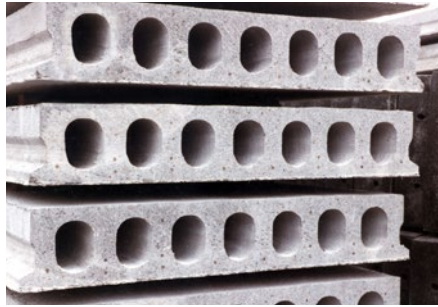


The hollow core slabs can be produced with certifiable fire resistances up to 180 minutes without changing any components on the machine.





The right solution to manufacture both floor and wall elements with different sizes

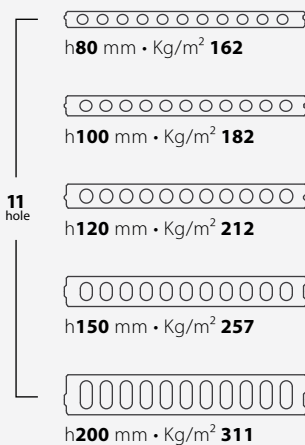


WHAT'S RIGHT FOR YOU?

sf120™

Wall Elements

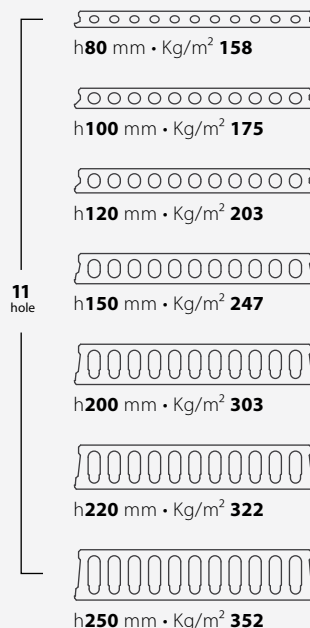
1200 mm wide



sf120™

Floor Elements

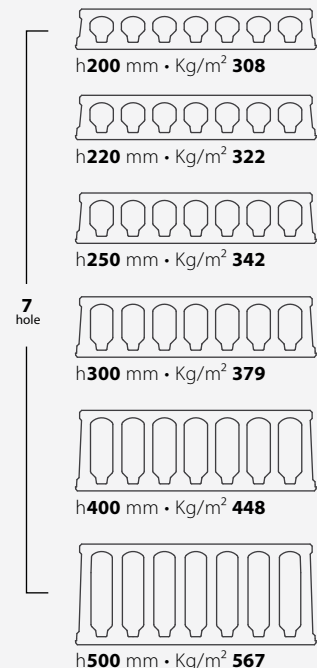
1200 mm wide



sf120™

Floor Elements

1200 mm wide



Concrete Experience

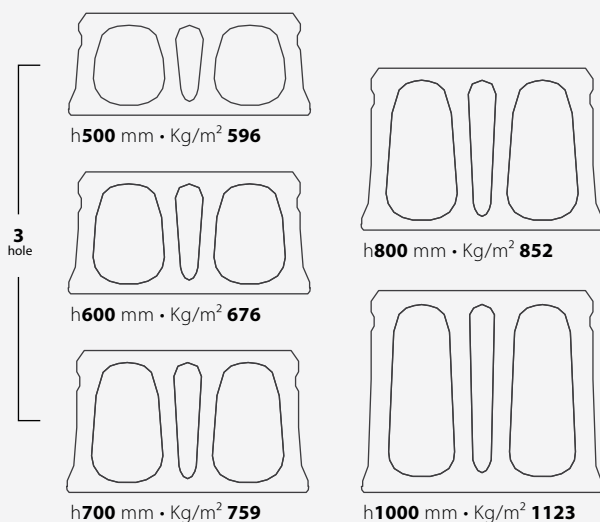


Slipformer **Sf** User friendly, proven reliability

Sf120™

Floor Elements

1200 mm wide



**SPECIAL
PROFILE
h1000**

**ONLY
WITH
NORDIMPIANTI
TECHNOLOGY**

**EXCEEDING EXPECTATIONS
FOR INDUSTRIAL AND COMMERCIAL BUILDINGS**

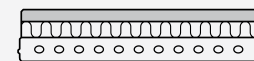
Sf120™

Special Elements

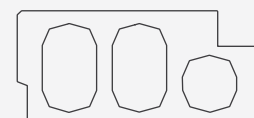
1200 mm wide



Wall panels with coloured aggregate finish



Insulated Sandwich Wall panels



Grandstand Panels





h1000 Special Profiles

Slipformer JUMBO

LARGE HOLLOW CORE SLABS

h 500 mm UP TO 1000 mm high

h 1000



The large hollow core slabs S-floor® JUMBO series have heights from 500 mm to 1000 mm and are available in widths of 600 mm or 1200 mm.

The slabs produced by NORDIMPIANTI's Slipformer are cast through a combination of concrete dosage and vibration ensuring a high level of compaction along every point of the element.



This series of elements have a particular constant cross section with two large lateral voids and a smaller centre void. Steel mesh can be inserted into the ribs and the lower part of the element.

The main applications of these special elements are:

- Tunnels, anti-landslide and avalanche guards;
- Decking systems for road viaducts and bridges with spans of more than 15m;
- Industrial flooring systems.

SPECIAL PROFILES ONLY FROM NORDIMPIANTI



The presence of voids means a reduction in slab weight. This results in a lighter floor with a solid/void ratio of less than 0.5

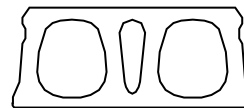


Slipformer JUMBO™

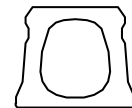
600-1200 mm wide, 500-1000 mm high

1200 mm wide
2+1 HOLE

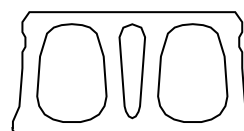
600 mm wide
1 HOLE



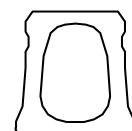
h **500 mm**
Kg/m² **596**



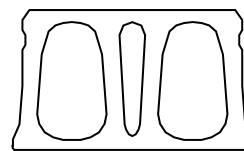
h **500 mm**
Kg/m **358**



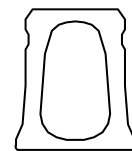
h **600 mm**
Kg/m² **676**



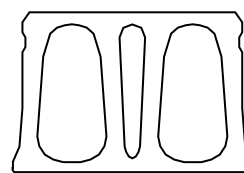
h **600 mm**
Kg/m **338**



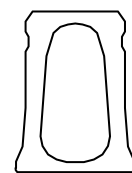
h **700 mm**
Kg/m² **759**



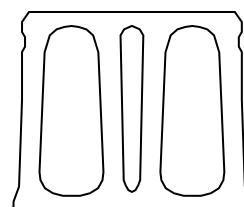
h **700 mm**
Kg/m **379**



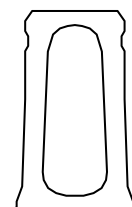
h **800 mm**
Kg/m² **852**



h **800 mm**
Kg/m **426**



h **1000 mm**
Kg/m² **1123**



h **1000 mm**
Kg/m **561**

HOLLOW CORE WALL PANELS



In residential, commercial or industrial building sectors hollow core slabs can be used as a wall element.

Hollow core wall panels have an excellent finish on both sides, one side because the elements are cast on steel beds the other side because the element is smoothed by the slipformer meaning that the final element requires no further finishing, painting can be done only if required.

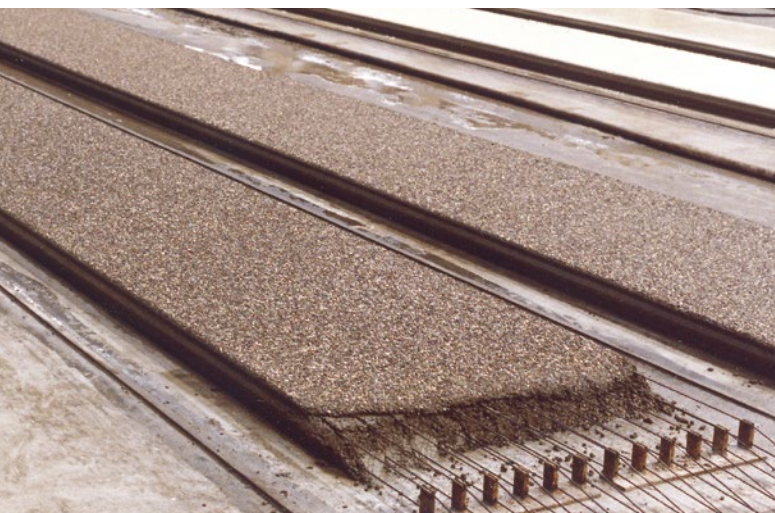
To improve the architectural aspect of the panel one side can be manufactured with a finish incorporating different coloured aggregates using a special topping machine. This allows economic production of high quality wall elements.

The elements can also incorporate insulating material between the hollow core slab and the concrete topping to increase the acoustic and thermal properties.

TOPPING MACHINE



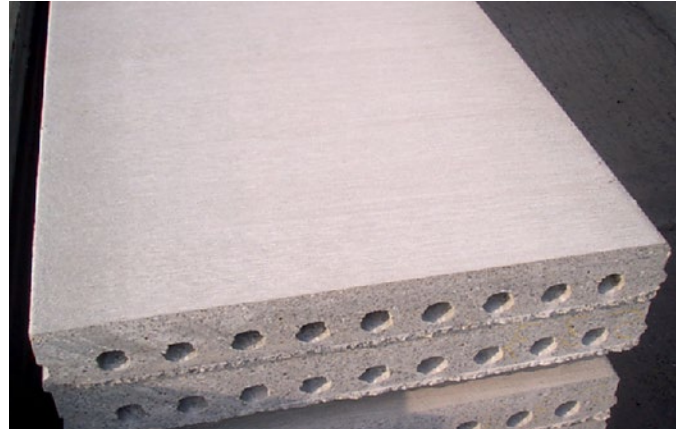
SLIPFORMER COMBINED WITH TOPPING MACHINE



The production of this particular element is simple and cost effective and doesn't require a large investment outlay on equipment. It can be manufactured on the same production bed as used for floor elements.

The thicknesses of both the elements and insulation can be varied as required in sandwich wall panels.

Possibility to have different coloured aggregate finishes

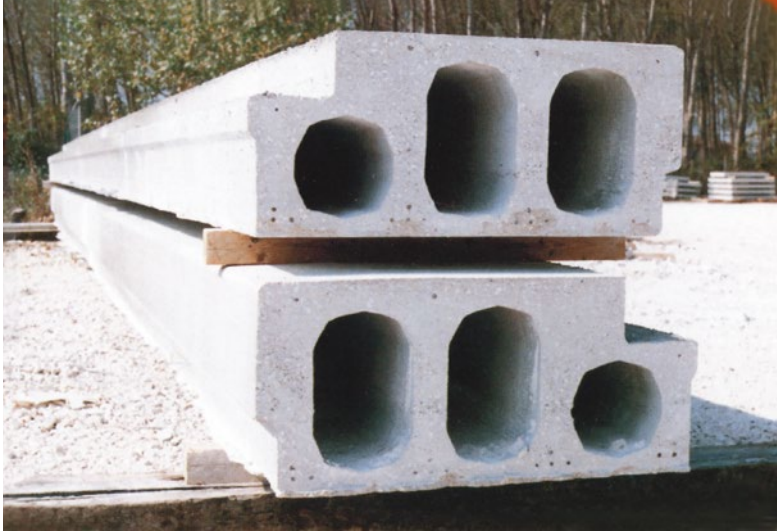




Grandstand Panels

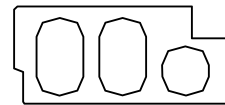
Produced by Slipformer Technology

GRANDSTAND PANELS



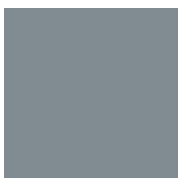
In infrastructure hollow core slabs can also be used for the construction of stadium seating.

3 hole



 **Concrete
Experience**





Hollow Core Slabs

Applications



NORDIMPIANTI SYSTEM SRL

Via Erasmo Piaggio, 19/A
66100 Chieti (CH) - Italy

Tel. +39 0871 540222

Fax +39 0871 562408

info@nordimpianti.com

www.nordimpianti.com

THE PRODUCTS IN THE PICTURES MAY HAVE SOME ACCESSORIES NOT INCLUDED WITH THE BASIC MACHINE.
THE DATA GIVEN IS STRICTLY INFORMATIVE. NORDIMPIANTI RESERVES THE RIGHT TO MODIFY THIS DATA WITHOUT PRIOR NOTICE.