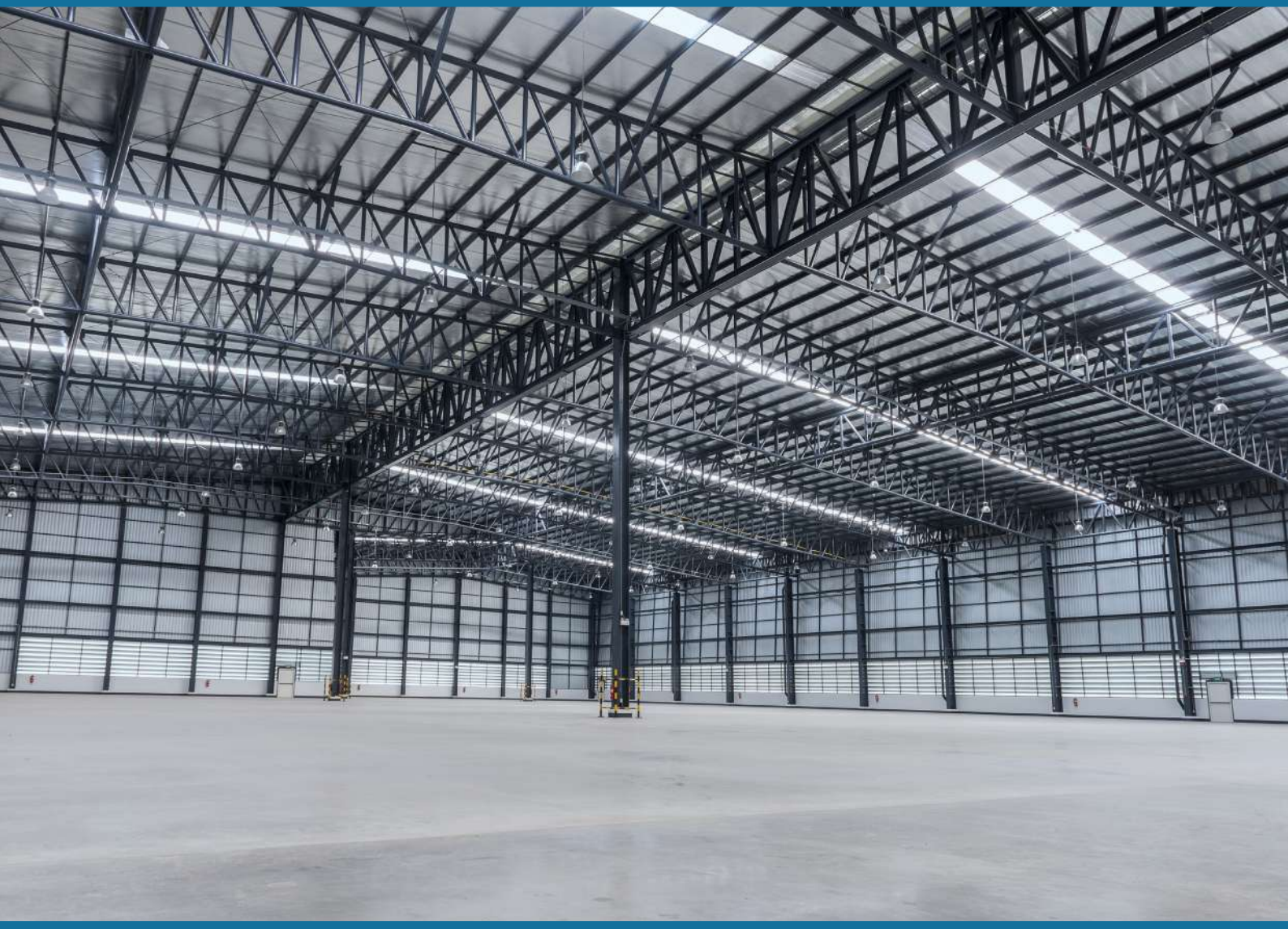
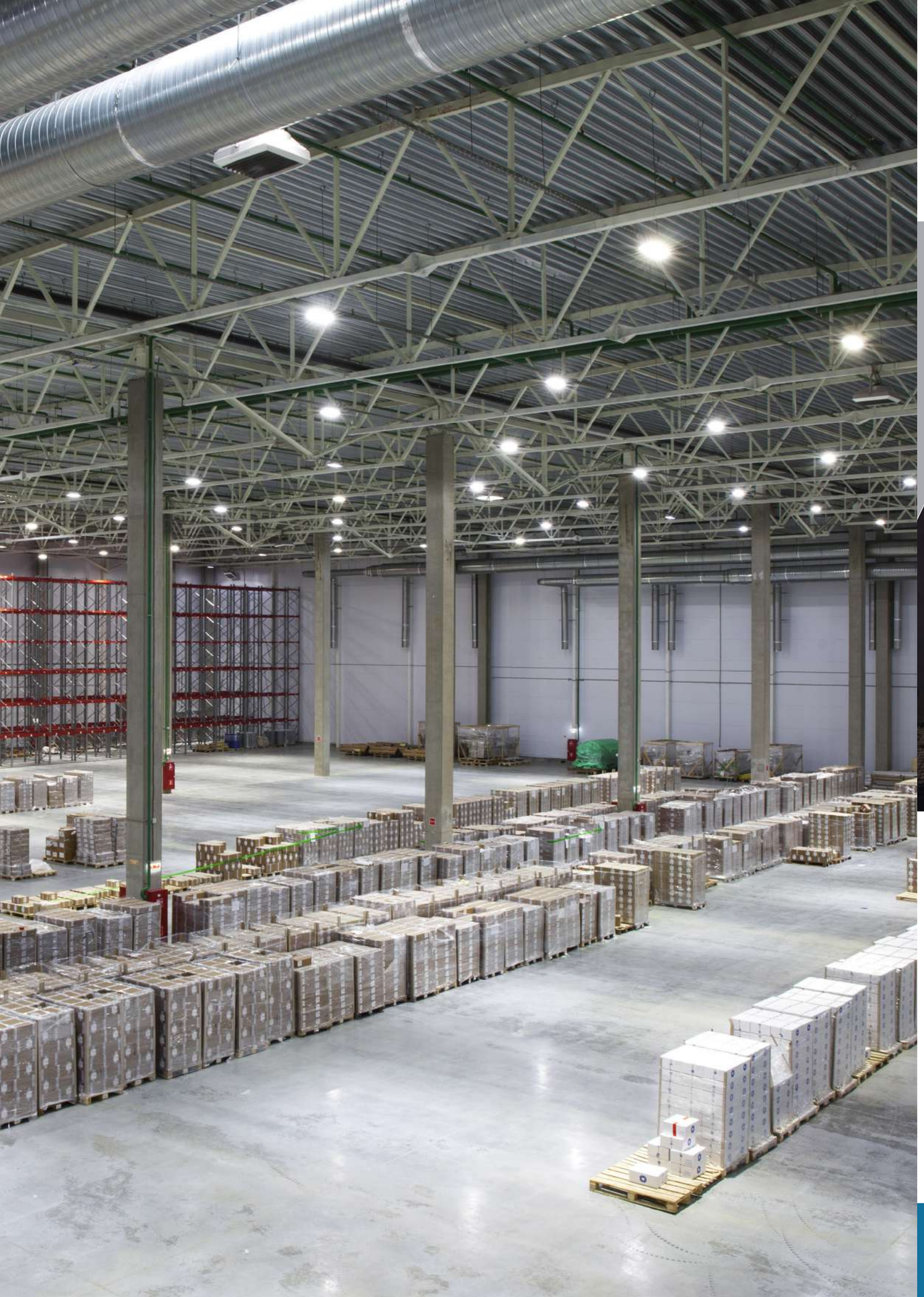
CONCRETE FLOORING



CONCRETE INDUSTRIAL FLOORS

Prima
PAVIMENTI SPECIALI



Prima
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WHERE

Aeronautics and shipbuilding industry
Metalworking and automotive industry
Steel industry
Manufacturing sector
Logistics and warehouses
Yards and parking
Public areas, walkways
Energy sector

BENEFITS

SOLID AND STRONG FOUNDATIONS
RESISTANCE TO STATIC AND DYNAMIC LOADS
HIGH FLATNESS
JOINTLESS CONTINUOUS SURFACES
FIRE RESISTANCE
IMPACT AND ABRASION RESISTANCE
TURNKEY SOLUTIONS

AD-HOC DESIGN AND REALISATION

In the delicate phase of design and analysis, prior to execution of the work, we make our experience available to the client. This involves studying the layout of the area to be floored and the concrete mix required. It also involves ensuring the correct thickness and reinforcement are used. This guarantees the highest quality standards and a turnkey solution.

Our structured approach is based on over 40 years of experience in the flooring sector – certified sustainable solutions and the know-how of listening to our customers to always provide the right answer to every need.

CONCRETE INDUSTRIAL FLOORS

ACQUIRED **KNOW-HOW** IS EXPRESSED
IN THE **EFFECTIVENESS**
OF THE PROPOSED **SOLUTIONS**

SAFE AND LASTING CHOICES

Prima's industrial floor solutions are designed to meet the specific needs of each company and must comply with certain requirements to ensure the highest quality standards and a turnkey service.

STABILITY AND LOADS

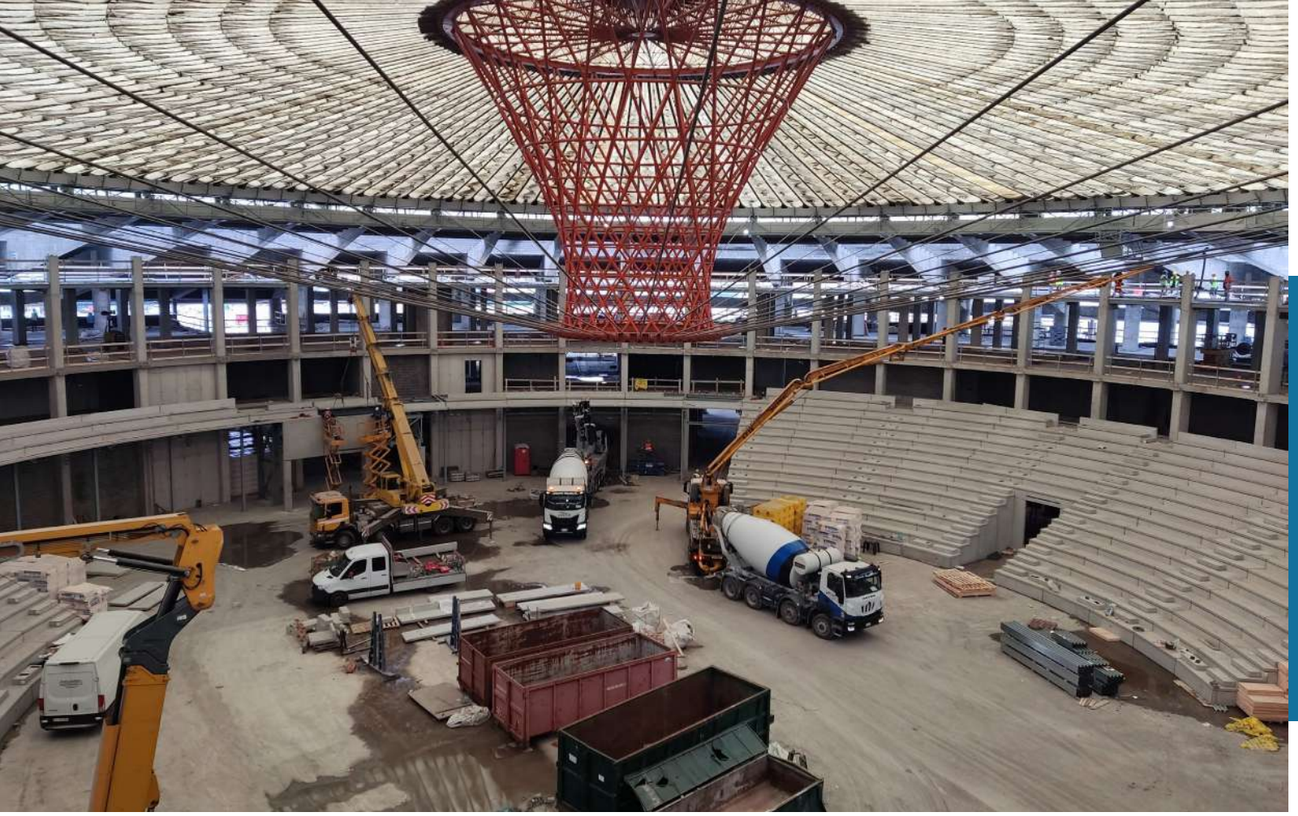
In order to ensure stability and durability, failure or structural damage that could compromise the use of the industrial area or warehouse, floors must be able to withstand static and dynamic loads. The transfer of these loads to the concrete floor takes place through the concrete slab, suitably sized and connected by joints, which distributes the stresses to the ballast and subgrade, designed to guarantee stability and limit deformations, taking into account the specific characteristics of the loads and operating conditions.

SUPERFACE TREATMENTS

To improve cleanliness and durability, we use appropriate surface hardeners, anti-dust treatments and/or consolidating agents.

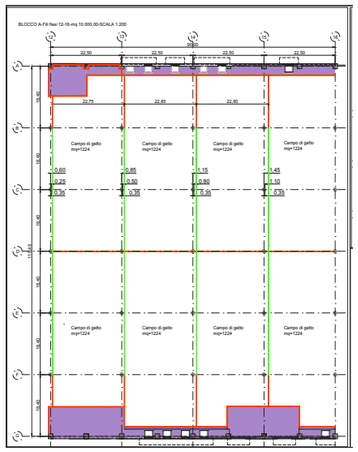
Project
Mazzucchelli - Castiglione Olona (VA) - Italy

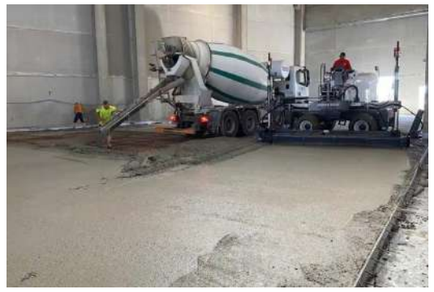
CONCRETE INDUSTRIAL FLOORS



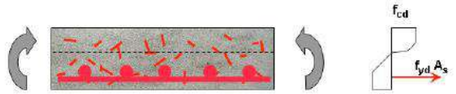
Project
Palasport & Waterfront- Genova (GE) - Italy

Laying of a vapour barrier consisting of 200-micron-thick polyethylene sheets.





VERIFICHE AZIONI INDIRETTE				DT211/2014
Spessore pavimentazione	h	50	mm	
Resistenza a trazione media del calcestruzzo	f_{ctm}	2,56	MPa	
Tensione di prima fessurazione	σ_t	2,13	MPa	§8.1.2
Coefficiente di rilassamento		Valori UNI 11146		
CALCOLO GRADIENTE TERMICO				
Superficie di scorrimento		Singolo foglio di polietilene		Tab.5.3
Coefficiente di attrito	μ	0,7		
Distanza tra i giunti	a_t	2500,00	mm	Tab.5.5
Distanza tra i giunti/sp. pavimentazione	a_t/h	50,0		
Fattore di vincolo	ψ	1		
Coefficiente di dilatazione termica	α	0,00001	1/°C	
Coefficiente di rilassamento	φ	2,00		
Gradiente termico costante lungo lo spessore				
Strutture non esposte	ΔT	10,00	°C	§5.2.3
Gradiente termico variabile lungo lo spessore				
Ambiente interno	ΔT°	5,00	°C	Tab.5.2
	ΔT	-5,00	°C	
Gradiente massimo	**ΔT**	**15,00**	**°C**	
Posizione di verifica lungo il campo di getto		CENTRO		
Tensione indotta dal gradiente termico	σ_T	1,57	MPa	Tab.5.6
Verifica tensioni indotte da gradiente termico	σ_t/σ_T	1,36	✔	



Conventionally reinforced concrete floor study

CONCRETE INDUSTRIAL FLOORS

Prima PAVIMENTI SPECIALI

AD HOC TECHNICAL DESIGN
TURNKEY **SOLUTIONS**

DESIGN STAGE

According to the Technical Standards for Construction (NTC 2018), the design is mandatory and must be carried out by a qualified technician, in accordance with the instructions in CNR DT 211/2014 and UNI 11146. Designing industrial concrete floors requires a detailed, multidisciplinary approach based on the latest regulations and precise assessment of the required operating conditions and performance. The design process involves precise evaluation phases.

LOAD-BEARING CAPACITY OF SOIL

The load-bearing capacity of soil is defined as the maximum load that it can support without undergoing excessive failure or breakage. This capacity depends on various factors, including the soil's mechanical properties (such as cohesion, friction angle and unit weight), the geometry and depth of the foundation, and the characteristics of the applied loads (e.g. inclination, eccentricity and adjacent loads).

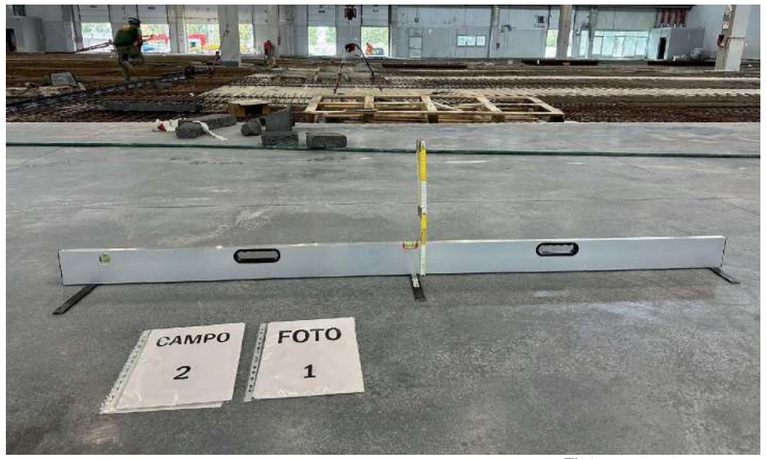
INDUCED TENSIONS AND SIZING

The calculation of induced tensions for dimensioning an industrial floor is based on analysing static and dynamic loads (e.g. trolleys and racks) and determining bending tensile stresses due to these loads. Thermal and hygrometric effects are also considered.

MIX DESIGN

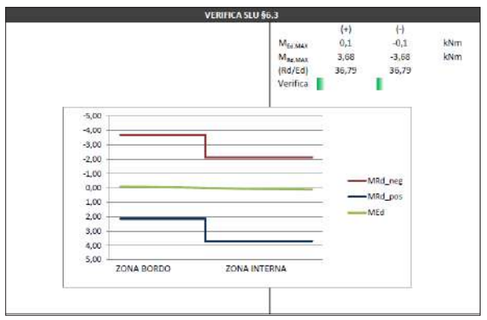
The concrete mix design for industrial flooring must be tailored to ensure strength and durability, minimise the risk of cracking, and provide adequate workability. It is essential to define:
- Required characteristic strength (Rck);
- maximum aggregate diameter (D_(max))
Consistency Class (S3–S5, based on the laying method).
Environmental exposure class.
Any additions (fibres, additives).

Posizionamento doppia armatura



Flatness tests

Control joint construction by cutting



CONCRETE INDUSTRIAL FLOORS

Prima
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FLOORING FOR LOGISTICS BUILDINGS, INDUSTRIAL AND COMMERCIAL PREMISES.

EXECUTION, CHECKS, RESULTS

Field experience and business model: this combination is essential for industrial flooring realization.

REINFORCEMENT

Reinforcement is used to compensate for the low tensile strength of concrete by creating a composite material called reinforced concrete. It is the set of steel elements, usually shaped and positioned carbon iron bars, that are embedded in the concrete to improve its structural strength, especially at tensile and bending stresses.

WEAR-RESISTANT SURFACE LAYER

Armouring of the industrial floor surface is a wear-resistant surface layer created by applying a pre-mixed cement, silica sand and quartz granules or other hard aggregates to fresh concrete, which is then smoothed with a trowel machine and incorporated into the fresh concrete. The primary function of this layer is to enhance the floor's resistance to abrasion and impact, thereby increasing its surface hardness.

CHECKS

For new industrial floors, checks are carried out according to the technical specifications set out in the CNR-DT 211/2016 document, which is the most up-to-date and exhaustive reference for design, execution and control. These checks cover materials, geometry and finish, the quality of the surface layer, and both non-destructive and destructive testing, as well as any defects. On-site checks are carried out to ensure compliance with design specifications and laying methods. Final checks confirm that the flooring complies with the required performance criteria (resistance, flatness and durability).

Project
Leonardo - Frosinone (FR) - Italy

INDOOR

LASER SCREED FLOORING

Technology at our service.

Laser Screed: vibrating machine: a computerized control machine, specially designed for levelling and vibrating industrial concrete flooring. It is equipped with a telescopic arm, at the end of which is placed a vibrant screed allowing the concrete to be machined. Flatness is monitored during the casting phase, allowing us to produce remarkable slabs (up to 2,500 square meters per day) with a large decrease both of construction joints and of potential flatness defects that could occur during the laying process.

BENEFITS

Instead of the traditional S4-S5 concrete used for casting, it is possible to use concrete of consistency class S3, which can result in considerable cost savings.
Reduction of construction joints, extending maintenance work over time.
Significant reduction in potential flatness defects that could occur during the laying process.
Reduction in execution time.
Optimal for logistics, large-scale distribution and automated warehouses, with high racking heights and high static or dynamic loads.

JOINTLESS FLOORING

Fast and safe handling.

Jointless concrete floors are free (or almost free) of contraction and control joints. Thanks to the use of specially formulated concretes (modified with expanding additives and/or hydraulic shrinkage reducers), and special reinforcements, it is possible to create JointLess flooring (eliminating control joints, which are sensitive to vehicular traffic) with **CONTROLLED RETREAT CONCRETE METHOD**.

BENEFITS

Elimination of maintenance costs related to degradation of the joints
Increase in the transit speed of the handling vehicles.
Decrease in maintenance costs for handling vehicles.
Decrease in occupational diseases arising from jolts and collisions.
Increased productivity.
Easier cleaning.
Suitable for logistics with high traffic and goods handling.

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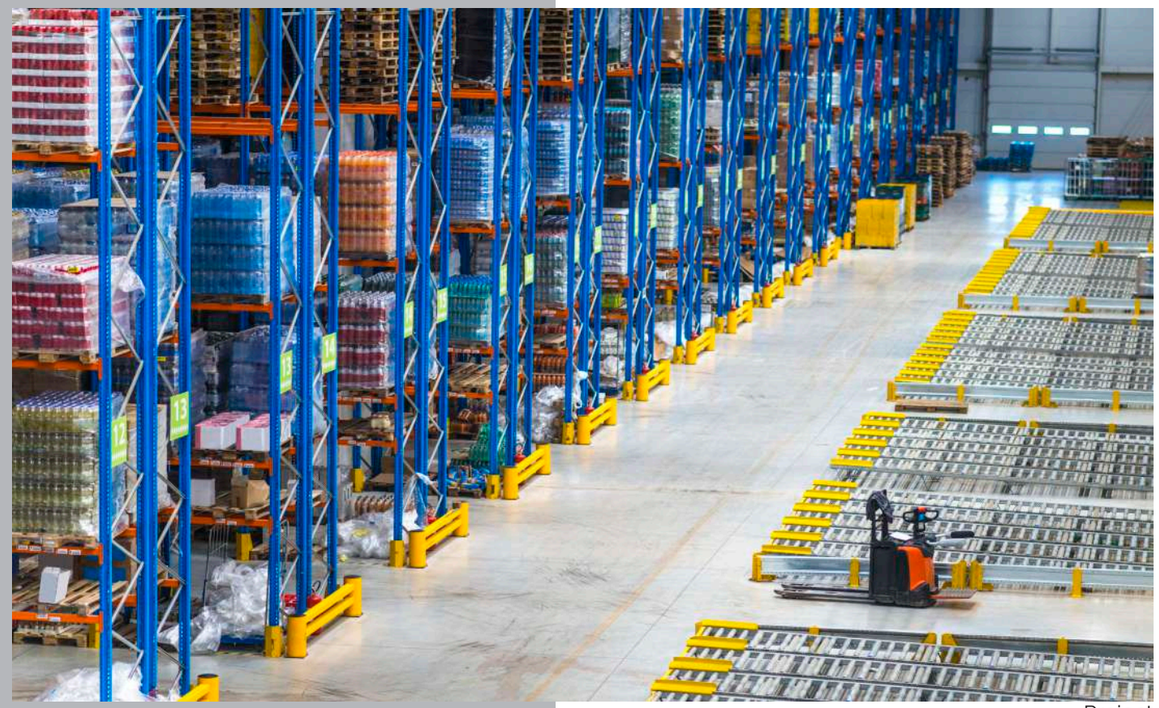


Project
Leonardo - Frosinone (FR) - Italy

CONTROLLED FLATNESS FLOORING

Greater stability. Safety.

They are suitable for use in environments where it is essential that surfaces are completely flat in order to ensure stable load handling.
Laser monitoring during the laying process using laser vibratory screeds (Laser Screed) allows for "step-by-step" flatness control during concrete pouring, ensuring high standards of horizontality and reducing construction joints.
Our solutions take into account the customer's in-house handling system to optimise the safe flow of goods.
They are ideal for high-bay warehouses and large-scale distribution, where electronic systems manage automated trolleys.

BENEFITS

Faster and safer handling of goods.
Extremely smooth and level surface: reduces vibrations and load movements, preventing damage to goods, shelves and handling equipment.
Millimetre precision: in high-bay warehouses, planing techniques with tenth-of-a-millimetre precision are used to achieve optimum flatness
High mechanical resistance
Reduced maintenance costs.

Project
Polo della Nautica (GE) - Italy

INDUSTRIAL COLLABORATING FLOOR WITH SLAB

Load-bearing capacity.

Collaborating floor slabs are structural solutions that join a floor to a slab so that the floor contributes to the load-bearing capacity of the slab, creating a single structural element.
The collaborating floor, particularly with a reinforced concrete slab, can improve the structural system's resistance to seismic events.
By integrating with the floor slab, the floor can reduce the overall height of the building, saving space.

BENEFITS

Ability to compensate for floor movements, reducing the risk of injury.
Increases the strength of the floor, allowing it to withstand heavy and repeated loads.
Improved seismic behaviour.
Reduction in the overall thickness of the floor-ceiling system, saving weight and usable space.

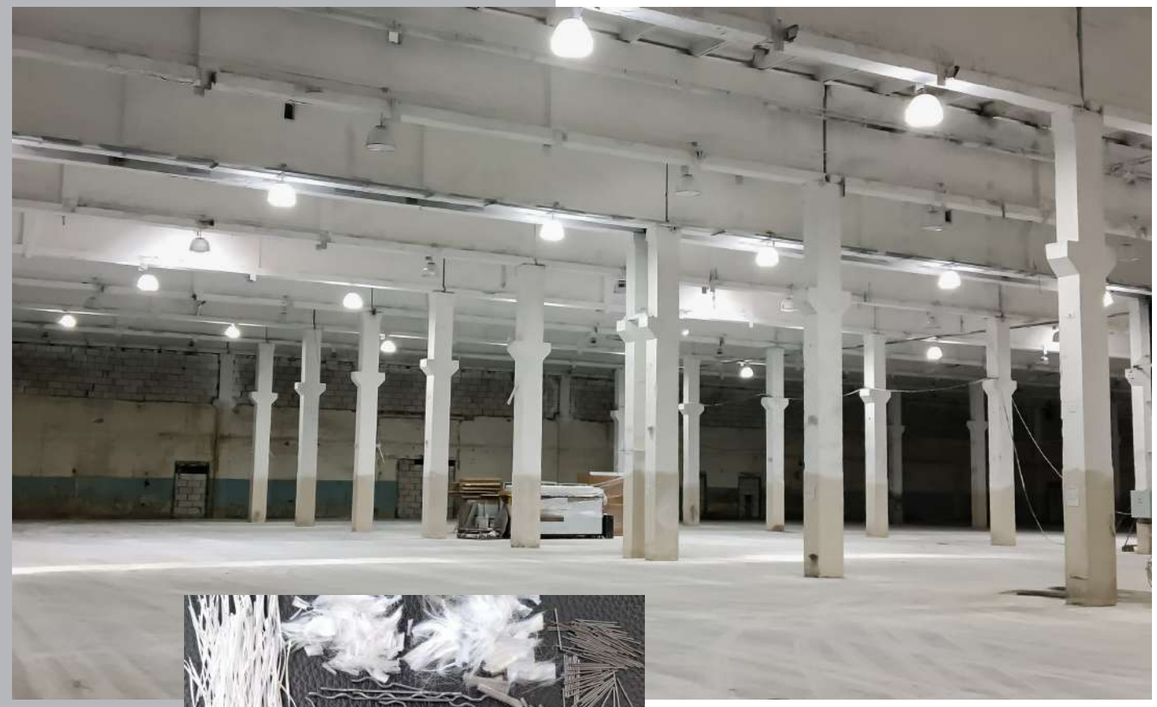
FLOORING ON RADIANT SYSTEM

Thermal comfort.

These solutions are designed to integrate a low-temperature heating system directly into the concrete screed. The radiant system pipes are positioned above an insulating layer and embedded within the concrete itself. Water at temperatures of up to 40 °C circulates in the pipes in a closed circuit across a large radiant surface area. Heat is transmitted by radiation from the bottom upwards. They are used in industrial and commercial applications as they do not affect the appearance of a space.

BENEFITS

Superior thermal comfort: avoids heat stratification and annoying draughts
Improved air quality: the absence of air heating prevents the circulation of dust and dust and prevents the formation of humidity and mould on the floor
Energy saving: the system allows low temperature operation and can lead to energy savings of up to 50% compared to traditional air systems, thanks to the large radiant surface area and low thermal inertia
Aesthetic and functional impact: the system is invisible, preserving surfaces



FIBER REINFORCED FLOORING

Fibre replaces reinforcement.

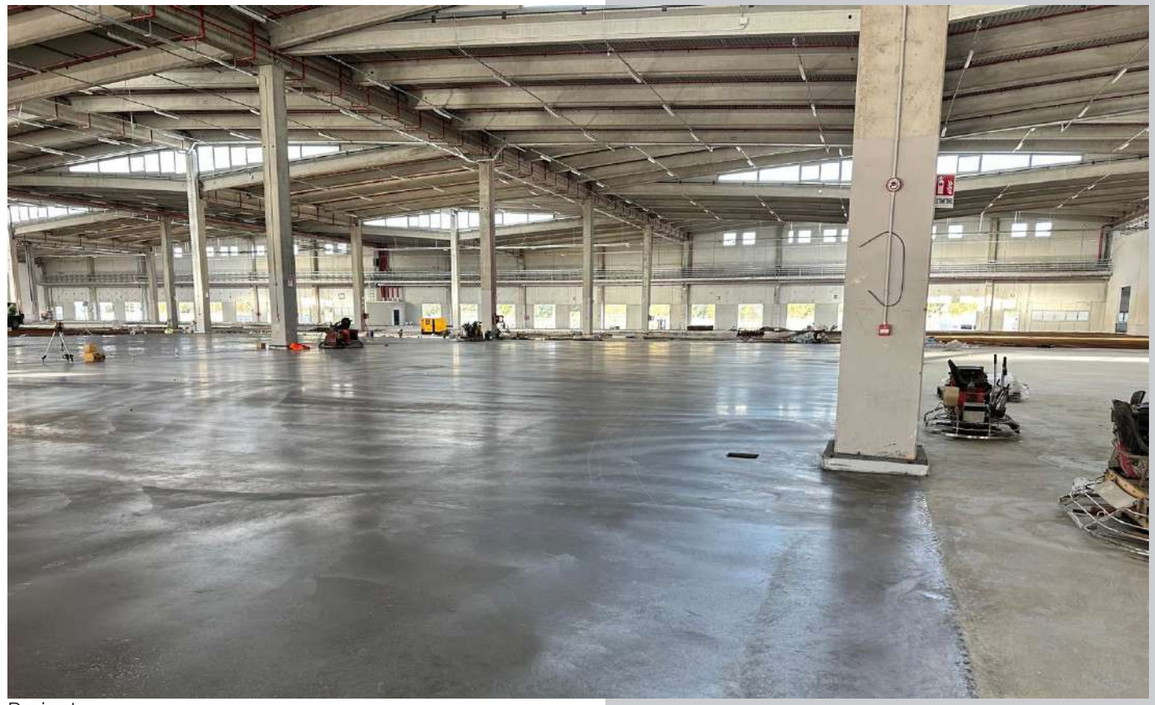
Fibre-reinforced industrial flooring provides greater ductility, increased load-bearing capacity and increased punching resistance. The use of steel or polymeric (depending on the case) fibre reinforcement (FRC) distributed in the concrete mix gives an omnidirectional type of reinforcement, capable of solving multiple design limitations. The fibres alone can withstand the tensile stresses resulting from seismic loads, or mixed reinforcement/FRC systems, increasing the strength of the flooring.

Designing a fibre-reinforced concrete (FRC) floor involves carefully evaluating the load values and slab failure values of the ballast to achieve the correct concrete mix design and fibre sizing (length, diameter and shape), as well as the correct dosage per m^3. The fibres are mixed and proportioned appropriately for the purpose in accordance with design requirements in both the fresh and hardened states.

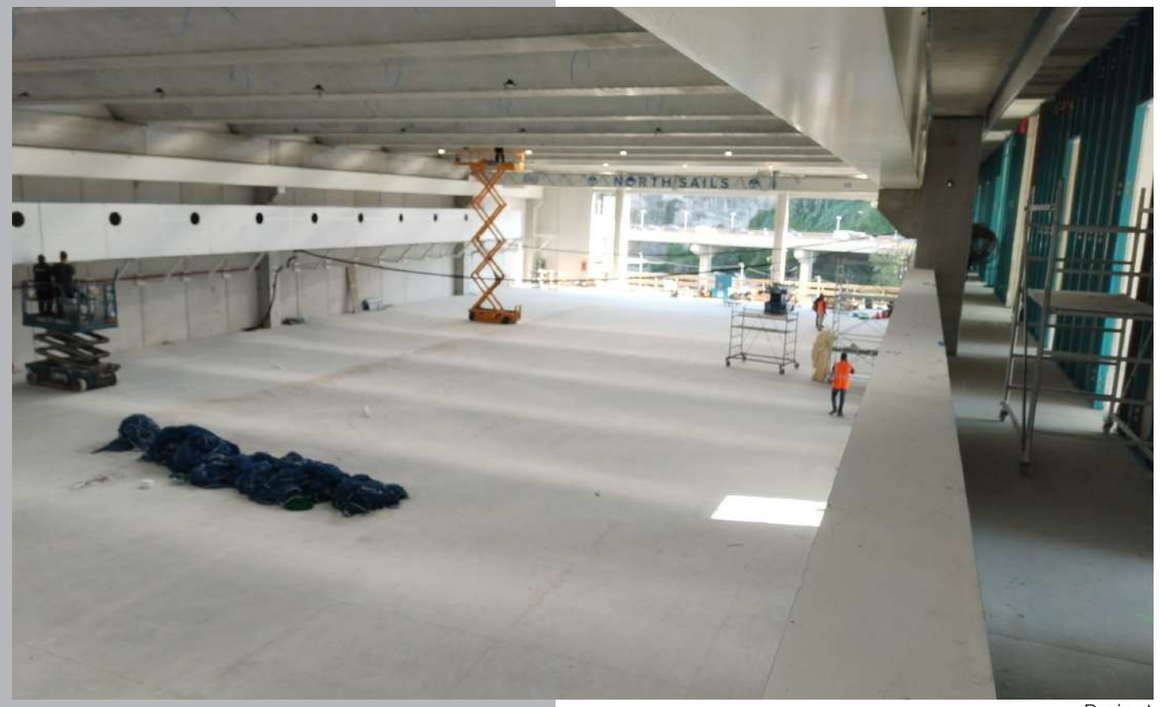
BENEFITS

Reduction of cracking: fibres limit the formation and propagation of cracks due to shrinkage, thermal variations and high loads.
High stress resistance.
High resistance to high static or dynamic loads, in heavy industrial activities such as aviation, shipbuilding or mechanical engineering, metallurgy and iron and steel industry.

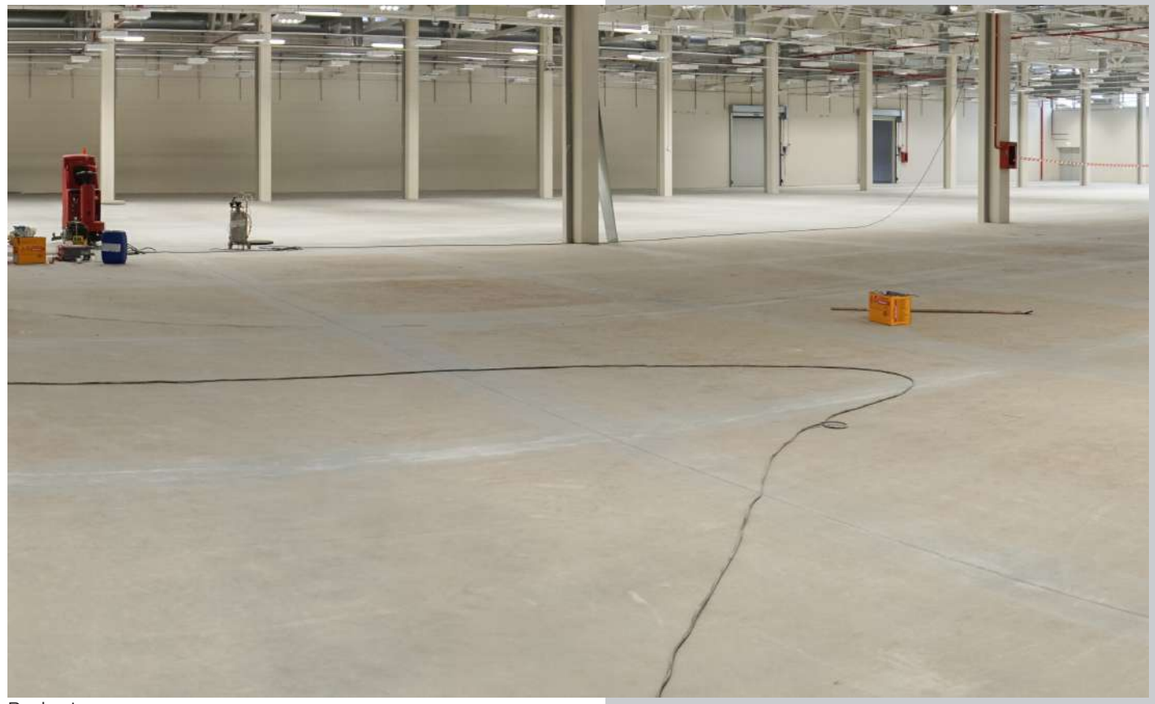
Project
Stabilimento FACO Cameri (NO) - Italy



Project
Logistica Kryalos Fondo Mazer - Fiumicino (RM) - Italy



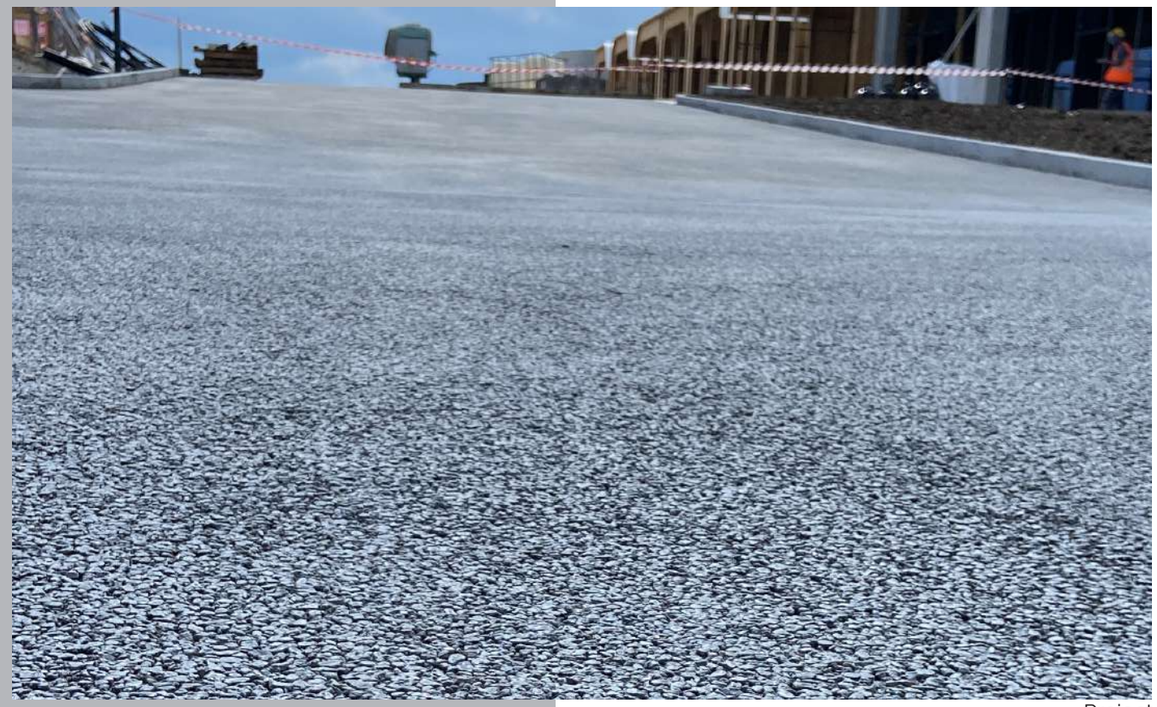
Project
Polo della Nautica Genova (GE) - Italy



Project
OBI - Roma Casilina (RM) - Italy

Prima PAVIMENTI SPECIALI

Project
Passerella ciclo-pedonale San Cristoforo - Milano - Italy



Project
Prima Idro® TO.Dream Urban District - Bike path - Torino - Italy

OUTDOOR FLOORING

Weathering resistance.

High-performance concrete floors are specially designed. This is because they must meet certain demands. Outdoor floors, for example, are designed to withstand rain, sun, frost and temperature changes. They must be made using specific concrete, for example with non-freezing aggregates, and with a mix design that has a low water-to-cement ratio in order to reduce porosity and prevent water penetration. Great care must also be taken when pouring the concrete, which should be done under ideal atmospheric conditions to ensure the desired strength is achieved. Anti-slip finish: for safety, especially in environments subject to moisture or frost, the surface is often finished with anti-slip treatments such as a “broomed” finish.

This type of flooring is perfect for special areas like airports and aircraft bases, where high-performance flooring is needed. In aircraft parking areas, to support aircraft loads during operations such as manoeuvring, parking and loading-unloading. Other applications include logistics loading and unloading areas and the redevelopment of public spaces.

BENEFITS

Resistance to freeze-thaw cycles
Resistance to weathering and high temperatures
Low-maintenance
High resistance to the passage of heavy vehicles

DRAINING FLOORS

PRIMA IDRO®

Key, starting from the design stages, is the choose certified materials at the design stage that concretely contribute to improving outdoor spaces, avoiding as much as possible the creation of new impemeable (such as asphalt and concrete) and/or unstable (such as self-locking and loose gravel) surfaces.

Draining concrete, as the word itself says, is a highly porous concrete permeable to liquids. The operating mechanism is simple: water that arrives on the Prima Idro® surface permeates through the entire structure, reaching the subsoil and regenerating the the groundwater.

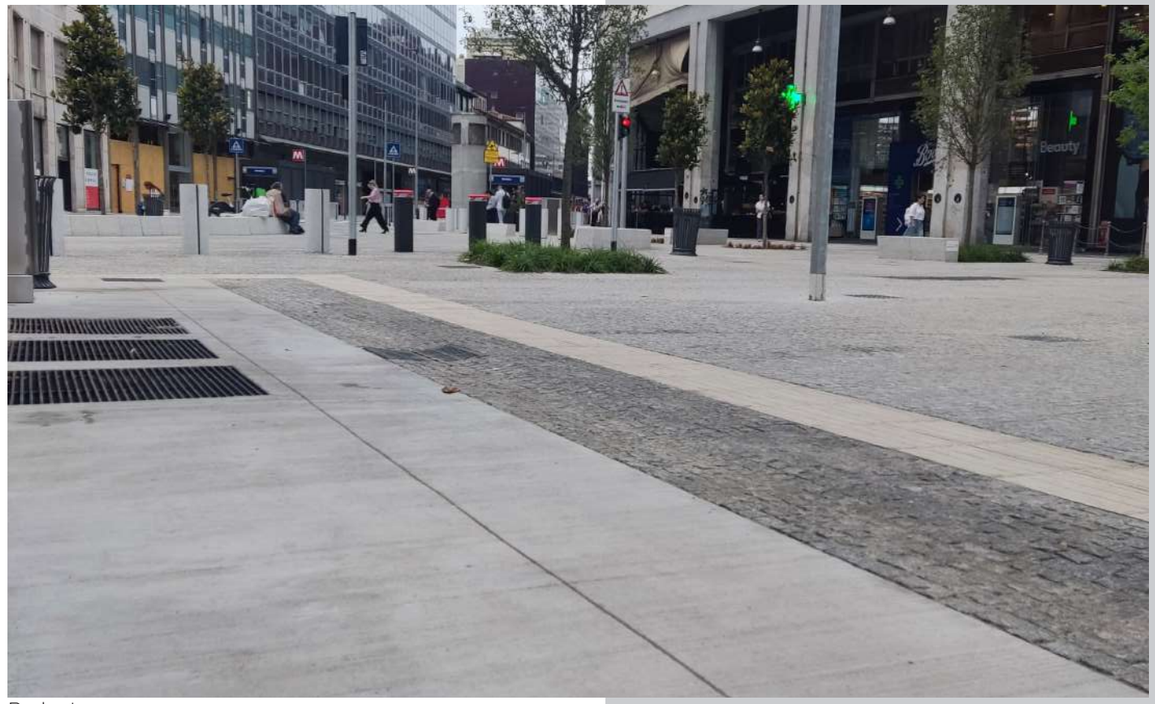
BENEFITS

Fully draining and eco-friendly.
Heat island effect.
Carrabile e pedonale.
A proportion of water is returned to the environment through evaporation, improving the thermo-hygrometric conditions of the site.
Resistance to freeze-thaw cycles.

Project
Obi - La Spezia (SP) - Italy

Project
Stabilimento FACO Cameri (NO) - Italy

Project
Prima Ground® Bulgari HQ - Valenza (AL) - Italy



Project
Superficie Metro San Babila - Milano - Italy

Project
Piaggio Group - Italy

POLISHING TREATMENT

PRIMA POLISHING FAST SYSTEM®

To overcome the porosity (and consequent deterioration) of concrete floors, even those with a dust finish, we have an exclusive solution: the Prima Polishing Fast System, the rapid polishing system that transforms your flooring into a resistant surface, reflective and easy to clean.

The treated floor will not withstand dust, get oils, and grease, etc. stretching over time maintenance works. Furthermore processing times of our treatment are very fast, in just 12 hours we make very large surfaces, immediately available for use.

BENEFITS

Stops dust generation during wear.
Increases abrasion and rolling resistance.
Minimises liquid absorption.
Maintenance work on the floor is minimised.
Customised floor gloss.

EPOXY ANTI-DUST TREATMENTS

Protection and consolidation.

It is a water-dispersed epoxy dustproof treatment for impregnating industrial quartz concrete, with a smooth matt final appearance. It is suitable for creating dustproof, oil-resistant surfaces that are frequently washed and subject to wear caused by the passage of trolleys and other vehicles. The surfaces to be treated must be in good condition, clean and compact.

BENEFITS

Anti-dust action
Waterproofing and consolidation
Improves wear resistance
Reduces absorption of liquids and oils, protecting the floor
from stains and mould.
Water-based, solvent-free formula, therefore more environmentally friendly and safer.
Colourless and non-film forming

Prima
PAVIMENTI SPECIALI

CASE HISTORY

Our industrial know-how and expertise in this field, our partnerships as well as recognized qualities over the years, have allowed us to become a major player in this sector.

The best calling card is the flooring we have realised. In Italy, in Europe and, in the rest of the world.

SOME OF OUR CUSTOMERS

ITINERA
IKEA
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LEONARDO FINMECCANICA
AgustaWestland
webuild
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Conad
Caprara di Campegine (RE)
Italy

Logistica CL13
Kryalos -Fondo Mazer
Fiumicino (RM) - Italy

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