

# Parking: Hoesch Additive Floor<sup>®</sup>

The perfect solution  
for multi-storey car parks



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many years!**

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**ThyssenKrupp Bausysteme**



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The perfect solution for multi-storey car parks



For many years, ThyssenKrupp Bausysteme have been engaged in developing solutions for parking systems.

In 1991, a floor system particularly suitable for multi-storey car parks was developed: Hoesch Additive Floor®.

This system, composed of profiled steel sheets of high load-bearing capacity and a light-weight reinforced-concrete ribbed slab offers many benefits: easy logistics, large spans, a wide range of colours to meet visual requirements and proved durability.

In the course of time, ThyssenKrupp Bausysteme have acquired a wealth of experience. A great variety of projects have been realised in Europe, from simple parking decks to multi-storey car parks of different sizes and designs. Altogether, more than 3,500,000 m<sup>2</sup> of Hoesch Additive Floor® have been installed.

If you are looking for a solution, whether for a parking deck or a multi-storey car park, please contact us and take advantage of our expertise. Our engineers will give you any advice you may require, from planning to execution.



## Key data when planning parking areas

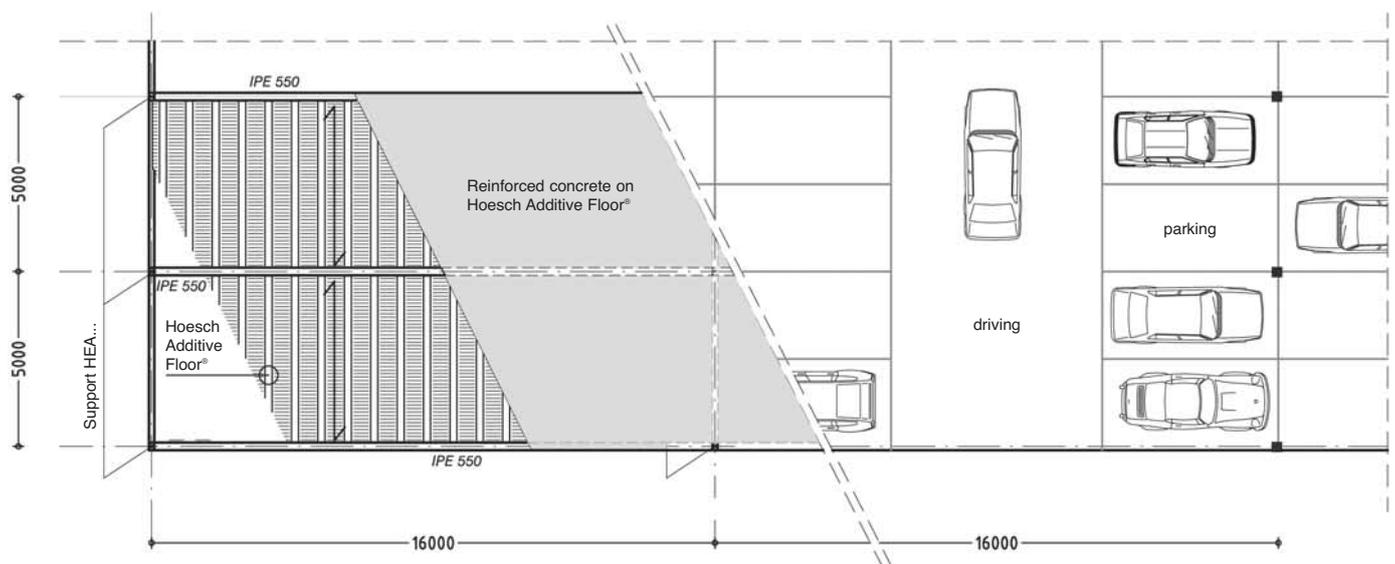
Reference values for the design of multi-storey car parks in Germany:		Standard system:	
Parking lot width:	2.5 m	Main girder span:	approx. 16 m
Parking lot length:	5.0 m	Typical floor span:	5 m
Aisle width:	6.0 m	Parking lot dimensions:	2.5 m x 5 m
Ramp slope:	12 %		
Max. car weight:	25.0 kN		
Min. clearance height:	2.10 m		

Requirements with regard to fire protection: generally there are no requirements in the case of open multi-storey car parks.

## Comfortably and clearly arranged



## Distribution of parking space



## Types of multi-storey car parks



Planning a multi-storey car park can be very complex. The planner has to take account of all constructional alternatives in order to achieve the optimum acceptance, quality, economic efficiency and durability of the building. From an early stage this requires various marginal technical and economic conditions to be taken into consideration. The specialists from ThyssenKrupp Bausysteme will be pleased to provide their expertise and experience without any commitment on your part. The selection of the type of car park primarily depends on the nature of the use and the defined priorities. When considering the nature of the use, a distinction is drawn between distributed volumes of traffic with vehicles constantly entering and leaving the car park (e.g. shopping centres) and peak volume of traffic, where the complete car park is filled and emptied in a short time (e.g. car parks for staff). Furthermore, the available space and the desired design are important when determining the type of car park.

The following car park systems are possible and have already been put into practice:

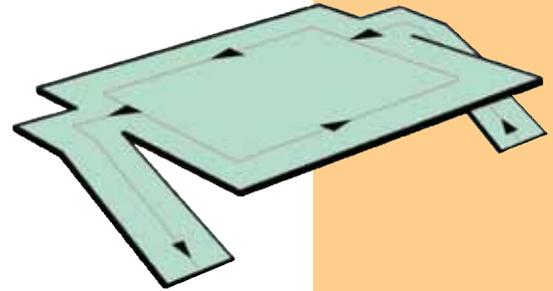
- **Single-storey car park:** one single parking area above street level
- **Flat car park:** horizontal parking areas on a number of storeys with separate access ramps outside or inside the building
- **Split-level car park:** horizontal parking levels arranged on mezzanine floors with short ramps between the parking levels
- **Ramped car park:** the storeys are achieved by an inclined arrangement of the parking levels.



## ■ Single-storey car park

A single-storey car park using the Hoesch Additive Floor® system is one of the simplest and most economic solutions. In most cases, this type of car

park is used in order to extend existing parking areas. Foundations and supports can be dimensioned so as to cater for the further addition of several parking levels in the future.



## ■ Flat car park

This type is especially suitable for large car parks, which have to cope with distributed volu-

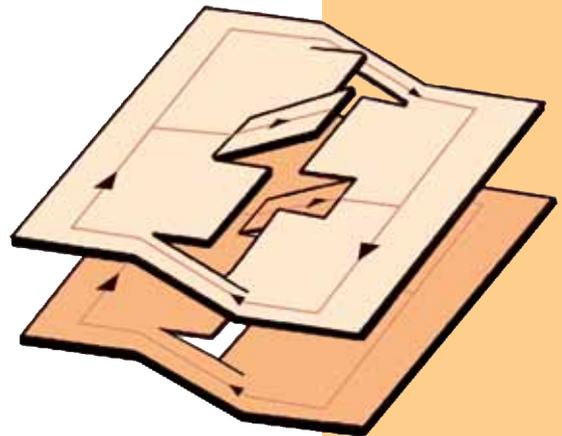
mes of traffic as well as peak traffic volumes. Large car parks are often provided with separate ramps for access and exit.



## ■ Split-level car park

This design is the most commonly used type of car park because of its flexibility. The name is derived from the design principle: the parking

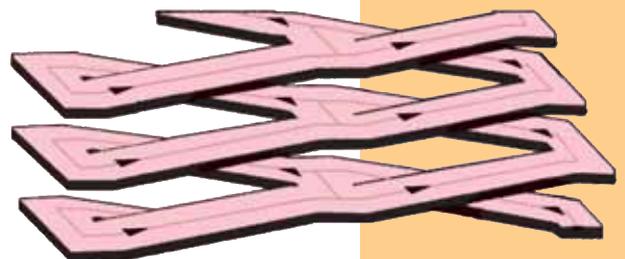
levels are arranged on mezzanine floors, connected by short ramps. The use of this design maximizes the available area. The centrally arranged ramps ensure a smooth traffic flow.



## ■ Ramped car park

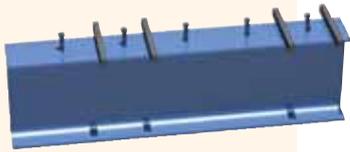
In ramped car parks, cars are parked on levels which are inclined so as to achieve the storeys required (maximum slope 5 %). This system is mainly used for very long buildings. The long distances are not conducive to rapid traffic flow

in the case of traffic peaks. However, this solution is considered to be one of the most userfriendly systems due to the low slope. As access and exit ramps are not required, the gross space required is optimised which makes this solution the most efficient one.



## Good reasons for choosing Hoesch Additive Floor®

Product properties:

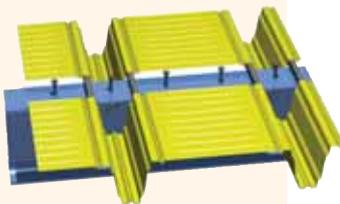
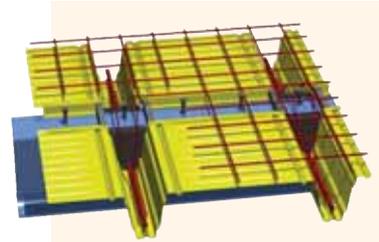


### Extremely rapid erection

Auxiliary props to support the floors and the steel structure in the concrete placing phase are not required. The various crafts, e.g. erection of the steel structure, profile laying, installation of reinforcement and concrete placing can be carried out independently of each other and in parallel. No additional painting of the floor lower side is required as the profiled sheets are provided with a high-quality coating when supplied.

### Attractive lower surface

The perfect colour finish selected from a large colour range, which is applied to the exposed lower side, makes an additional painting unnecessary and saves lighting costs. An agreeable atmosphere is created by the interplay of the colours of supports and floor.

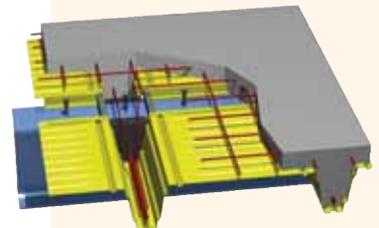


### High economic efficiency

The generously dimensioned spans result in a low steel consumption. Thanks to the special profile geometry no supports are required and small floor cross sections are obtained. This results in lower costs down to the foundations.

### Durability

Hoesch Additive Floor® is a proven and tested system. It has been used in great variety of car parks with a total surface area of several million square meters. The profiled sheets are galvanised and coated with a high-quality two-layer stove enamel lacquer on a polyester base. Thus, they comply with the most stringent corrosion protection class K III as per DIN 55928-8. The complete floor structure behaves very well in the long term. An experts report of resistance of the floor upper side to deicing salt as required by DIN 1045-1 is available.



Our experts will be pleased to convince you of the economic efficiency of this system.

## References



### Car parks at airports

- 50,000 m<sup>2</sup> Airport Hannover
- 12,000 m<sup>2</sup> Airport Saarbrücken
- 30,000 m<sup>2</sup> Airport Münster-Osnabrück
- 340,000 m<sup>2</sup> Airport Köln-Bonn
- 32,000 m<sup>2</sup> Airport Dresden
- 61,000 m<sup>2</sup> Airport Bremen
- 54,000 m<sup>2</sup> Airport Düsseldorf

### Car parks for car manufacturers

- 7,000 m<sup>2</sup> BMW
- 68,000 m<sup>2</sup> Daimler / Mercedes Benz
- 33,400 m<sup>2</sup> Audi
- 89,500 m<sup>2</sup> VW
- 20,000 m<sup>2</sup> Opel
- 25,600 m<sup>2</sup> Ford

### Car parks for 13 IKEA stores

- 167,000 m<sup>2</sup> Total surface

### International projects

- 10,500 m<sup>2</sup> Tiroltherme Lengenfeld (AT)
- 4,700 m<sup>2</sup> Car park Dreispitz, Basel (CH)
- 32,000 m<sup>2</sup> Car park exhibition area, Zürich (CH)
- 60,000 m<sup>2</sup> Car park Duda, Sosnowiec (PL)
- 10,000 m<sup>2</sup> Car park Wroclaw (PL)
- 45,000 m<sup>2</sup> Car park Bouillon, Luxemburg (L)
- 13,500 m<sup>2</sup> City centre Kirchberg, Luxemburg (L)
- 8,000 m<sup>2</sup> Car park de Boogert, Rijswijk (NL)
- 10,000 m<sup>2</sup> Car park WFC, Amsterdam (NL)
- 10,500 m<sup>2</sup> Car park Rijnstate Hospital, Arnhem (NL)
- 11,000 m<sup>2</sup> Car park Makro, Vianen (NL)
- 5,300 m<sup>2</sup> Car park Medway Maritime Hospital, Kent (GB)
- 11,000 m<sup>2</sup> Administration office, Istanbul (TR)
- 1,000 m<sup>2</sup> Victoria prison, Hong Kong (HK)

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