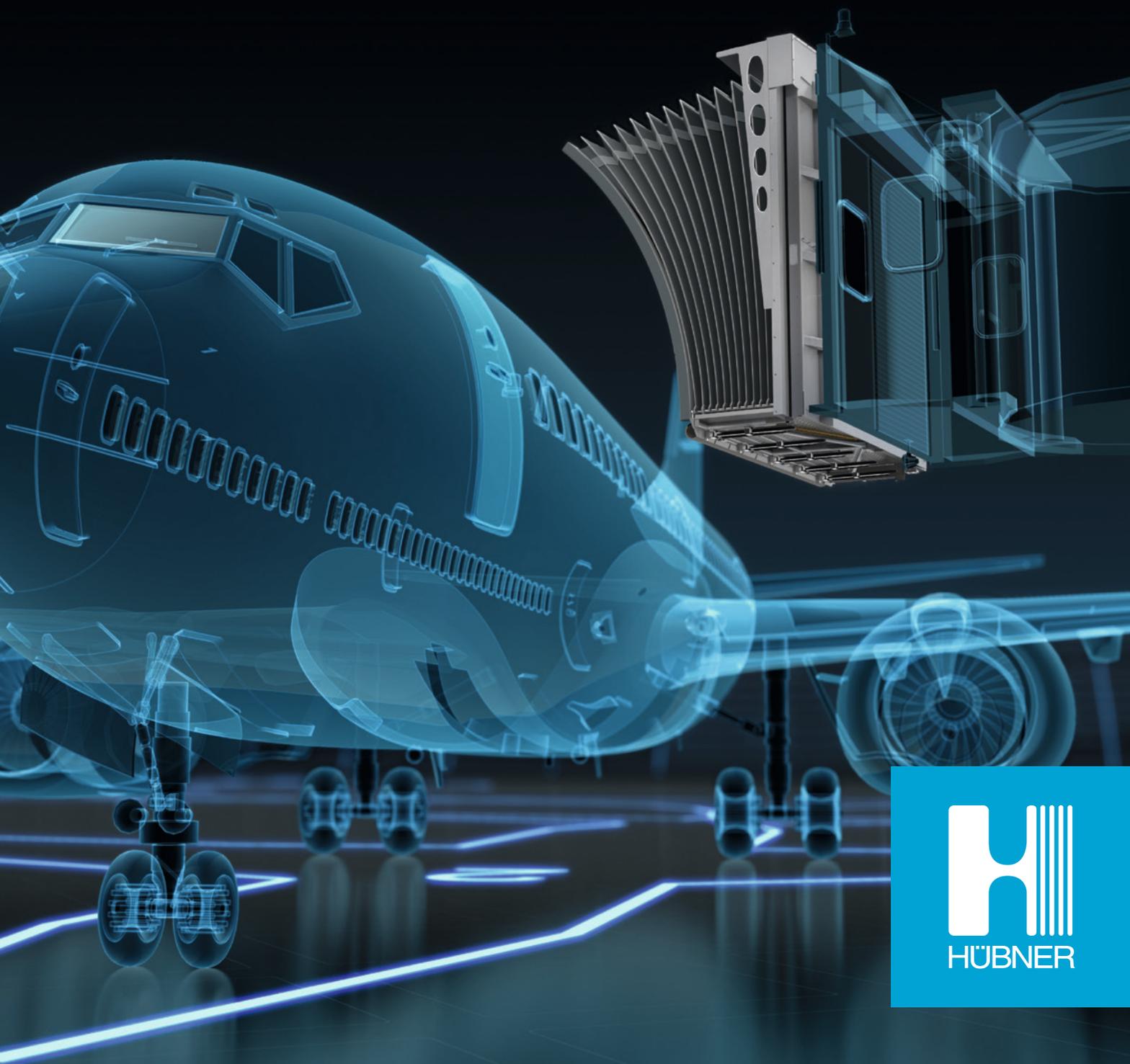


Products and concepts for  
**Airport technology**

**Mobility** | Making mobility happen.



**Mobility. Materials. Photonics.** | united by passion.

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HÜBNER Group  
**Mobility. Materials. Photonics.**  
united by passion.

Since the beginning in 1946 when Kurt Hübner founded the company, HÜBNER has been shaped by a spirit of enterprise, inventiveness and innovation. Today it continues to be this same passion for new solutions that drives the company and its employees. Again and again over the years, new concepts for new products and new markets have been developed and implemented.

It is on this basis that HÜBNER has become the company that it is today: A comprehensive system supplier for transportation technology and the worldwide leader for gangway systems (Mobility), a well-recognized specialist for sophisticated elastomer solutions and products, insulation and composite materials (Material Solutions), as well as an up-and-coming company in the field of laser, terahertz and high frequency technologies (Photonics).

Today the HÜBNER Group consists of more than 30 different companies and has more than 3,300 employees around the world. And HÜBNER products continue to stand out with their high-quality workmanship, their superior convenience and their distinctive durability. This high level of quality is to be found in all of the Group's business sectors and throughout the entire product range.

This all comes together in our company slogan:  
**Mobility. Materials. Photonics.** | united by passion.





## Mobility | Making mobility happen.

Hardly anything in today's globalized society shapes life as much as mobility. In addition to data and goods, it is people who are on the move more than ever before. As the global leader for gangway systems and a major supplier of bus, rail and airport technology solutions, the HÜBNER Group plays an integral part in this megatrend.

For decades, the company has been delivering innovative products for the transport sector. The extensive portfolio ranges from customized gangway systems, to chassis technology, to driver displays in locomotive cabs and other vehicles, to products for airport technology applications.

With increasing mobility, however, there is also growing demand for protection of the environment and resources. HÜBNER innovations such as lightweight articulation systems or aerodynamically streamlined corrugated bellows for railway vehicles are making significant contributions to greater energy efficiency in public transportation – while at the same time allowing for higher speeds.

And the materials used in HÜBNER products – many developed specifically for these applications – feature outstanding durability, thus reducing the consumption of resources over the whole product life cycle. HÜBNER has been developing innovative mobility concepts and solutions around the world for decades. These are making mobility happen today and are opening up new mobility horizons for the future.

## Fitting solutions

Comfortable and convenient, safe and secure, and easy on the aircraft fuselage: HÜBNER airport technology solutions make it possible for passengers to enter planes safely and comfortably via the passenger boarding bridge – at airports around the world. And thanks to HÜBNER's innovative technology, the aircraft fuselage has optimal protection against damages.



## Boarding completed

HÜBNER produced the first folding canopies for passenger boarding bridges in 1971. Since then, the family-owned company has delivered more than 5,000 of these high-performance units. What makes them so special is that they can flexibly adjust to nearly every type of commercial aircraft – from small regional planes to the jumbo Airbus A380. The patented HÜBNER kinematic system allows for gap-free docking with the passenger boarding bridge. Elastic bumpers provide an optimal seal between the folding canopy and the aircraft, protecting passengers against any type of weather that might be encountered.

HÜBNER supplies all of the components in the area of the bridgehead and has continually introduced new innovations to improve the performance of its airport technology solutions. One such innovation is the Passenger Boarding Bridge Interface (PBBI) – a complete system consisting of a fixed frame, an adjustable tilt-correction mechanism, the folding canopy and an optional no-touch sliding floor element that can pivot symmetrically in both directions.

New standards in airport technology are also being set by HÜBNER's modular passenger weather protection and guidance system (ALBE). The system allows for a perfect connection across the airport apron from the terminal to an airplane, providing passengers with a clear way to follow and secure weather protection.



History

# Yesterday an idea, today the standard

HÜBNER has been producing high-performance products for airport technology for almost 50 years. From the first folding canopies, to sophisticated kinematic systems, to the latest Passenger Boarding Bridge Interfaces or the HÜBNER universal sliding floor units – the company has long been a driving force for technical advances and has played a major role in shaping developments in the field. Many of the solutions that today are seen as standard at the world’s airports can be traced back to ideas that first came from HÜBNER.

From the beginning, the family-owned company has made a clear commitment to innovation and outstanding quality in its products and concepts. Thanks to the careful adaptation of these products to the evolving design of passenger boarding bridges, HÜBNER products provide outstanding functionality. HÜBNER’s aim is always to be at the forefront of developing technical know-how in the field. And to deliver consistent quality at the highest standards around the globe using the most modern development and production methods available.

2019 Development of the HÜBNER  
Universal Sliding Floor (HUSB)

Further 2017  
enhancement of the  
Passenger Boarding  
Bridge Interface

2014 Development of separable folding  
canopies for more convenient shipment

Production of the first 2012  
Passenger Boarding Bridge  
Interface (PBBi)

2009 Production of folding canopies for  
CIMC Tianda passenger boarding bridges

Folding canopies fulfill the highest 2004  
fire safety standards (e.g. NFPA)

2004 Production of the first  
universal kinematic systems

Production of folding canopies for 1996  
FMT passenger boarding bridges

1993 Production of the first folding canopies  
for Avio passenger boarding bridges

Production of the first folding 1971  
canopies for ThyssenKrupp  
passenger boarding bridges

1952 Production of the first  
folding bellows for  
articulated buses

First vulcanized rubber products 1946

## From takeoff to touchdown

### Customized solutions

Whether it is components, complete systems or full series: HÜBNER delivers customized solutions for every sort of requirement. Customers benefit from employees' many years of experience – in development and production as well as in project management. Production standards that are uniform around the world guarantee precision products and consistently high quality.

### Always up to standard

HÜBNER products meet all established international standards and requirements – as documented by numerous certifications. And often HÜBNER products exceed these standards in their functionality or safety aspects. This is the case for the requirements of the passenger boarding bridge standard DIN EN 12312-4 as well as the relevant fire safety standards.

### Taking new approaches

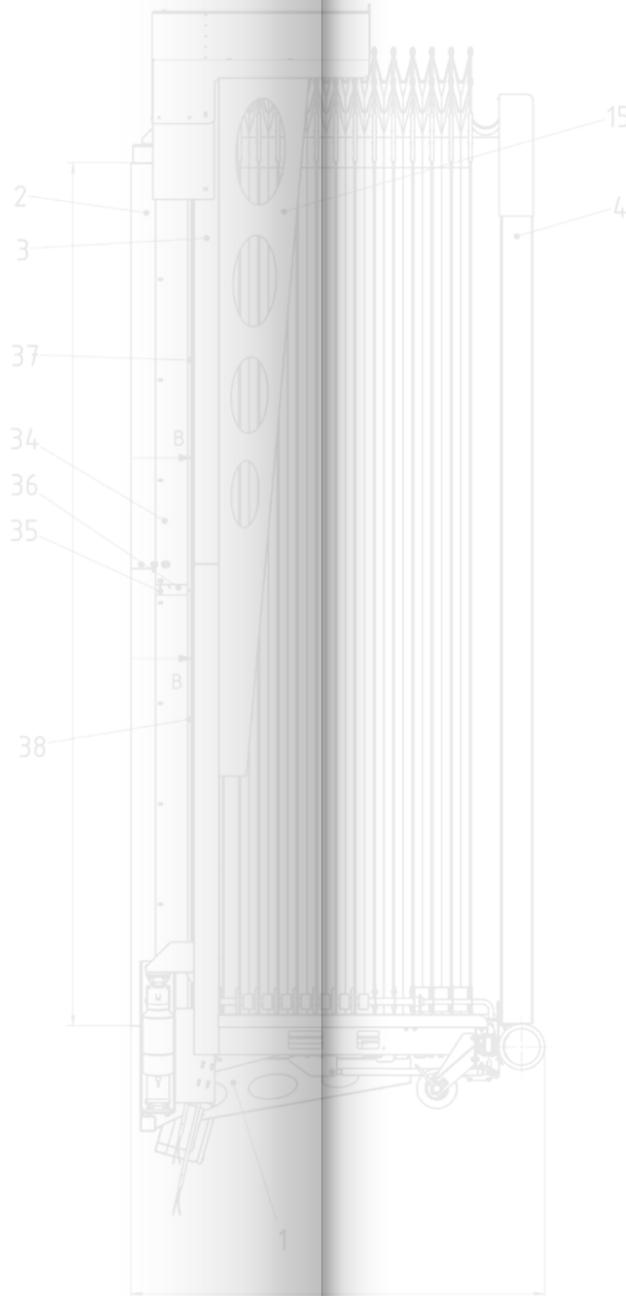
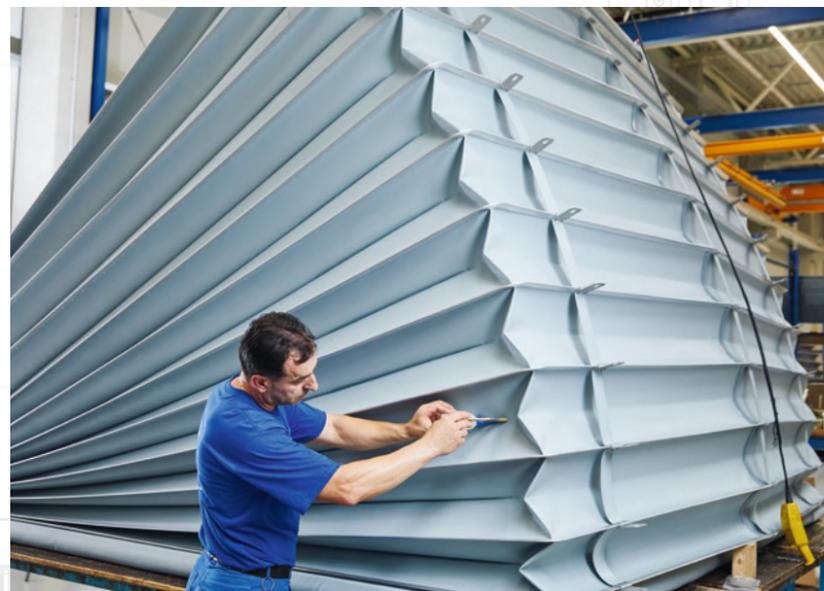
Innovation has a tradition at HÜBNER. That means to always be enhancing products, to be thinking ahead and taking new approaches with innovative ideas. The company's departments for research and development are working continuously on improvements, including for example a fixed version of the PBB1 with flexible sliding floor. There is also ongoing testing of new materials with optimized fire safety characteristics or higher environmental compatibility. Partnerships with leading scientific institutes support knowledge transfer and the inclusion of the latest technological developments in product innovations. For example, a new HÜBNER innovation for the passenger boarding bridge undercarriage – the drive unit guard – provides optimal safety at the level of the airport apron by preventing collisions during deployment. Product enhancements and innovations are always designed to benefit airport operators – or their key customers, airline passengers around the world.



# Making connections

The folding canopy, the PBBI as all-round interface and the sliding floor element: All these components developed by HÜBNER optimize the connection between the passenger boarding bridge and the airplane. With HÜBNER's modular system, customized solutions can be delivered exactly as required by the customer. Retrofitting solutions are also possible.





## Folding canopy systems – a soft touch, a flexible and tight connection

### Bumpers for perfect sealing

Adjustable bumpers completely seal the gap between the folding canopy and the aircraft. The bumpers' special polymer structure absorbs very little moisture and therefore guarantees soft cushioning even in winter. The high degree of flexibility in the bumpers' plastic spring elements ensures proper sealing even with very small aircraft such as the EMB 145 as well as with larger aircraft such as the Boeing 747 all the way up to the Airbus A 380.

### A kinematic system for optimal docking with all aircraft types

With the patented HÜBNER kinematic system, it is possible to precisely dock the passenger boarding bridge with a wide spectrum of different airplane types. It fits perfectly with the more sharply curved contours found in smaller airplanes as well with the nearly flat contours of larger aircraft fuselages.

### Highest standards for fire safety

HÜBNER develops and produces its own folding bellows materials used in its folding canopies. These materials meet the highest standards in safety, fire protection and durability. HÜBNER folding canopies are highly flame resistant and fulfill the most important international fire safety standards such as NFPA 415, DIN 5510-2 and NFF 16-101.

### Four different drives for maximum flexibility

A central motor drives the HÜBNER folding canopies. Four different drive variants are available: a manual drive, a 24V DC drive (for mobile passenger steps), as well as 120V/50 Hz or 230V/50 Hz three-phase AC drives. The motors are designed to handle the extreme weather conditions encountered at airports around the world and are equipped with a freewheel safety mechanism in addition to being protected against overheating. In addition, these drive motors also allow a reduction of the opening and closing times of the folding canopy by approximately 45% – a significant benefit in optimizing passenger handling processes.

### Simple assembly & economical shipment

On-site assembly at the customer's location is simple and quick. The newest, optimized generation of folding canopies can be divided into sectional pieces for simple delivery, thus providing a further benefit with economical shipment through full use of truck carrying capacity.

Depending on the technical specification, the following materials can be selected:

|                   | Specially coated fabric  | Silicone                                   |
|-------------------|--|--|
| Heat resistance   | + 80 °C  | + 80 °C                                    |
| Cold resistance   | - 40 °C  | - 40 °C                                    |
| Burning behavior  | DIN 5510-2:S3/SR1/ST2<br>NF F 16-101: M2/F3                                | NFPA 415: Fulfilled                        |
| Application scope | Enhanced standard for high requirements in burning behavior and durability | Very high requirements in burning behavior |

Passenger Boarding Bridge Interface  
**PBBI**

**Maximum flexibility**

The Passenger Boarding Bridge Interface (PBBI) from HÜBNER is the flexible all-rounder for passenger boarding bridges. The system consists of a solid basic frame that is mounted on the cabin of the passenger boarding bridge plus a pivot adapter adjustable on the longitudinal axis and a flexible sliding floor element together with HÜBNER's own folding canopy. The pivot adapter can be adjusted in both directions to level the connection with the aircraft.

**Minimal pressure on the aircraft fuselage**

With its patented kinematic system, the system provides optimal sealing as well as precise docking of the folding canopy – with very low pressure being exerted on the fuselage of the aircraft. The flexible sliding floor element extends to the body of the aircraft, completely closing the gap at the floor level. Also at this point of contact there is minimal pressure on the aircraft fuselage.

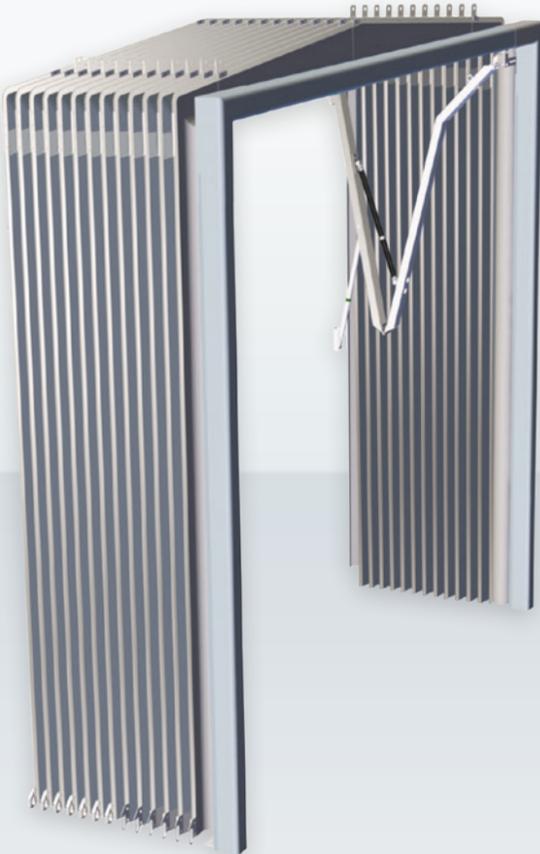
The PBBI fits flexibly together with every type of aircraft – from small regional planes to the Airbus A380. The system has proven itself in general operation since 2013 and is in use as the standard interface at one of Germany's major airports.



Cabin of the passenger boarding bridge



Interface



Folding canopy (separable)



Complete product



## Optimal contact

Whether for small regional planes or for the upper deck of the jumbo Airbus A380: The connection system adjusts flexibly to every requirement. With its patented components, it guarantees an optimal seal as well as precise docking of the folding canopy. And provides a connection that is at once secure and soft – because pressure on the aircraft body is kept to a minimum.



## Comfortable entry and exit

The combination of the tilt correction function with the flexible sliding floor makes for gap-free docking between the folding canopy, the floor element and the aircraft fuselage. Through the horizontal positioning of the interface, the different inclination angles in the passenger boarding bridge which occur in handling different types of aircraft can be compensated for. Low contact pressure of the sliding floor element against the aircraft prevents any damage to the airplane body. If desired, floor bumpers with special sensors that support touchless docking are also available.

### Individual branding & practical handling

The Passenger Boarding Bridge Interface can be individually designed and adjusted to the specific requirements of airport operators. Retrofitting of existing passenger boarding bridges can be undertaken without problem. The Interface can be delivered in separate parts facilitating easy shipment.

## Flexible sliding floor

The flexible sliding floor unit is available in soft-touch or completely touchless models and can be easily configured on the basis of the HÜBNER modular system.

### Tilt adjustment range:

0° to 6° / -3° to +3° / -3° to +6° / none

### Soft-Touch model:

- Extension via gas compression springs providing flexibility in handling vertical movements of the airplane
- Floor bumpers completely seal the connection with the airplane
- Minimal contact pressure
- Retraction via belt system

### Touchless model:

- Same functions as Soft-Touch model
- Additional sensor system on the sliding floor measures the distance between the floor and the airplane body
- The floor extension stops before contact is made with the fuselage – a consistent, measured interval between the aircraft fuselage and the floor element is established
- No pressure at all is applied to the airplane body

## Universal Sliding Floor

The HÜBNER Universal Sliding Floor (HUSB) has been developed for passenger boarding bridges such as nose-loader models that do not require a tilt adjustment function but at the same time should be equipped with flexible floor extension functionality. The Universal Sliding Floor can also be used for passenger boarding stairs.

- Floor fits flexibly to the aircraft body contours and provides a perfect seal
- Combines folding canopy and floor into a single unit
- Suitable for all passenger boarding bridges
- Suitable for passenger boarding stairs
- Available with no-touch option
- 400 mm maximum extension of the floor
- Available accessories: Floor heating system, sensor system
- Fulfills requirements of DIN EN 12312-4
- No effect on weight, therefore particularly suitable for retrofitting



## ALBE –

# Passenger weather protection and guidance system

HÜBNER's modular passenger weather protection and guidance system provides a perfect connection across the airport apron to the terminal or to a transport bus, providing passengers with a clear way to follow and ideal weather protection. The new innovation from HÜBNER sets a whole new standard in this product field. The HÜBNER passenger weather protection and guidance system can cover much greater distances than comparable products.

This is made possible through three modular systems that can be combined as needed for maximum flexibility, operating range and safety. The HÜBNER passenger weather protection and guidance system is certified by the German TÜV technical inspection service for its mechanical features as well as for its fire safety standards.





Fixed module element



Flexible module element (telescoping)



Junction station

## Fixed, flexible, modular

### Fixed module element

The new innovation from HÜBNER provides the perfect solution for standard routes and longer stretches. With its durable ground anchoring, the fixed element provides a high level of comfort and convenience and has an attractive design for permanent installation. With its modular construction it can be extended as far as necessary and can thus cover even lengthy distances in a very economical manner.

### Flexible module element (telescoping)

With the telescoping flexible module elements, it is possible to provide a route to several different planes from a single location. The conical tunnel elements can be telescoped into one another or extended as required, thus allowing extensions of unlimited length. The ALBE system is designed so that it is possible to implement sharp curves in the deployment of the system. The paneling consists of robust polycarbonate sheets.

|                           |  |
|---------------------------|--|
| <b>Maximum wind speed</b> | Full extension:  |
|                           | 40 knots = 74 km/h   |
|                           | Telescoped together:   |
|                           | 80 knots = Approx. 150 km/h  |
|                           | Above knots, additional measures must be taken to secure the units |
| <b>Temperature range</b>  | - 30° C to +50° C  |
| <b>Maintenance</b>        | None required  |
| <b>Lighting</b>           | LED  |

### Junction station

The junction station serves as a connecting element. The junction station is equipped with doors for emergency exit as well as for directing passenger flow. The doors also connect to all of the three module types. All of the module types can be used separately or combined as required.



## Service – Check!

HÜBNER is a company you can count on. Not only does HÜBNER deliver first-class products, its airport technology experts are also always there to provide practical assistance and expertise to customers. And this support is available throughout the whole life cycle of the products, because HÜBNER's offerings to customers don't simply stop once products have been delivered. Years after the sale of a product, HÜBNER ensures continuing operating safety and performance – with know-how and a wide range of services.

One significant advantage of working with the HÜBNER Group: In the preceding years, the company has established a network of locations and service points around the world. Distances between the company and customer are kept short and direct. The customers in Europe are served from the company headquarters in Germany. The HÜBNER location in the USA serves North America; its location in Brazil is responsible for South America. Customers in Asia have two contact partners with locations in China and in India.

### Service from A to Z

Prior to any purchase, customers receive comprehensive consulting and fair advice. Following delivery, the HÜBNER team provides assistance with the initial installation conveniently performed at the customer's location. Later, HÜBNER experts are always available to answer questions quickly and individually in direct support of customers.

In addition to training for maintenance personnel, HÜBNER also provides a wide range of other service support – whenever possible also at the customer's location. These include maintenance and repair of folding canopies and other components, refurbishment and replacement. The HÜBNER experts are also ready to look for special solutions as required. For example, an existing design can be modified to dimensions that fit better for a particular customer's situation.

When a component needs to be replaced, only the original is good enough. HÜBNER guarantees high availability of original spare parts – thanks to flexible production capacities, a high degree of in-house production depth, and 3,300 employees worldwide. Components such as bumpers, drives or kinematic systems can be supplied quickly and efficiently on this basis. Replacement of parts and components can be performed directly by the customer's own trained personnel or by HÜBNER with economical and efficient offerings. The most important aim here is to avoid downtimes for customers or to limit them to an absolute minimum.



## The company **HÜBNER** worldwide

Think globally, act locally: HÜBNER is there where its customers are – because close contact helps us to understand business partners better and to provide better support. Individual wishes and requirements can be determined quickly and then put into effect and implemented without delay. Customers thus have direct benefits from our strong local presence.

In addition to the company headquarters in Kassel, Germany in the heart of Europe, HÜBNER has built up more than 30 locations around the world in the preceding years and decades. The company now has major plants in Hungary, Poland, the USA, China, Russia and Brazil. This network of company-owned locations is supported by sales partners and trade representatives in more than 30 additional countries.

And the company's offering to customers does not end with the delivery of the products. The HÜBNER Group is also continually expanding its service structures – in personnel and in the technical facilities that are provided. To be on hand ready to provide support as quickly as possible – in locations around the world.

[www.hubner-group.com/en/worldwide](http://www.hubner-group.com/en/worldwide)

|   |  |   |                           |
|---|--|---|---------------------------|
| <b>1 group</b><br>with more than<br><b>30</b> locations | sales partners & representatives<br>in more than <b>30 countries</b> | approx.                                   | <b>3,300</b><br>employees |
|   | founded in <b>1946</b>   | approx. <b>1,000</b><br>patents worldwide |                           |

[www.hubner-group.com](http://www.hubner-group.com)



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