

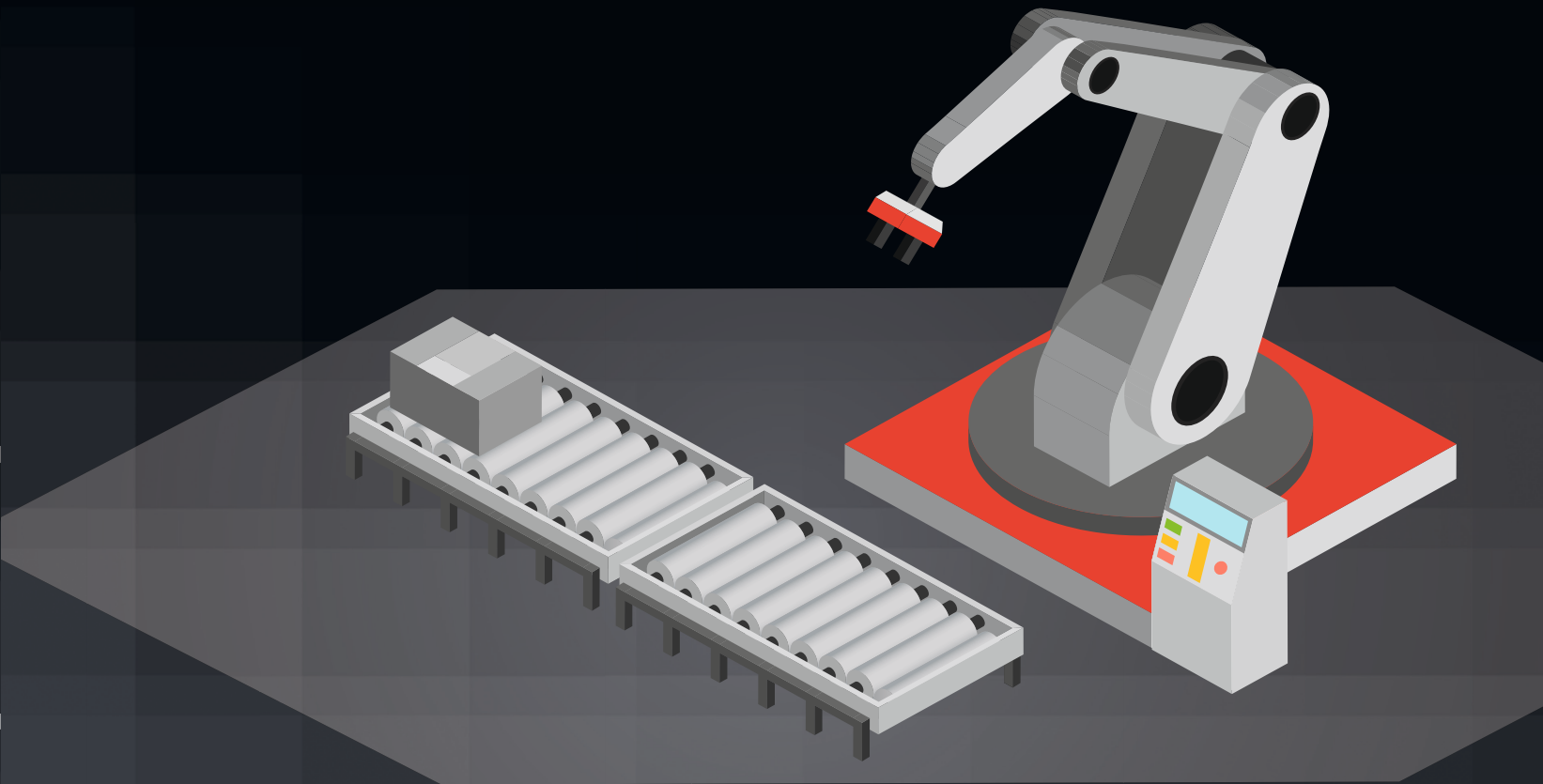
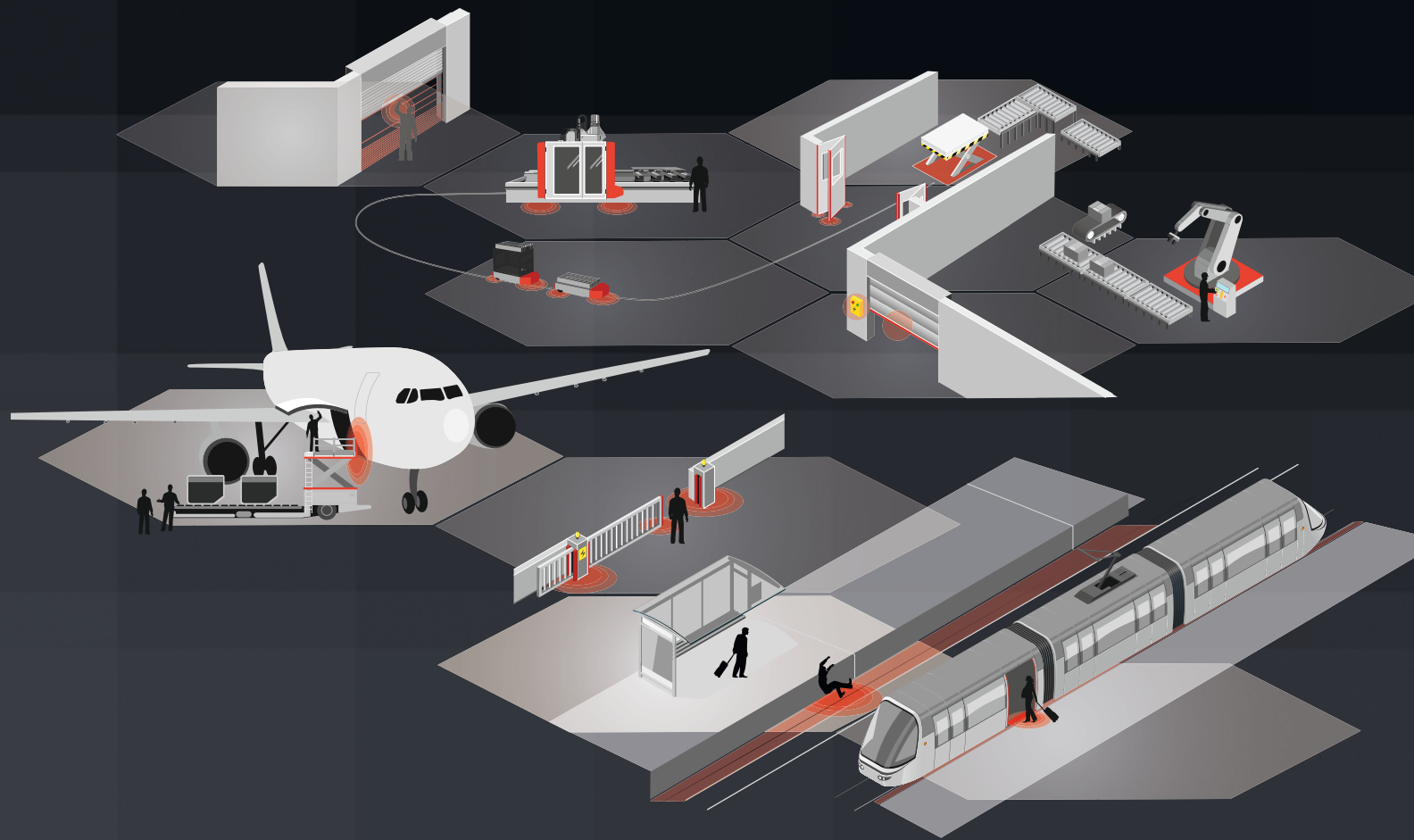
# Safety for Robotics

## ASO Safety Solutions – At the Cutting Edge

ASO Safety Solutions has been established for almost 40 years and is today the world market leader for tactile sensor technology.

Regular exchanges and feedback from customers has enabled the company to align production and sales with real customer requirements. Investment in research and development has allowed ASO to meet growing requirements in industry and society. ASO Safety Solutions pride themselves on innovative thinking and dynamic development processes that make them an industry success.

ASO addresses the major challenges of globalisation by concentrating on core competences, by carefully adapting its operating structures and systematically expanding its international presence. Today, there are 200 employees worldwide, who manufacture safety contactors, controls and customer-specific sensor solutions. In addition to the company headquarters in Germany, the USA and China, sales offices all over Europe and a worldwide dealer network are responsible for worldwide sales.



### Headquarters Europe

ASO GmbH  
Hansastraße 52  
59557 Lippstadt  
GERMANY

**Phone** +49 2941 9793-0  
**Fax** +49 2941 9793-299  
[www.asosafety.de](http://www.asosafety.de)  
[sales-eu@asosafety.com](mailto:sales-eu@asosafety.com)

### Headquarters USA

ASO Safety Solutions Inc.  
350 N Frontage Road  
Landing, NJ 07850  
USA

**Phone** +1 973 586 9600  
**Fax** +1 973 784 4994  
[www.asosafety.com](http://www.asosafety.com)  
[sales-us@asosafety.com](mailto:sales-us@asosafety.com)

### Headquarters Asia Pacific

ASO Safety Solutions Nanjing Co. Ltd.  
Jinma Lu 3 Maqun Scientific Park  
210049 Nanjing  
CHINA

**Phone** +86 25 856 73990  
[www.asosafety.cn](http://www.asosafety.cn)  
[sales-cn@asosafety.com](mailto:sales-cn@asosafety.com)

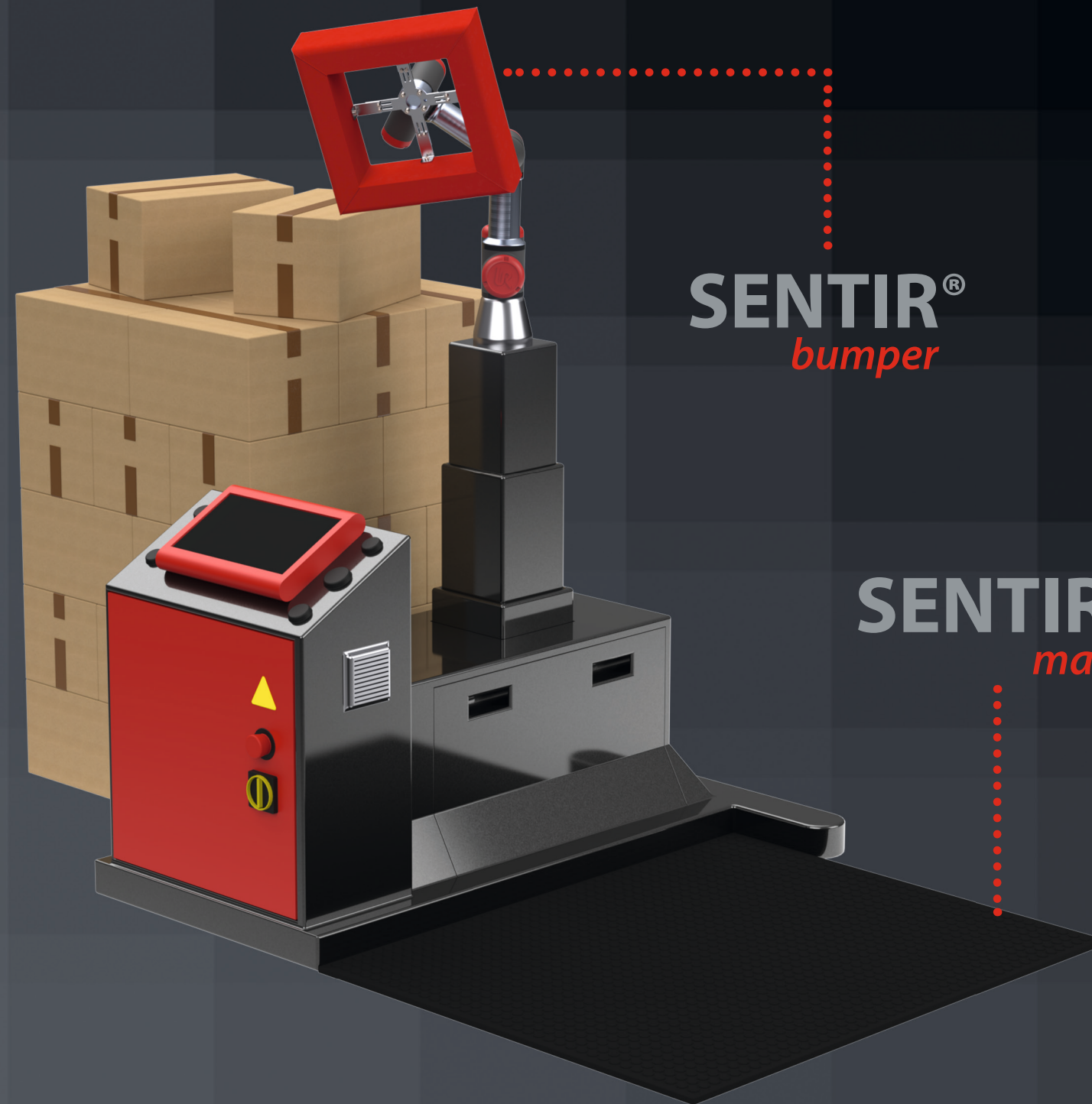
## Safety for robot arms

Production and warehouse processes are becoming increasingly automated - the use of cobots is growing steadily. Cobots not only increase productivity, they also reduce human error and provide a lower-risk working environment. But how can risks be minimized when operating speeds are increased at the same time?

Integrated optical sensors or force limitation provide safety, but are sometimes not reliable enough in dusty environments or at very high operating speeds. In order to protect both workers and robots in the event of a collision, it is recommended to additionally use touch-sensitive sensors.

Our **SENTIR bumper** is an extremely fast switching sensor with excellent cushioning and overtravel. On contact, an immediate stop signal is triggered. Especially for robot arms, ASO has developed a version with a matching mount that provides all-round protection during rotational movements.

The safety contact bumper can be customized in terms of its shape, color and material. With more than 1 million switching cycles, the **SENTIR bumper** is also extremely durable and wear-free.



## Area protection

For robotic applications with a large range of motion, extremely high speeds or heavy goods being handled, additional area protection can ensure safe interaction between humans and robots.

A **SENTIR mat** safety contact mat consists of a high-quality sensor element that is seamlessly encased in polyurethane. This extremely robust design is IP 65 certified and thus offers extremely high protection against external influences. The mat has a structured surface. In case of very high mechanical requirements on the surface of the mat, coverings made of aluminum or stainless steel are also available. Up to 10 mats can be connected together. Special shapes, several switching zones or individual colors can also be implemented.

## Interface

Our **ELMON** safety relay acts as an interface between the sensors and the robot. It ensures permanent monitoring of the sensor. **ELMON** safety relays are available in different safety categories and with variable functions. They can also be adapted to customer-specific environmental conditions. The use of our sensors with the ELMON relay is of course type-tested.



**SENTIR<sup>®</sup>**  
**mat**

Contact mats

### SENTIR mat

- Maintenance-free system, easy to clean from dust and dirt
- High moisture resistance (IP 65)
- More than 6 million switching cycles
- Standard dimensions and individual shaping possible

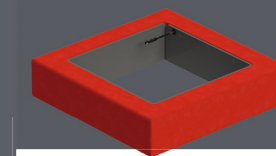


**ELMON<sup>®</sup>**  
**relay**

Safety relay

### ELMON relay

- Reliable link between safety sensor and PLC
- Various housing and functions
- Universal use due to various adjustment possibilities
- Different safety categories available, up to Cat.3 / PL e



**SENTIR<sup>®</sup>**  
**bumper**

Contact bumpers

### SENTIR bumper

- Robust design due to flexible and durable artificial leather
- Individual mounting and connection possibilities
- Insensitive to vibrations
- Resistant to many chemicals and substances