

 **mayr**®  
*your reliable partner*

## Elevator Brakes

Never compromise  
on safety







## Safety does not allow for compromises

For more than 100 years, the company *mayr*<sup>®</sup> power transmission has stood for innovations and premium quality. The family-run company from the Allgäu region can rely on decades of experience in development, manufacture and application, and is today the world market leader in the field of elevator brakes. The low-noise, patented brakes by *mayr*<sup>®</sup> provide reliable protection in multitudinous elevators around the globe. No matter where people are moved by elevators - whether in skyscrapers, in shopping centres or residential buildings, in hospitals, at airports or on ships - the brakes guarantee the safety of passengers at all times.

*mayr*<sup>®</sup> power transmission provides a high diversity of products for all elevator drives and possesses the experience to develop customized and economical brakes, also when it comes to customer-specific requirements. Numerous renowned elevator manufacturers worldwide trust in holistic solutions from Mauerstetten – **as safety does not allow for compromises.**





## Expert know-how in development and design

As the technological leader, *mayr*® power transmission focuses on continuous further development. Today, highly qualified engineers and technicians work on tomorrow's innovations using the most up-to-date tools. The many years of experience and countless trials carried out by the Research and Development department at the headquarters in Mauerstetten form the basis for a conscientiously-planned service lifetime, taking into account realistic and verified braking torque tolerances.

The values upheld by our traditional, family-run company also include long-term stability, independence as well as a good reputation and satisfied customers.

Therefore, we place emphasis on:

- Tested product quality
- Optimum customer service
- Comprehensive know-how
- Global presence
- Successful innovations
- Effective cost management

## Tested quality and reliability

*mayr*® brakes are subject to meticulous quality inspections. These include quality assurance measures during the construction process and a comprehensive final inspection. Only the best, tested quality leaves our factory. All products are rigorously tested on calibrated test stands, and adjusted precisely to the requested values. An electronic database in which the measurement values are archived together with the associated serial numbers guarantees 100 % traceability. On request, we confirm the product characteristics with a test protocol.

The certification of our quality management according to DIN EN ISO 9001:2000 confirms the quality-consciousness of our colleagues at every level of the company.

## Signed and sealed

mayr® power transmission is prepared for the new elevator standards EN81-20 and EN81-50: The safety brakes are prototype-inspected by the TÜV Süd (German Technical Inspectorate, Southern Germany). Moreover, we have had

branch-specific brakes, couplings and clutches tested and certified for safety-critical and unusual applications by independent institutes. They confirm our claims as to quality and reliability.



EN 81- **A3**  
-conform

**Elevator brake** as part of the protection device against overspeed for the elevator cage moving in an upwards direction.

Simple implementation of the elevator standard **EN81-A3**.



**ROBA-stop® brakes** are certified according to the North American standards of the CSA and UL.

## Strongly positioned

mayr® sets standards in power transmission with economically viable solutions. For maximum competitiveness of your machines and systems, we always aim for the best possible cost efficiency, starting during the development of your clutch/coupling or brake right up to delivery of the finished and inspected product. For cost-efficient production, our Production plants in Poland and China represent the perfect supplement to our headquarters in Germany.



mayr®-headquarters in Mauerstetten



Subsidiary with production department — mayr®-China



Subsidiary with production department — mayr®-Poland

# Safety Brakes

## *Experts instead of experiments*

Today, safety brakes are an indispensable safety feature in modern electrical drives. *mayr*<sup>®</sup> power transmission consistently takes the following basic safety principles into account during development and manufacture: The electromagnetic safety brakes ROBA-stop<sup>®</sup> operate according to the fail-safe principle, they are therefore closed in a de-energised condition. The braking torque is generated by the force stored in the thrust springs. If the magnetic coil is energised, a magnetic field is built up which attracts the armature disk against the force of the springs, thereby releasing the rotor with the friction linings. The brake is released. This condition can also be achieved using an integrated hand release. The ROBA-stop<sup>®</sup> brakes developed for the elevator sector are mainly used as holding brakes,

but also take on friction work in case of EMERGENCY STOP braking actions.

### **The difference lies in the detail**

All brake components are dimensioned safely and are only made of high-quality, known and proven materials. Furthermore, *mayr*<sup>®</sup> brakes are equipped with a patented noise damping device. Switching noises are basically non-existent and lie below 50 dB(A) in new condition (sound pressure level measurement). Long-term tests confirm that operation noise levels remain low even after 300,000 switching actions. Even after several million switching actions, the switching noise is still substantially below the level of other elevator brakes.







## Innovative: Contactless release monitoring

An indispensable element for safety brakes fulfilling the DIN EN 81 standard requirements is the integrated function monitoring. This release monitoring prevents unpermitted operating conditions, such as for example the motor starting up against closed brakes. *mayr*® power transmission as the leading manufacturer offers a unique innovation as an alternative to release monitoring with microswitches: A contactless system with an inductive proximity switch registers the operating condition of the brake and authorises the motor to start up only after release.

Due to the fact that no mechanical parts are used, the release monitoring with proximity switch is wear-free. The service lifetime is independent of the switching frequency. Furthermore, the system is magnetic field-resistant and works absolutely reliably. It is also resistant to impacts and vibrations, as there are no movable parts, and the electronics are completely encapsulated.



Contactless release monitoring: wear-free, robust, magnetic field-resistant, reliable.



### Please take the following into consideration when selecting the elevator brake

We have summarized further information on the topic of safe brakes in our flyer. The flyer FI.806.V\_... is also available in the Internet on [www.mayr.com/branchen/aufzugsbremsen](http://www.mayr.com/branchen/aufzugsbremsen).











## Aiming high: Skyscrapers

Whether in passenger elevators in the World Financial Center in Shanghai, in the Buddha Tower in Xian or in many other skyscrapers in the metropolises around the globe – ROBA®-diskstop® brakes are characterised through high energy absorption capability in case of dynamic braking actions. Therefore, they are perfectly suited for application in elevators with high speeds and masses. The classic caliper brakes are prototype-inspected according to EN81 for the elevator sector. Through slight modification, conformity according to ASME A17 can also be achieved if required.

### ROBA®-diskstop®

The modular system for brake disks

- Four standard sizes
- Different brake disk diameters
- Modular number of brake units per disk
- Various configuration possibilities such as hand release, release monitoring, mounting bolts





## The safe route to work

The compact, extremely short ROBA®-twinstop® brakes safeguard passenger elevators in offices and commercial buildings. They consist of two independent brake circuits, which can be tested individually. Due to the patented noise damping system, these brake type series switch extremely quietly.

### ROBA®-twinstop®

The compact brake for gearless elevator drives

- Different sizes
- Various configuration possibilities such as hand release, release monitoring, encoder integration
- Electrical single-circuit inspection possible via two integrated magnetic coils





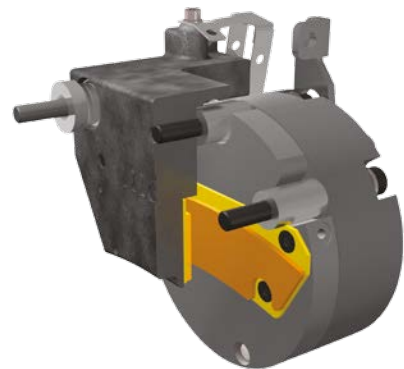
## The shopping centre as a meeting point

Shopping centres are normally full of busy shoppers and sellers. In the elevators in such centres, ROBA®-diskstop® brakes, for example, guarantee maximum functional and operational safety. They switch very quietly and without grinding in operation due to a patented alignment mechanism. The brakes can be mounted quickly and easily; adjustment work is not necessary.

### ROBA®-diskstop®

The modular system for brake disks

- Four standard sizes
- Different brake disk diameters
- Modular number of brake units per disk
- Attractive solution for large braking torques
- Various configuration possibilities such as hand release, release monitoring, mounting bolts







## Where reliably functioning technology is essential: Hospitals

In hospitals, elevators must take patients, staff and visitors quickly and reliably to their destination – and not just in emergencies. Here, for example ROBA®-sheavestop® and ROBA®-silenzio® brakes guarantee maximum safety for people and systems. The brakes are suitable as a protection device against overspeed for the elevator cage moving in an upwards direction. They are mounted on transmission machines directly onto the drive sheave or onto the side opposite the transmission output shaft.

### ROBA®-sheavestop® and ROBA-stop®-silenzio®

Safety brakes for elevator gear drives

- Reliable elevator brake for retrofitting purposes to prevent excessive upwards speeds according to EN 81
- Type examination, tested by the TÜV (German Technical Inspectorate)
- Optionally available with a brake base, for direct mounting onto cantilevered drive sheave







## Residential buildings – Safety for household elevators

Private elevators and household elevator applications guarantee comfort and barrier-free homes. For these elevators, *mayr*® power transmission offers the ROBA-stop®-silenzio®, the ROBA-stop®-M or the ROBA®-secustop safety brakes as the ideal solutions for different drive constellations. The brakes in single-circuit or dual-circuit design fulfil the maximum safety requirements, are unbeatably low-noise and their compact design offers innovative possibilities for economical solutions.

### Reliable and flexible –

Different single and dual-circuit brakes  
for household elevator applications

- ROBA-stop®-silenzio®
- ROBA-stop®-M
- ROBA®-secustop





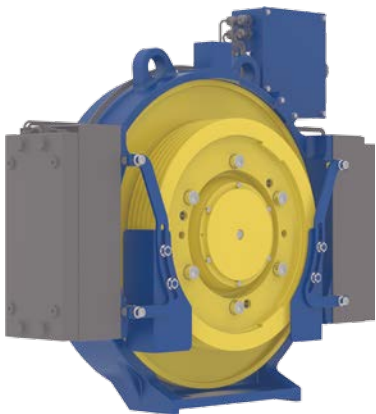
## Always in motion: Aviation sector turnstiles

Many thousands of passengers are moved through Munich Airport every day. In the elevators and moving staircases, which people use en route to the different buildings and halls, the ROBA®-boxerstop® safety brakes, for example, ensure safe and reliable operation. These brakes are especially designed for elevator drives with brake drums. Here the friction linings are adapted to the respective drum diameter.

### ROBA®-boxerstop®

#### The safe drum brake

- Individual solutions in accordance with the system specifications based on modular variants
- Optionally available with microswitch for release monitoring
- Optionally available with hand release
- Different cable and plug configurations







## Technology for escalators: Smart switching - adapted braking

Whether in department stores, airports, large railway stations or underground train stations, escalators are an everyday method of transport for many people today. Here, too, high-quality brakes by *mayr*<sup>®</sup> power transmission, such as for example the ROBA-stop<sup>®</sup>-M ensure reliable operation and guarantee the safety of the passengers at all times. *mayr*<sup>®</sup> power transmission has newly developed the intelligent braking torque control module ROBA<sup>®</sup>-torqcontrol for ROBA-stop<sup>®</sup> safety brakes. Before, stopping distances could only be ensured via large additional mass moments of inertia on the escalator drives. This economically attractive solution means that it is now possible to generate a variable braking torque for the brakes – depending on the respective load – and thereby to decelerate systems evenly and gently.

### ROBA-stop<sup>®</sup>-M

The robust, cost-effective mounting brake

- Easy installation
- Short switching times
- Constructionally specified and inspected nominal air gap
- Magnetic coil is designed for a relative duty cycle of 100 %
- Maintenance-free over the entire service lifetime of the rotor







## Safety for the stages of this world

Safety brakes by *mayr*<sup>®</sup> power transmission are utilised in the stage drives of numerous theatres and opera houses around the globe. But they not only provide reliable protection for those behind the scenes or on the stage in the so-called traps, but also for those in the classic passenger elevators. On the redundant ROBA-stop<sup>®</sup>-silenzio<sup>®</sup> brake, the patented *mayr*<sup>®</sup> noise damping system has been perfected: This makes it the quietest safety brake on the market even in the standard version.

### ROBA-stop<sup>®</sup>-silenzio<sup>®</sup>

The quietest safety brakes for elevator drives

- Single or double brake
- Short construction length, as the brake has no intermediate flange
- Easy installation
- Consistently low noise level for the entire service lifetime
- 12 sizes up to 1x4300 Nm / up to 2x2800 Nm







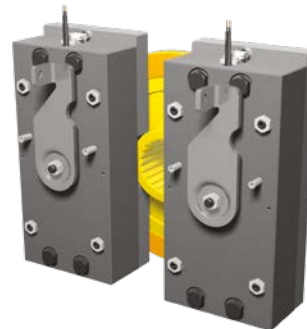
## Pure relaxation – on the high seas or in a hotel

Cruise liners such as, for example, the Oasis of the Seas, provide holidaymakers with top class on-board entertainment. For the required technology – e.g. for stages and lift drives – safety brakes and clutches/couplings by *mayr*<sup>®</sup> power transmission are used. And brakes such as the ROBA<sup>®</sup>-duplostop<sup>®</sup> are also ideal for ensuring the safety of the passenger elevators, the guests and personnel between the individual decks – or in hotels, when moving between the individual storeys. The low-noise brake operation guarantees that the guests in their cabins or hotel rooms can enjoy untroubled dreams.

### ROBA<sup>®</sup>-duplostop<sup>®</sup>

The economic solution for gearless drives

- Maximum safety due to redundancy according to EN 81
- Also licensed as protection against excessive upward speeds when fitted with release monitoring
- Exceptionally short construction
- Brakes can be individually switched and inspected
- Mounting the encoder does not enlarge the construction







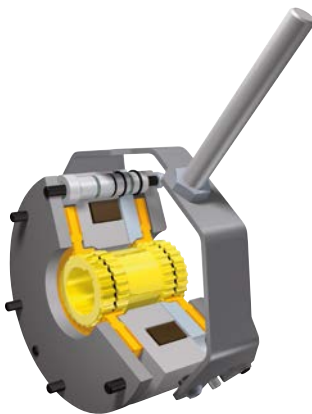
## Comfortable and safe – inclined elevators

Holiday homes and hotel facilities on mountain slopes have their own special flair, often presenting a marvellous view. With inclined elevators, guests can also comfortably reach even the upper storeys, and transport their luggage easily and conveniently. With safety brakes by *mayr*<sup>®</sup> power transmission, such as the ROBA-stop<sup>®</sup>-Z dual-circuit brakes, the required safety regulations are also reliably maintained. The compact braking concept with two brake circuits working independently of each other with only one magnetic part has proven its worth in countless applications.

### ROBA-stop<sup>®</sup>-Z

The cost-effective dual-circuit safety brake

- Dual-circuit brake in compact design
- Low-noise operation
- Easy installation







## Safe technology for sports stadiums

Stage brakes by *mayr*<sup>®</sup> power transmission were used at the opening and closing ceremonies of the 2008 Olympic Games at the national stadium in Beijing. They safeguard the rope hoists which are used to move, for example, the headlights and decorations, and also the actors. But not only in stage technology – also in passenger elevators in very different sporting facilities worldwide, safety brakes such as the ROBA<sup>®</sup>-duplostop<sup>®</sup> ensure reliable protection of the passengers. These brakes work problem-free even after longer downtimes, for example during the summer or winter breaks in the sports season, in particular in high air humidity or at very low temperatures. For these specific application cases *mayr*<sup>®</sup> power transmission has developed a special friction lining technology for all brakes and offers innovative, sticking-resistant friction materials which do not adhere to the counter friction surfaces.

### ROBA<sup>®</sup>-duplostop<sup>®</sup>

The economic solution for gearless drives

- Maximum safety due to redundancy according to EN 81
- Also licensed as protection against excessive upward speeds when fitted with release monitoring
- Unique long-term performance with regard to noise and braking torque stability
- Exceptionally short construction
- Brakes can be individually switched and inspected
- Mounting the encoder does not enlarge the construction





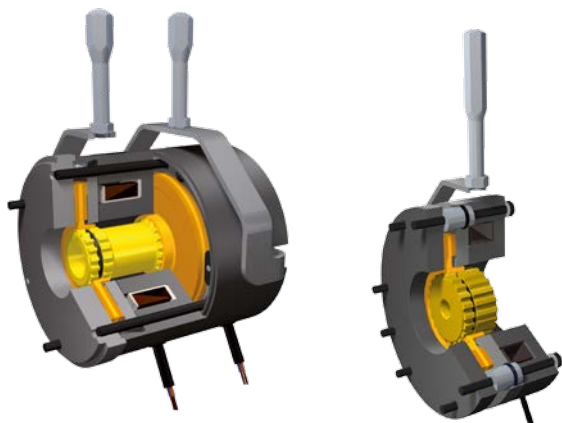
## Lightning-quick transport for small goods

In addition to passenger elevators, small goods elevators are an essential part of our everyday lives. They are used amongst other things in gastronomy, in business buildings or in hospitals for the fast transportation of meals, files or medicines. *mayr*<sup>®</sup> power transmission also provides ideal solutions for these elevators with the ROBA-stop<sup>®</sup>-silenzio, the ROBA-stop<sup>®</sup>-M or the ROBA<sup>®</sup>-secustop safety brakes. The brakes are extremely compact and permit innovative, economic solutions.

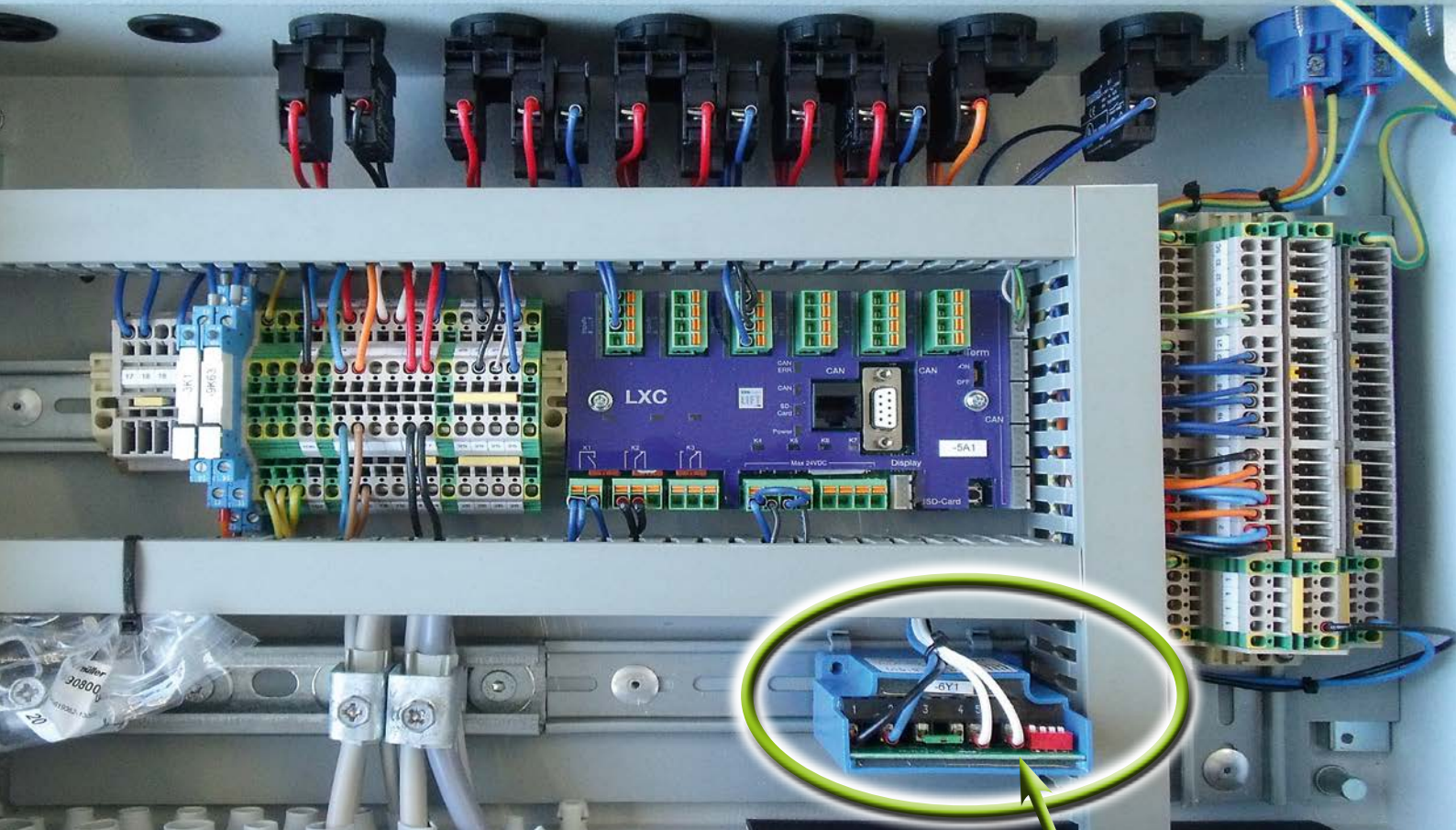
### Reliable and flexible —

different single-circuit or optionally dual-circuit brakes for small goods elevators

- ROBA-stop<sup>®</sup>-silenzio<sup>®</sup>
- ROBA-stop<sup>®</sup>-M
- ROBA<sup>®</sup>-secustop







## Electronic accessories for optimum interactions

*mayr*<sup>®</sup> power transmission offers comprehensive electronic accessories with their elevator brakes for an aligned overall system. In addition to spark quenching units to prevent the creation of sparks on switching contacts, this includes half-wave and bridge rectifiers as well as ROBA<sup>®</sup>-switches and ROBA<sup>®</sup>-multiswitch fast acting rectifiers. The safety brakes are controlled using these rectifiers: They connect the brakes as DC consumers to the alternating voltage supply and allow the implementation of short overexcitation operation and/or voltage reduction. With these compact, light-weight as well as energy and cost-saving modules, *mayr*<sup>®</sup> power transmission provides flexible solutions for different brake concepts.

## Light-weight and flexible electrical accessories for an aligned system

- Half-wave and bridge rectifiers
- ROBA<sup>®</sup>-switch fast acting rectifier
- ROBA<sup>®</sup>-multiswitch fast acting rectifier
- Spark quenching unit





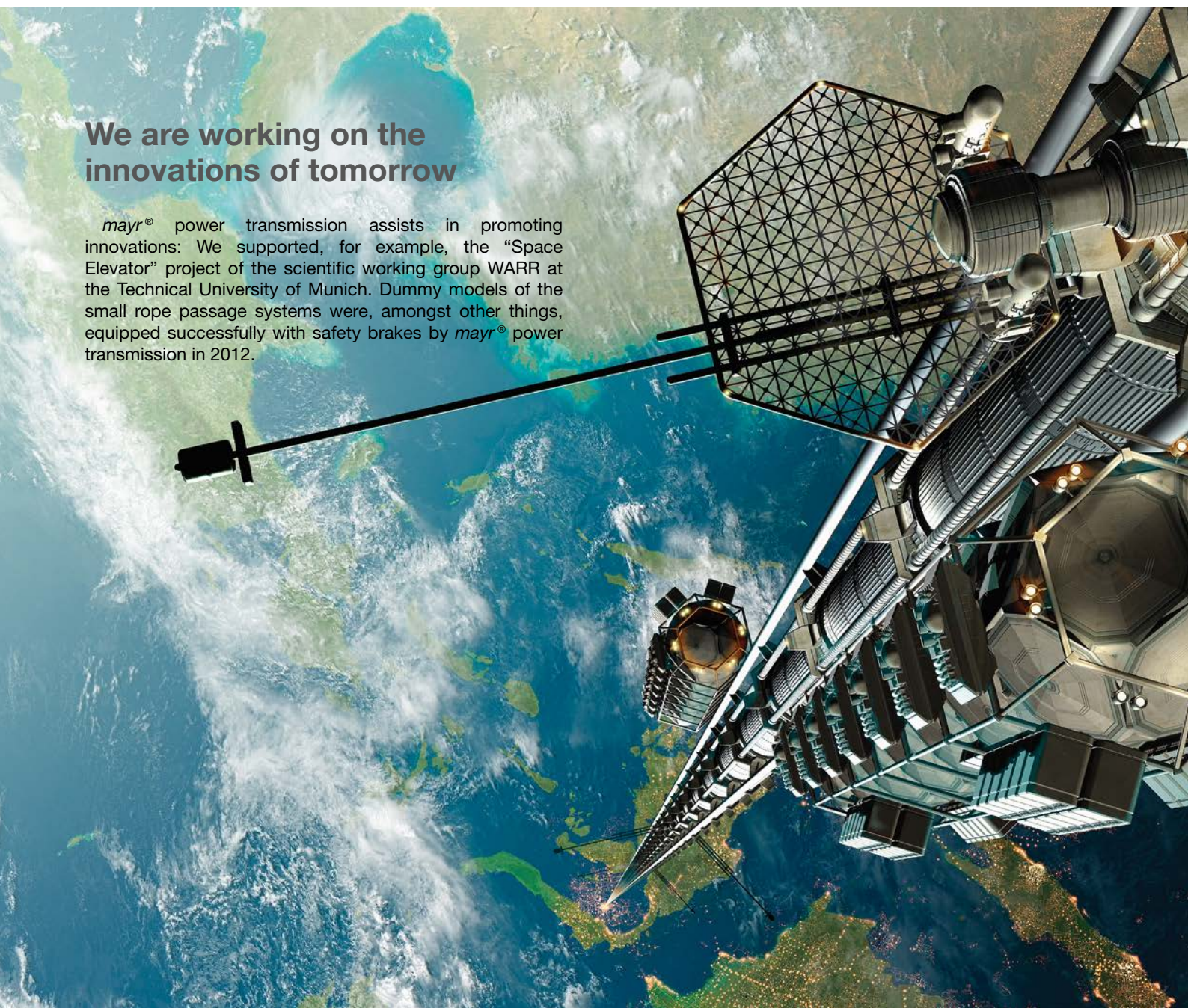
# *mayr*<sup>®</sup> power transmission stands for

- Branch know-how and experience from the market leader
- A wide product range for an objective solution-finding process
- Highest quality, state-of-the-art technology thanks to 100% quality checks and certified quality management
- High flexibility for customer-tailored solutions
- Simple implementation of the elevator standard EN81-A3
- Involvement in associations, e.g. the VDMA and the VFA Interlift e.V.

**So that you can rely 100 per cent on our products —  
as safety does not allow for compromises**

## **We are working on the innovations of tomorrow**

*mayr*<sup>®</sup> power transmission assists in promoting innovations: We supported, for example, the “Space Elevator” project of the scientific working group WARR at the Technical University of Munich. Dummy models of the small rope passage systems were, amongst other things, equipped successfully with safety brakes by *mayr*<sup>®</sup> power transmission in 2012.







## Headquarters

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## Service worldwide

mayr® power transmission is represented locally in all important industrial regions, and guarantees excellent customer service around the globe.

- **Competent service worldwide**
- **24-hour delivery service for replacement parts**
- **Unlimited replacement part availability**
- **Present at all leading trade fairs**



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