



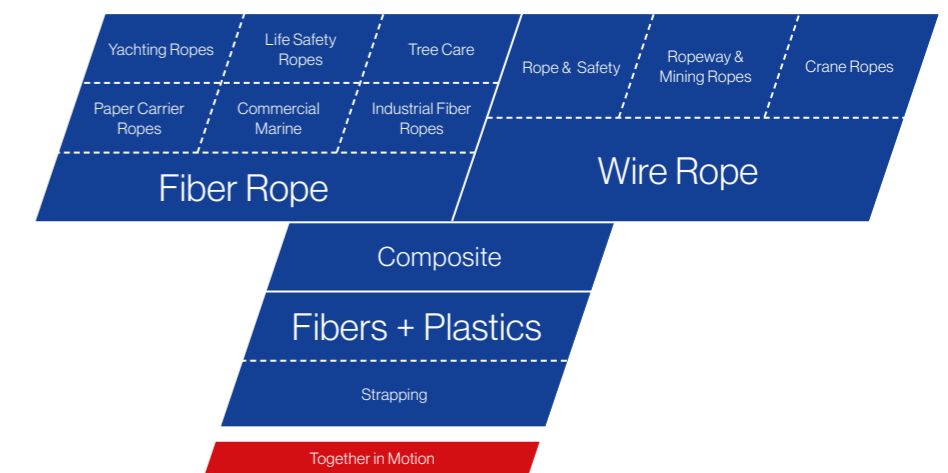
ROPEWAY & MINING ROPES

EXPERTISE FROM 225 YEARS OF EXPERIENCE

What started back in 1790 with simple hemp ropes has since evolved into a globally successful group of enterprises specializing in the development and production of fiber and steel wire ropes, strapping, and composites.

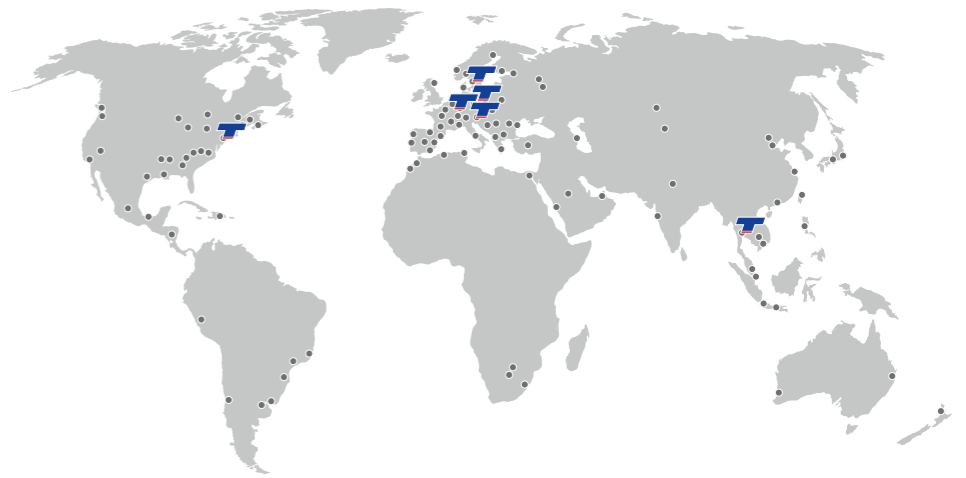
Vast diversity

Its products are designed for a wide variety of applications ranging from cranes and marine applications to packaging and through to the automotive sector. It is the continuity and stability of a family business that makes us the reliable partner who supports you, competently and effectively, in coping with your daily challenges.



Global presence ensures customer proximity

Manufacturing operations in various countries allow us to meet local quality and certification standards as well as customer requirements without difficulty. From our sites in Austria, the Czech Republic, the U.S., Sweden, and Thailand, and backed by a close-knit global network of distribution partners, we continue to satisfy the expectations of our customers.



Innovative solutions through synergies

TEUFELBERGER is a leading specialist for fiber and steel wire ropes, strapping, and fiber composite components. The spectrum of technologies in TEUFELBERGER's portfolio generates various synergies between the extrusion of thermoplastics, braiding of high performance fibers, and processing of wires into ropes, strapping, and lightweight composite components.

Especially fiber and steel wire products brought about valuable synergies with regard to both application and manufacturing technologies, which have benefited our customers tremendously. This makes TEUFELBERGER your ideal partner right from the project planning phase.

5% of TEUFELBERGER's employees are active in research and development and make sure that our customers have access to the latest, innovative rope technologies. 10% of the entire investment volume are committed to development and quality assurance.

PASSENGER ROPEWAYS

TEUFELBERGER steel wire ropes provide safety and reliability for your ropeway system.

Gathered throughout two generations, our long standing experience in steel wire rope manufacturing results in optimized products for all fields of use in the passenger ropeway segment. Our special rope designs and manufacturing technologies ideally cater to our customers'

high expectations in terms of rope lifetime and low-noise/low-vibration running characteristics. With our forward-looking rope technologies such as SOLITEC® and SUPERFILL®, we are able to guarantee long maintenance intervals and thus less downtime, which constitutes a key factor

for the success of a ropeway operator. In many cases, our track ropes continue in use throughout the entire lifetime of the ropeway system – and that with great reliability, low maintenance requirements, and the utmost riding comfort.

TEUFELBERGER steel wire ropes excel through:

- **Maximum safety and quiet operation**
The perfect roundness of the rope ensures its quiet, near-silent operation. Exact and consistent diameters help avoid coupling issues and provide secure attachment surfaces for clamps on the rope.
- **Excellent longevity**
Our proprietary rope technology developments, SOLITEC® and STRESSLESS, ensure the extremely long lifetimes of our steel wire ropes.
- **Tremendous breaking forces**
Thanks to high quality wires and SUPERFILL® compaction technology, TEUFELBERGER steel wire ropes achieve tremendously high breaking forces.
- **Long-term cost effectiveness due to low, controlled elongation**
The rope's excellent durability and the fact that maintenance can be planned ahead due to the low, controlled elongation ensure the cost effective operation of your ropeway system.
- **Great ease of splicing**
Unique TEUFELBERGER splicing technology and the great spliceability of the ropes provide for continuous transitions from one rope end to another.

We bring people safely to the summit.

⚠ WARNING

Using these products may involve hazards. Therefore, use our products only for the purposes they are designed for. Customers must ensure that all users are familiar with their correct use and the necessary safety precautions. Keep in mind that any of the products may cause damage or harm when misused or overloaded.

TEUFELBERGER®, 拖飞宝®, SOLITEC® and SUPERFILL® are internationally registered trademarks of the TEUFELBERGER Group. NOROTEC™ is a trademark of the TEUFELBERGER Group registered in many countries.

Reference projects



Arosa-Lenzerheide, Switzerland (reversible aerial ropeway)

Year of manufacture and delivery: 2013

Track rope used:

STRESSLESS DATA (with fiber optics)

- Length: 4 x 1,800 m
- Rope diameter: 76 mm

Haul rope used:

SOLITEC® 6x25F SUPERFILL®

- Length: 2 x with 3,600 m
- Rope diameter: 42 mm

In 2013, the two Swiss ski resorts of Arosa and Lenzerheide were linked with a spectacular reversible aerial ropeway. 1.7 km long, it connects Mount Hörnli with the Urdenfürggli Pass and uses 2 rope types made by TEUFELBERGER. This ropeway is capable of carrying up to 1,700 passengers per hour. It also continues in service through the high season in summer.



Wildspitzbahn ropeway / Pitz Valley Glacier, Austria (unidirectional aerial ropeway)

Year of manufacture and delivery: 2013

Track rope used: SOLITEC® 6x36WS

- Length: 4,260 m
- Rope diameter: 54 mm

Austria's highest ropeway carries almost 2,200 passengers per hour up to an altitude of 3,340 m for skiing, or having just a cup of coffee in a spectacular setting. The steel wire rope from TEUFELBERGER, which has contributed significantly toward the success of this project, weighs over 44 tons.



Grünbergbahn ropeway / Gmunden, Austria (reversible aerial ropeway)

Year of manufacture and delivery: 2014

Track rope used: STRESSLESS

- Length: 4 x 2,250 m
- Rope diameter: 46 mm

Haul rope used: SOLITEC® 6x19S

- Length: 4,240 m
- Rope diameter: 28 mm

Since 2014, the new Grünbergbahn ropeway, ascends 550 m in altitude to the recreational area near Lake Traunsee. Carried by a TEUFELBERGER STRESSLESS track rope and hauled by a SOLITEC® rope, each of its two cabins offers space to 60 passengers. In its first season, it transported more than 100,000 visitors, double the expected number.



Las Vegas / Mandalay Bay Casino, USA (funicular railway)

Year of manufacture and delivery: 1999

Haul rope: SOLITEC®, 8x16S

- Length: 1,800 m
- Rope diameter: 33 mm

Since 1999, the Cable Liner of the Mandalay Bay Casino in Las Vegas has carried up to 65,000 passengers per day (it operates 12 hours a day). This 865 m long funicular railway is pulled by a TEUFELBERGER haul rope which has already withstood 60,000 operating hours and more than one million bending cycles.

Always in action.
No matter where.

The perfect roundness of the rope ensures its quiet, near-silent operation, thus offering optimum riding comfort.

Absolute adherence to schedules through perfect transport logistics. Even in mountainous terrain.

Enormous fatigue resistance, even when subjected to extreme reverse bending loads.

MATERIAL ROPEWAYS, CONVEYOR BELTS AND CABLE CRANES

TEUFELBERGER steel wire ropes are employed successfully as haul ropes to transport goods across long distances of several kilometers.

Reliability is key for a rope used on unidirectional material ropeways. TEUFELBERGER ropes achieve the highest levels of reliability and availability, thanks to the right combination of wire quality, rope construction, manufacture, and lubrication. In addition, they provide long lifetimes and excellent robustness when exposed to high loads and dirt. All this expertise is embodied in the SOLITEC® and SUPERFILL® rope technologies from TEUFELBERGER. By reliably living up to their specified lifetimes, TEUFELBERGER ropes help reduce system downtimes, prolong maintenance intervals, and achieve greater cost effectiveness.

TEUFELBERGER steel wire ropes excel through:

- **Excellent longevity**
TEUFELBERGER steel wire ropes stand out because of their long service lives, a product of long standing experience in rope design and manufacture, as well as thanks to the premium quality materials they are made of. This results in excellent spliceability and splice life. Due to the special structure of TEUFELBERGER ropes, external influences such as dust or extreme climatic conditions cannot harm the rope.
- **Corrosion resistance**
The special structure of steel wire ropes from TEUFELBERGER and the use of premium quality starting materials such as wires with thick zinc-aluminum coating makes the final products particularly corrosion resistant.
- **Tremendous breaking forces**
Thanks to high quality wires and SUPERFILL® compaction technology, TEUFELBERGER steel wire ropes achieve tremendously high breaking forces.
- **Long term cost effectiveness**
The ropes' excellent durability and the fact that maintenance can be planned ahead due to their low, controlled elongation (minimal downtimes/low elongation) help generate cost savings.
- **Maximum safety**
The perfect roundness of the rope as well as exact and consistent diameters to avoid coupling issues constitute prerequisites for the safe operation of the ropeway.

Reference projects



Lukovac, Bosnia (unidirectional aerial cableway)

- First delivery:** 1982
- Customer:** Rudnik/Asamer
- Track rope used:** STRESSLESS (1+6+Z15+Z18)
 - Length: 4 x 14.2 km
 - Rope diameter: 28 mm
- Haul rope used:** SOLITEC® 6x36WS
 - Length: 4 x 6000 m
 - Rope diameter: 29 mm

Lukovac, Bosnia, is home to one of Europe's longest and oldest material ropeways spanning a length of 14 km. This ropeway has relied on TEUFELBERGER ropes (haul and track ropes) for about 40 years. The ropeway's transport capacity is about 150 tons per hour. It carries limestone from a quarry, across a reservoir, and all the way to a cement factory and a soda plant, where it is processed. The ropes withstand the extreme conditions of several climatic zones – from very humid environments above water to frequently changing weather conditions in the mountains.



Soligorsk, Belarus (material conveyor belt)

- Delivery:** July 2014
- Customer:** Belaruskali
- Haul rope used:** SOLITEC® 6xK26WS
 - Length: 6 x 7 km
 - Rope diameter: 38 mm

In Soligorsk, Belaruskali, Belarus, there is a 20 km belt conveyor which transports potash. The potash is conveyed from the mining site all the way to the fertilizer plant. Our SOLITEC® ropes are ideal for such applications of conveyor belts for goods and materials, as they were designed specifically with such scenarios of use in mind.



Baihetan Dam, China (cable crane)

- First delivery:** 2014
- Customer:** Hangzhou Guodian Dali Mechanical & Electrical Engineering Co. Ltd.
- Track rope used:** STRESSLESS (1+6+Z15+Z18)
 - Length: 4 x 1,100 m
 - Rope diameter: 108 mm

For the erection of the Baihetan Dam in China (expected completion in: 2019), one of the world's tallest barrages, a temporary cable crane was installed. This cable crane uses track ropes from TEUFELBERGER. In total, 611 tons of rope of an aggregate length of 1,100 m and a diameter of 108 mm were delivered.

STEEL ROPES FOR UNDERGROUND MINING

Reliability and safety are indispensable prerequisites for steel wire ropes used in mining activities.

TEUFELBERGER steel wire ropes are designed for these heavy duty conditions. TEUFELBERGER employs cutting edge development and manufacturing technologies to maximize a rope's lifetime and thus keep the required maintenance intervals as long as possible. This way, the ropes are able to cope with high transport loads and can remain in use for extended periods of time, which in turn makes them extremely cost effective.

TEUFELBERGER steel wire ropes excel through:

- **Long lifetime & high reliability**
TEUFELBERGER steel wire ropes stand out because of their long service lives, a product of long standing experience in rope design and manufacture, as well as thanks to the premium quality materials they are made of.
- **Long term cost effectiveness**
The excellent durability of our ropes and the fact that their maintenance can be planned ahead help users avoid unnecessary downtimes and costs, caused by early and unexpected rope changes.
- **The ideal rope for any use**
Our long standing experience and wide product portfolio of high quality mining ropes allows us to offer you the ideal rope for any use. TEUFELBERGER offers you more than just ropes.
- **Extreme corrosion resistance**
The special structure of the steel wire ropes from TEUFELBERGER and the use of premium quality starting materials such as wires with thick zinc-aluminum coating makes the final products particularly corrosion resistant.
- **Easy handling**
Non-rotating rope constructions are extremely easy to handle, enhance safety, and permit fast rope changes.

Reference projects



Technology-Jezkazgansky Rudnik, Kazakhstan (shaft hoisting system)

Customer: KAZ Minerals
System type: Koepe
Delivery: November 2014
Hoist rope used: SOLITEC® 6xK36WS
 - Length: 4 x 860 m
 - Rope diameter: 40.5 mm

In the Vostochno-Jezkazgansky mine, four SOLITEC® ropes are being used as hoist ropes in a mine shaft for copper lead ore. The ore mine is 420 m deep.

Bielszowice, Poland (shaft hoisting system)

Customer: Kompania Węglowa S.A
System type: Koepe
Delivery: June 2014
Guide rope installed: HVS (half locked coil rope)
 - Length: 2 x 1,200 m
 - Rope diameter: 48 mm

In the Bielszowice mine, hard coal is being extracted. Kompania Węglowa S.A. is the biggest producer of hard coal in the European Union.

Wyoming, U.S. (shaft hoisting system)

Customer: TATA Chemicals
 North America, Wyoming
System type: Koepe
Delivery: October 2015
Hoist rope installed: VVS (fully locked coil rope)
 - Length: 6 x 524 m
 - Rope diameter: 30 mm

The site of TATA Chemicals in North America contains the world's biggest deposits of trona, a naturally occurring mineral consisting of pure sodium carbonate. The mining facility has a capacity of 2.5 million tons and consists of an underground trona mine and a surface refining plant that processes the ore into soda ash.

In the mining industry, requirements are extremely high.

Highest safety & maximum cost efficiency.

BEFORE THE PROJECT IS AFTER THE PROJECT

Whatever you need – we are the right partner

The provision of special-purpose steel wire ropes custom-tailored to your specific needs is a fundamental prerequisite for a lasting, successful business relationship. However, TEUFELBERGER also provides additional services that make the construction or upkeep of a ropeway system significantly easier.

- **Support in project planning:**
TEUFELBERGER is a solutions provider. As early as in the project phase, our rope experts can contribute valuable expertise. This makes it possible to plan and implement the optimal solution, and to avoid unexpected additional costs.
- **Installation:**
For this task, TEUFELBERGER relies only on the best: its own specialist fitters. More than 600 installation assignments worldwide per year make us uniquely qualified for the highly complex installation of ropeway ropes. Our large team of 9 fitters is at your beck and call around the clock.
- **Optimized transport logistics:**
TEUFELBERGER gets you to the top - reliably and safely. Thanks to our decades of experience in the transport of heavyweight rope reels, we are able to assist our customers actively and effectively in handling this very important part of the project.
- **Service and customer support:**
The damage appraisers and rope analysts from TEUFELBERGER will answer any questions about the condition of a damaged rope or a rope that has already been in use for a long time. Our experts offer competent advice near you. Our international service team is on call for maintenance, splicing and repair jobs 24/7.
24 hour hotline: +43 (0) 7242 615388



Only the best is good enough.

Impressive from project planning through to startup.

THE RIGHT ROPE FOR ANY TYPE OF USE

Every application, from unidirectional ropeways to material ropeways, poses its specific challenges that need to be mastered. Using the right rope is key to success. TEUFELBERGER has the necessary know-how for any type of ropeway and is therefore in a position to provide you with the right rope for your specific need.

Ropes by field of use

Ropes	PP 6L (5 – 32 mm)	SOLITEC® 6L (23 – 56 mm)	SOLITEC® 8L (25 – 45 mm)	QS816V (10 – 48 mm)	NOROTEC™ MT 91 (20 – 70 mm)	NOROTEC™ MT 83 (30 – 57 mm)	HVS (19 – 60 mm)	STRESSLESS 2Z-6Z (DATA) (51 – 110 mm) ¹ (19 – 60 mm) ²
Applications								
Surface lift	□							
Monocable ropeway		□						
Detachable monocable ropeway		□						
Multicable ropeway		■	■					■
Reversible aerial ropeway		■						■
Funicular railway		■	■					
Material ropeway		■						■
Cable crane				■	■			■
Mining / Underground mining		■	■	■	■	■	■	■ ■

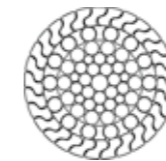
□ haul/track rope ■ haul rope / traveling rope ■ track rope
 ■ hoisting rope ■ guide rope ■ haul rope

¹ passenger ropeway
² in mining

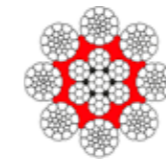
IT IS THE INNER VALUES THAT MATTER MOST

The structure of a rope is decisive for its quality. Cross-sectional views and rope rendering depict the key characteristics of our high quality steel wire ropes.

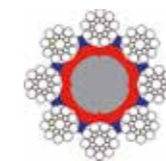
STRESSLESS DATA



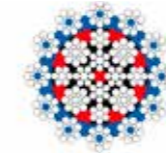
QS816 V



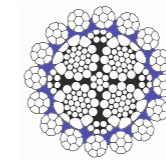
SOLITEC®



NOROTEC™ MT 83



NOROTEC™ MT 91



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