



Industry

# Optimal Mining Equipment Performance with Carbon

Technically differentiated engineered product  
solutions suited for the mining industry





# Schunk – A worldwide success. Always at your side.

Schunk is the world leader in the development, production, and application of carbon, ceramic, quartz and sinter metals solutions. Like no other, Schunk combines innovative strength and technological know-how with an extraordinary service orientation to supply a range of performances unique to the market.

Schunk is a partner who offers you all the technological possibilities of a globally active company and can implement your ideas pragmatically and tailor-made to your requirements – whether these are for industrial large-volume markets or highly specialized niche markets.

### The Schunk Group

Empowering, idea-driven, collaborative – this is how the Schunk Group has made a name for itself as a globally-active technology group since 1913. Empowering, because we build bridges for our customers to help them develop better products and conquer new markets with innovative technologies. Idea-driven, because innovations are a significant aspect of our company culture. Collaborative, because every employee of the Schunk Group is focused on the customer.

The Schunk Group is a globally operating technology company with a global business unit structure. The company is a leading supplier of products made of high-tech materials – such as carbon, technical ceramics and sintered metal – as well as machines and systems – from environmental simulation and air conditioning to ultrasonic welding and optical machines. The Schunk Group has more than 9,100 employees in 29 countries and achieved sales of €1.35 billion in 2019.



# Proven product performance in a wide range of applications

For over 100 years, Schunk has been developing innovative carbon solutions for trouble free current transfer. We are always setting new standards with the performance, safety, and service life of our products. Our products are used in many different industrial applications worldwide, where they work reliably every day, even in extreme environmental and operational conditions. Our customers benefit from our ability to optimize the almost limitless possibilities of carbon to suit your needs.

### Technically differentiated engineered product solutions

From carbon brushes to brush holders and solid lubrication – these are just some of the parts we have developed that currently lead their technological areas, across industrial bases including, mining, steel, aluminium, wind and transit. From initial idea to production, our engineers work with customers and OEM partners to develop products specifically tailored to their individual requirements.

### Your trusted partner to the mining industry

Many areas of the mining industry also benefit from our experience, engineering competence and efficiency. Utilize the material and development expertise of our global distribution network and our production locations on every continent.

We understand the challenges of operating a mine 24/7. Based on our highly developed materials, we find common solutions that optimize component service life, maintenance work, and associated costs, providing an overall cost of ownership advantage.

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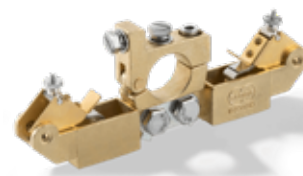
## Technically differentiated – high performance products

Our products generate optimal performance in rugged mining operations. No matter how extreme your conditions are, with dust, temperature, humidity and load fluctuations – our solutions can help you ensure long part service life and minimum maintenance and downtimes both on the surface and below ground.



### Carbon brushes for commutators and slip ring applications

Our carbon brush products are used globally in a wide variety of different industries. The carbon, graphite and metal (copper/bronze) materials we use combine good electrical and thermal conductivity with high temperature resistance. Thanks to their custom material compositions, our carbon brushes are also well equipped to handle extreme environments, such as power surges, idle running, heavy duty operation, caustic gases and vapors, extreme ambient temperatures, oil mist, high dust or ash content, and low humidity environments providing excellent commutating and current transfer capabilities.



### Brush holders for commutators and slip ring applications

Our precision brush holders are perfectly coordinated to work with our carbon brushes and ensure optimal stability and product reliability – even in the toughest conditions. The superior design of our brush holders and an integrated wear indicator ensure ease of maintenance and replacement.

### Schunk mining product advantages:

- Both standard and custom-tailored solutions to meet your demands
- Proven reliability and long service life
- Advanced product compositions ensure minimal surface wear (commutator, slip ring, contact wire, chain)
- Brush holders with monitoring function to minimize maintenance work
- Perfectly designed for a wide range of operational and environmental conditions
- Optimal performance in arduous open underground and commodity based mining operations
- On site technical advice and support from trained and experienced employees worldwide





## Reliability and optimizing “uptime” are key in mining

**Hoisting, dragging, swinging, propelling, conveying, washing and transporting - surface mining requires a lot of movement. To handle all of that movement, you need powerful reliable motors and generators. With Schunk products, you can rely on our differentiated materials - in the most challenging operating environments.**

Reliability and asset availability are key performance indicators in the mining sector. Components failures and poor product reliability greatly affect return on investment (ROI). That can be expensive for you as an asset manager, operator or maintainer.

Trust in uncompromising quality and technically differentiated carbon material solutions from Schunk. Our carbon brushes and brush holders ensure motors and generators in draglines, shovels, excavators, trucks, locomotives, conveyor belts and crushers work reliably around the clock - even under the toughest conditions. Schunk carbon contact pieces in mining vehicles improve your operational reliability, as do our wheel flange lubricants, solid lubricants and current collectors for mining locomotives.

### ▸ Motors, generators and auxiliary drives

Materials E101, E49X, E220

### ▸ Bucket wheel excavators

Materials C72, C40Z3, C80X

### ▸ Conveyor belts

Materials C40Z3

### ▸ Raw material preparation

Different electrographite and metal graphite materials

### ▸ Electric trucks

Materials E141, E49X, E888  
Two wheel drives per vehicle

Carbon brush  
for draglines



Carbon brush  
for draglines

### Product applications:

- Motors & generators - dragline, shovel, excavator
- Conveyor belts
- Mining trucks
- Draglines and shovels
- Transportation locomotives



Shovels





## Designed to perform, in challenging underground environments

Schunk products help you achieve excellent reliability and efficiency in underground mining during every step of production. Our highly trained team of application experts, are available to recommend which materials are best suited to ensure seamless performance.

No matter what you are mining coal, copper, zinc, platinum, iron ore, gold or nickel - our products perform. They retain the same excellent performance across their entire service life. They are optimally designed to meet your needs through a collaborative development partnership: We work with you to find the perfect material combination.

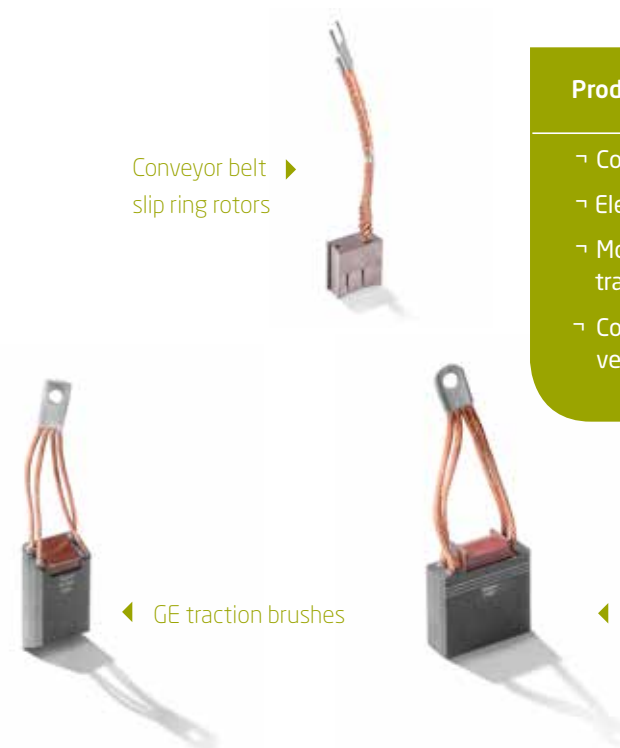
In underground mining, in particular, heavy dust production and high humidity can create extremely challenging conditions for motors and generators. Non-swelling carbon brushes, brush holders and contact strips from Schunk are suited to conveyor motors, sag and ball mills and vehicles perfectly to handle these challenges without compromise. Schunk carbon brush materials also minimize spark production, ensuring safe operations with explosion protection.

▸ Conveyor motors  
Materials E46 family

▸ Shuttle car motors  
Materials E29, E101

▸ Contact strips  
for transportation vehicles  
Materials BH25Z4, BH26C

Conveyor belt  
slip ring rotors



### Product applications:

- Conveyor motors
- Elevator motors
- Motors for battery-operated transportation vehicles
- Contact strips for transportation vehicles



# Schunk OEM grades

Material	Your advantages	Application
E108	Self-cleaning properties	For improved performance in difficult environmental conditions
C40Z3	Long service life, current density of 15 -25 A/cm²	For conveyor belts - sag and ball mills
E101	Suitable for alternating loads	For motors and battery-operated mine locomotives
M-Design	Improved commutation, self-cleaning	For motors and generators
X-Treatment	Optimized mechanical stability, improved performance at low humidity	For all applications and carbon brush materials
8-Treatment	Self-cleaning properties in poor environmental conditions	For all kinds of drives

# Your innovative development partner

We work closely with our customers and OEM partners to develop solutions precisely tailored to their needs. From specific problem to initial idea and manufacturing, we develop products that set new standards for reliability, long service life and quality.

Carbon is full of possibilities. We understand carbon in all of its different variations, and we know how to get the best out of it. Our range of technologies encompasses solid materials expertise in mechanical, electrical and thermal applications, as well as precise design of material properties, modern forming technologies and a comprehensive spectrum of surface treatments.

Every development process starts with selecting the perfect material. Ultimately, the specific properties of the finished product are determined by the characteristics of the raw material. Schunk offers over 100 years of experience in developing and processing our high-quality materials. No matter what your requirements are - as one of the world's leading carbon material specialists, we can work with you to find the right solution.

# We are there when you need us

Both our products and our customer service are perfectly tailored to meet your needs. We know how important consulting, reliability, and fast delivery are to you. You can always expect a little something extra when you work with us.

As a global technology group, we maintain production locations on every continent. That means you can always rely on quick and reliable delivery for your products - no matter what corner of the world you are operating from. The global Schunk sales network also offers you outstanding advising on site. Our trained and experienced employees can answer all of your questions, and our engineers are happy to offer practical seminars at your company on application engineering topics. We always have a willing ear for you, we understand your everyday practical challenges, and we can support you with our expertise.



# Clean work thanks to electric drives

Schunk Smart Charging is setting new standards as an innovative charging solution for electric buses. The system has also been successfully tested for automatic charging of battery-operated mining vehicles as part of a unique pilot project.

The project "The Electric Site" is a perfect example of how we understand innovative leadership. In this project, we tried to do more than just improve our existing products for mining vehicles. We also looked for all new answers to make operating these vehicles more environmentally-friendly, safe and cost-effective. The answer to these needs is Schunk Smart Charging.

We mounted the charging components on the underbody of a battery-operated mining vehicle - rather than on the roof as usual - to ensure they are well-protected. When the vehicle is positioned over the charging station, the pantograph comes up out of the floor to connect to the charging component. The vehicle's batteries are then loaded with around 200 amperes of current in just five minutes.

Want to learn more about this topic? Just get in touch with us!

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