



high performance equipment for steel plants and rolling mills

66 years in service.
30 years experience in the steel industry.
40 countries served.
ISO 9001 certified.

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Company overview

The KARK story dates back to 1945, when Hugo Kark set up a small metal-working firm.

In the following decades, new business contacts were established which, together with extensive investment, provided a basis for the company's systematic development.

KARK is now a highly innovative mechanical engineering company.

Our products are in use in more than 40 countries worldwide.



Kark Hamburg manufacturing facility and head office

Kark Brandenburg manufacturing facility

A selection of our valued customers:



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KAFX composite rolls for hot rolling mills

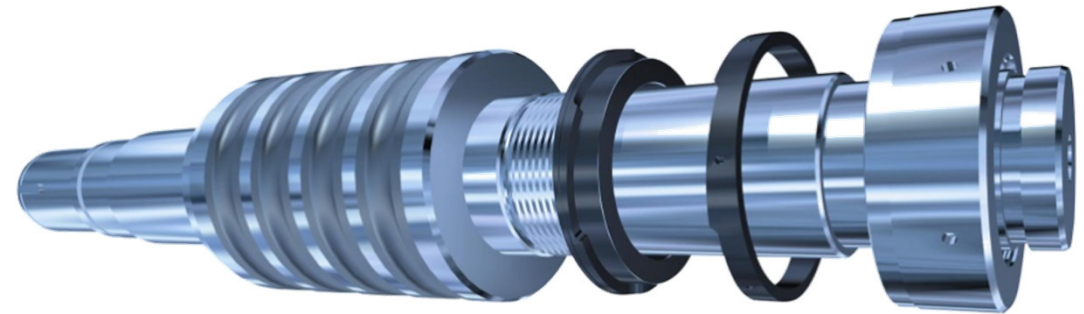
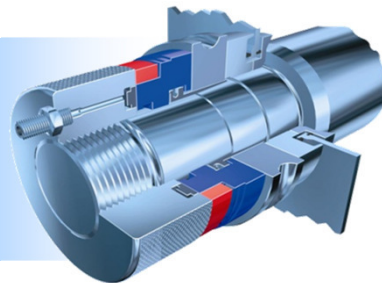
With thousands of systems sold and 30 years of experience, KARK is one of the most recognized suppliers of composite rolls world wide. Our aim is to provide you with the most durable clamping system possible to give you maximum availability of your mill.

As we are not a Tungsten Carbide Ring manufacturer, we minimize roll ring dimensions to reduce your consumables cost.

Our clamping systems are specifically designed to fit in your mill and are manufactured in our plants in Germany.

We use only superior materials and fabrication technologies.

Also available:
KAFX Axial Clamping Systems
for cantilever and finishing block
mill stands



- **minimized mill downtime**
- **increase of tons per groove performance**
- **purely axial roll ring clamping**
- **multi-strand capability**
- **easy roll ring exchange at your roll shop**
- **improved rod shape and surface finish**
- **complete stainless steel clamping system**
- **ISO 9001 certified manufacturing process**

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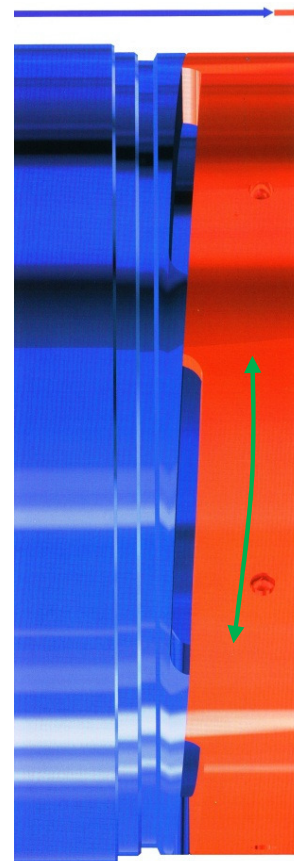
KAFX composite rolls for hot rolling mills

KARK develops composite rolls and roll ring clamping systems since the end of the seventies. We are convinced that an operationally safe roll ring clamping system can only function with axial forces. Today, our KAFX Composite Roll sets the standard in the industry.

The KAFX Composite Roll is easy to operate and guarantees a solid mounting of the roll rings. The Kafx clamping principle eliminates radial and tangential tension in the roll rings. It is infinitely adjustable and accurately maintains the pre-defined axial clamping force.

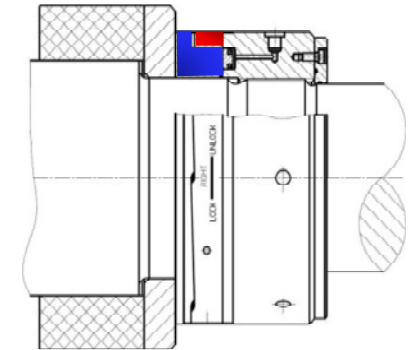
The KAFX Composite Roll is designed for fast and simple assembly and dismantling of the roll by the customer in his own roll workshop.

A typical mounting procedure is outlined on the right.



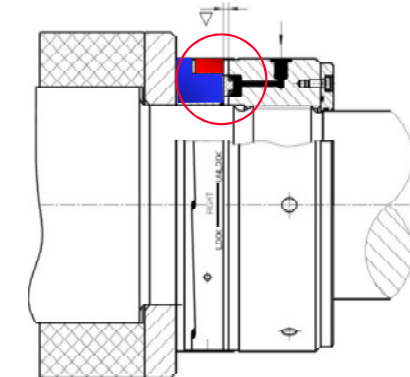
Step 1:

Clamping system is mounted,
hydraulic nut is fastened
wrench-tight



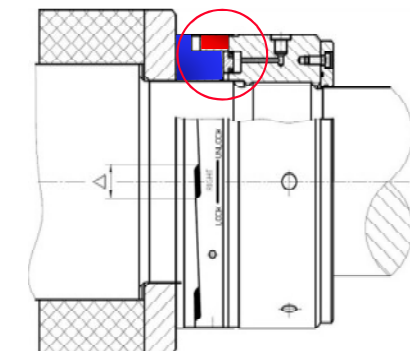
Step 2:

Applying a hydraulic
pressure of 2.000 bar
Elongation of the roll shaft
creates a gap between
pressure ring and
key locking ring



Step 3:

The gap is filled by **rotating**
the key locking ring
Pressure is then released
thereby transferring the
hydraulic prestressing force
into pure mechanical axial
clamping force



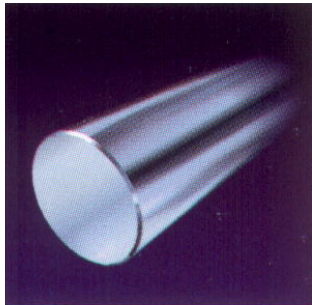
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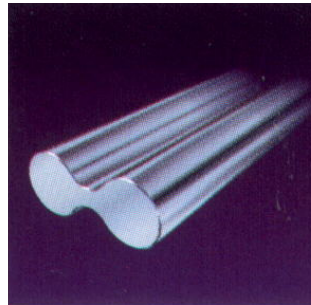
KAFIX composite rolls for hot rolling mills

Typical profiles and sizes rolled by our customers with KAFIX composite rolls

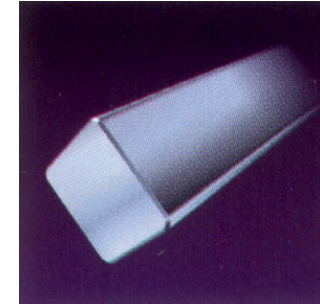


round
10mm - 50mm
0.4 - 2in

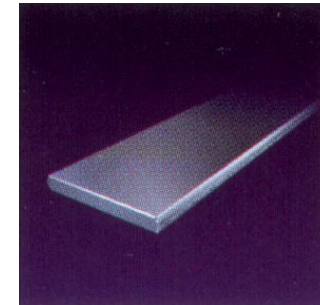
oval
12mm - 82mm
0,5 - 3.2in



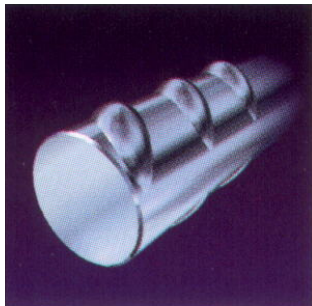
dogbone
24mm - 47mm
0.9 - 1.9in



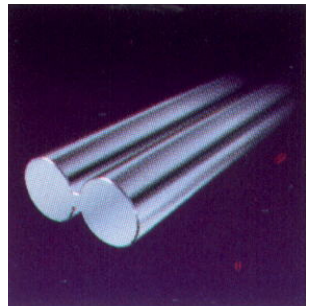
square
10mm - 15mm
0.4 - 0.6in



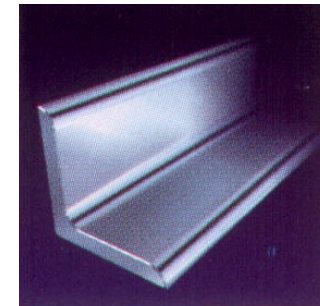
flat
up to 165mm wide
up to 6.5in wide



rebar
10mm - 40mm
#3 - #11



slit
25mm - 55mm
1 - 2.2in



angle
25mm - 76mm
1 - 3in

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Tungsten Carbide Roll Rings

Today's hot rolling processes require optimum and reliable products and components throughout the mill train.

KARK and one of the world's leading producers of tungsten carbide materials, **elementsix**, have formed a strong and reliable partnership for the manufacture and distribution of superior quality tungsten carbide roll rings.

We offer you a wide variety of standard grades to satisfy almost every application request. Special non-standard grades are also available, as well as a sophisticated R&D-department, that is continuously working on developing new grades.

Our tungsten carbide roll rings are available in standard block sizes and up to a diameter of 480mm (18.8"), they come either ground but without grooves or ready-to-use, with grooves.



- high-performance rolls for hot rolling mills
- made exclusively from virgin materials
- wide variety of standard grades
- state-of-the-art materials from **elementsix**, one of the leading manufacturers worldwide
- available for nearly every rolling application
- excellent surface finish of the rolled product
- machining service and training available

A strong partnership:

Element Six is the world's leading supplier of industrial diamond supermaterials and one of the largest carbide tool and roll ring makers.

Element Six has processing and manufacturing facilities in 9 countries, serving more than 10.000 global customers.



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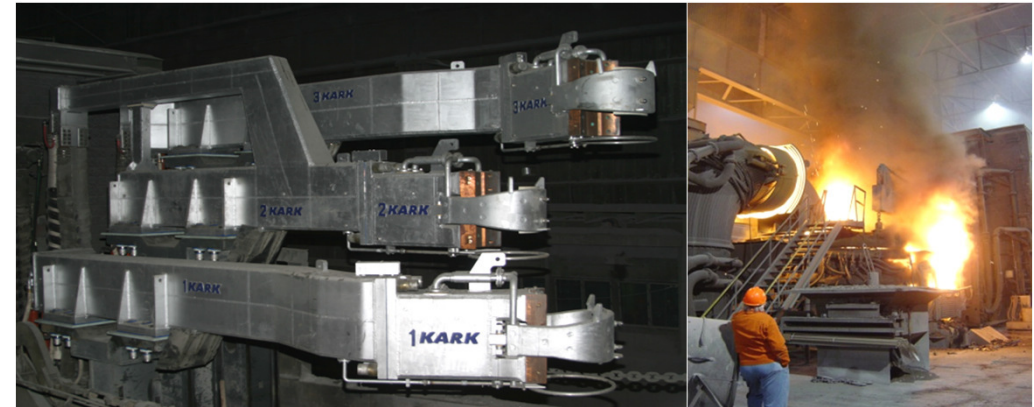
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Current conducting aluminum electrode arms for UHP furnaces

We designed and built the the first aluminum electrode arm for a UHP furnace. We invented the detachable electrode holder, a major step forward to lowering maintenance cost and downtime. With more than 90 sets manufactured and delivered, we are the market leader.

Our aluminum arm systems are specifically engineered to fit on your furnace and are designed and manufactured in our plants in Germany.

Also available:
KARK ECS aerosol electrode
spray cooling. Specially designed
to prevent plugging of the
cooling water nozzles and to
boost the cooling performance
without using more water.



- optimum integrated cooling with one single water supply and return hose per phase
- no sophisticated cooling water requirements
- interchangeable standardized electrode holder
- up to 50% less weight than conventional arms
- faster response to regulation system
- reduced magnetic fields, more stable arc performance
- increase in active electrical power input
- lower kwh and graphite consumption per ton
- substantially reduced maintenance cost
- available for AC and DC furnaces
- ISO 9001 certified manufacturing process
- favorable short term return on investment

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Current conducting aluminum electrode arms for UHP furnaces

Design Advantages

- *Electrode arm made of aluminum in box type design with welded internal reinforcements*
- *Electrode is held by force of belleville washers. Hydraulic pressure is only needed for release*
- *Electrode holders are identical and interchangeable for all three phases*
- *Phase I and III arms are cranked towards the center to allow an optimum PCD (pitch circle diameter)*
- *Electrode arms and electrode holders are fully water-cooled with a minimum number of in- and outlets*
- *Stainless steel hydraulic piping is incorporated inside the arm*



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The **KARK_{EA}F** current conducting electrode arm is made of aluminum. It is of sturdy box-type design with welded internal reinforcements and ribbings.

The current is conducted through the electrode arm itself. This means a true design simplification compared to conventional arms.

The total weight of the **KARK_{EA}F** aluminum arm, water included, is up to 50 % lower than that of conventional arms. This results in less strain on the guide rolls of the electrode masts as well as higher electrode speeds and accelerations.

Aluminum also offers the advantage of very low inductance, compared to current conducting copper-clad arms or steel arms with copper-bus.

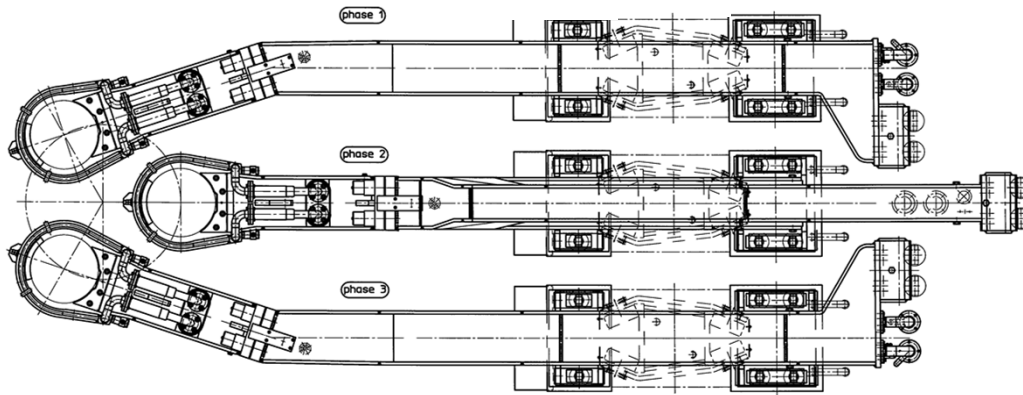
Current is conducted conventionally from the transformer secondary side to the rear part of the electrode arm with water-cooled high current cables. Then the current passes through the aluminum profile of the electrode arm to the copper contact shoe on the electrode clamping device.

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Current conducting aluminum electrode arms for UHP furnaces

Both outer arms (cranked towards the center) and the straight center arm carry **identical interchangeable electrode holders**.

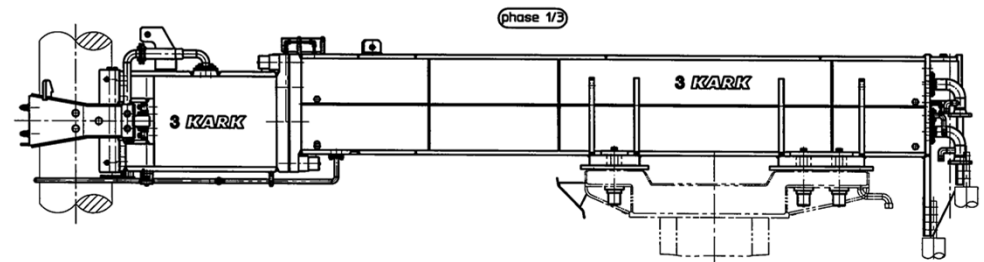
This arrangement allows for an optimal PCD and reduced spare part inventory.



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The **KARK_{EMF}** current conducting electrode arms make it possible to retain the existing water-cooled high current cables. The arm is bolted to a water-cooled electrode arm stool which in turn is welded on the electrode mast. Oblong holes permit a certain correction of the angular and axial alignment of the electrode arm to ensure its exact position with regard to the furnace centerline.

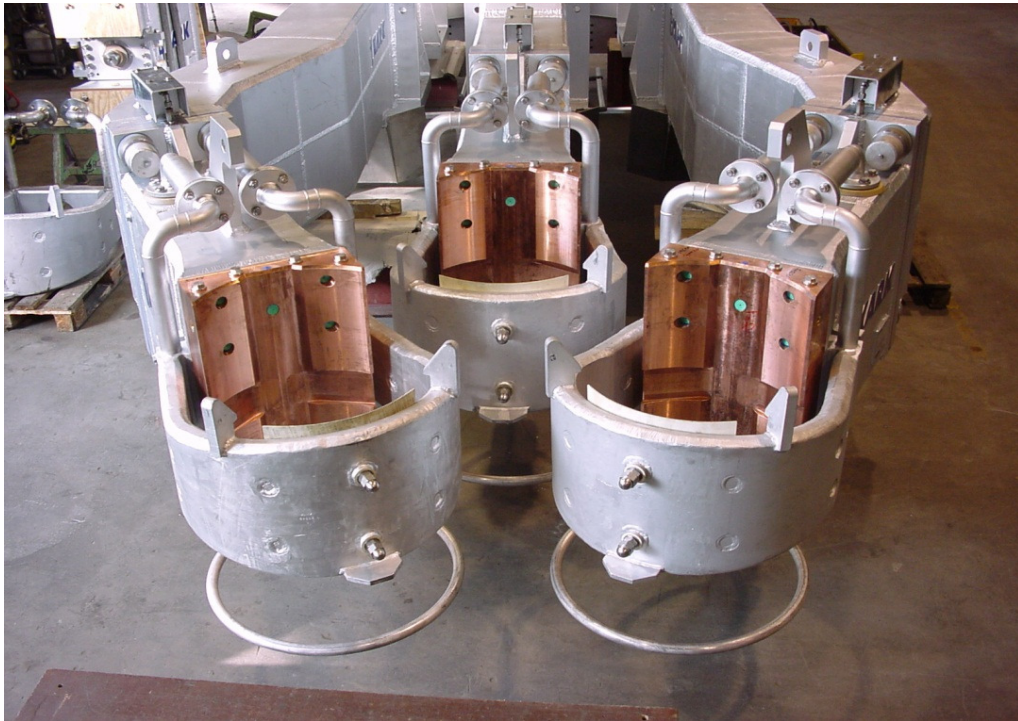
A large number of insulating parts compared to conventional designs are no longer needed, the remaining parts are less exposed to thermal stress and vibrations. This means almost maintenance-free operation.



The electrode clamping device is integrated in the front part of the electrode arm, the so-called electrode holder. At the electrode arm interfaces (connection arm/holder, holder/contact jaw), the water of the individual circuits is conducted directly through the flanges. These ducts are sealed so as to prevent leakage.

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Current conducting aluminum electrode arms for UHP furnaces



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The clamping jaw is operated by a set of belleville washers that can be adjusted to the appropriate pressure by means of a nut outside the electrode holder. A hydraulic cylinder in the interior of the electrode holder provides the pressure to open the clamping jaw.

The electrode holders are identical for all three phases so that the number of spare parts is reduced. In fact, with the flange-type electrode holders only one spare clamping head is needed, where other suppliers require a full set of spare electrode arms. Maintenance critical water hoses in this area and copper bus bars are eliminated, thus reducing the risk of water leakage.

The **KARK_{EAF}** current conducting arms made of aluminum bring a substantial reduction in energy losses which in turn results in an increased effective active power input into the furnace.

The **KARK_{EAF}** current conducting arms provide for profitable steelmaking at increased productivity and reduced costs.

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General manufacturing

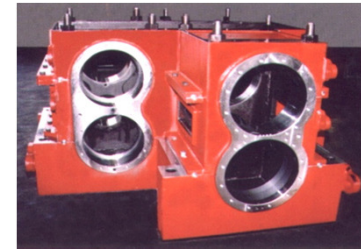
We are dedicated in solving technical problems quickly and rationally using state-of-the-art technology.

Our CNC-controlled (5- and 6-axle) machining centres, for example, have maximum load capacities of up to 10 tons. Our lathes can handle workpieces with a maximum centre clearance of 6.000 mm. These are augmented by drilling and milling centres and universal milling machines, plus the latest generation of welding equipment.

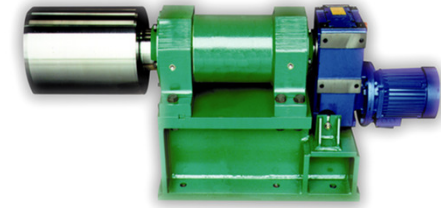
Our ultimate aim is customer satisfaction. That's why our supporting services continue long after the original order has been completed. For instance, we carry out maintenance and assist in the extension and conversion of existing installations.

We also offer our customers inspection services and training courses.

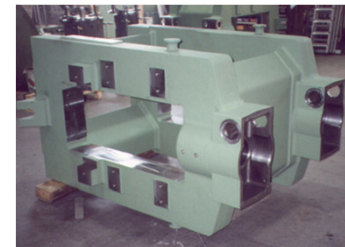
KARK's technically sophisticated products and developments are employed by major industrial firms and research establishments. This testifies to the company's innovative ideas and its strong in-house R&D potential.



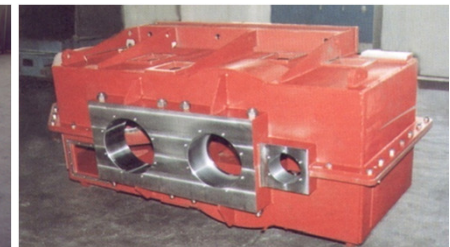
Gearbox for Rolling Mill



Roller Table Drive



Re-engineered millstand



Drivebox for Rolling Mill



Differential Gearbox

