



MINING

RUBBER MILL LINERS

Innovative Elastomer Technology

Turkey

Discover
the potential



ABOUT US

FKK Group is a privately held company based in Samsun, Turkey. The Company was founded by two visionary Turkish entrepreneurs Tayyip Altuncu and Ahmet Avni Altuncu brothers in 1957. Since then FKK Group has become the world's leading spare parts manufacturer for automotive, mining, marine, industrial equipment and construction sectors. Today, second and third generations of Altuncu family are in control of firm's management. FKK Group has 4 production plants 2 in Samsun, 1 in Corum and 1 in Istanbul, and 3 offices for marketing in Ankara, Istanbul and Izmir.

FKK Group manufacture and supply spare parts such as jounce bumpers for automotive sector, rubber mill liners for mining industry, marine fenders for sea ports, Vulkollan tow to top rollers for Stretch breaking machines for Industrial Equipment and rubber bridge bearings for one of the biggest construction projects in Turkey and Middle East.

Our Company philosophy 'Excellent Quality, Best Price and Fast Delivery' obtain us to export our products to more than 55 countries worldwide. Our long term marketing strategy is to reach this number to 196 countries in seven continents.

A photograph showing a car body on an assembly line, with various mechanical parts and tools visible.

AUTOMOTIVE

A photograph of a construction worker wearing a white hard hat and safety vest, working on a large metal structure.

CONSTRUCTION

MINING



MARINE



INDUSTRIAL



RUBBER MILL LININGS

Day by day, it becomes more important to use rubber materials in mineral grinding operations because of their resistance to wearing. Also with the relation to the above concept, the most important reasons of using rubber linings instead of steel linings are as follows:

First, rubber linings are more economical than steel linings, they become more adapted in grinding operations and they decrease the noise pollution effectively which is produced due to grinding and cause also a suitable work environment.

Rubber is lighter than steel and this facilitates the handling and installation for workers, in aspect of accidents it reduces injuries due to handling and installation of lining which is occurred in lining.

Due to elasticity of rubber it shows more resistance to material than steel lining. This also causes to emit sounds. Resistance to wearing is not because of hardness of its formation, it is because of strong polymer bonds in rubber.

Rubber has more resistance than steel to abrasion and hard materials.

Knowing special criterias of rubber has a very important role in performance of good grinding.

Due to light weight of rubber mill liners, operators consume less energy in their grinding processes.

We use different rubber formations for different conditions. FKK by using high technology and experienced technicians guarantee the selection of different formation of rubber for different grinding conditions.

RE
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Nickel Gold Platinum
Aluminum Silica
Potash Bauxite Quartz
Silver Diamond
Ceramic



THE WORLD'S MOST DURABLE
RUBBER MILL LINERS

Rhodium **Iron Ore**
Limestone

Phosphate

Aerated
Concrete

Zinc

Titanium
Chrome

Copper

INNOVATION

TOP
QUALITY

FAST
DELIVERY

BEST
PRICE

SOLUTION
PROVIDER

TECHNICAL
SUPPORT

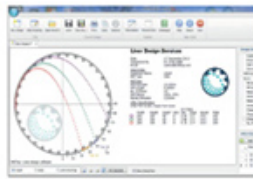
DESIGN AND IMPROVEMENTS

FKK designs are based on optimization with efficiency in grinding, reduction in power draw and availability of the equipment. Also includes a wide selection of rubber compounds for best quality wear life in grinding process.

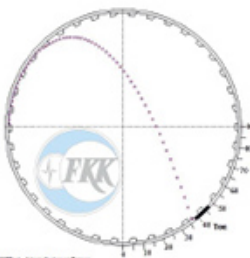
Design Capabilities



- We employ latest CAD-CAM technologies (NX10)
- MSC Software, Patran, Marc FEA (Finite Element Analysis)
- Miltraj Liner Design Software
 - Milling Performance
 - Lining Life
 - Ball Trajectory



Q6500x11260 – PRIMARY BALL MILL PROJECT



FKK Design Department

Order: 28 September 2014
 Material: 170002 204 00 00
 Contact: Design@mkf.com
 Client: Mitsui
 Customer Name: Mitsui
 Mill Type: Primary Ball Mill
 Mill Size: 6500 x 11260 mm
 Product Size: 1500 mm
 Mill Speed: 15.5 RPM
 Mill Diameter: 6500 mm
 Mill Length: 11260 mm
 No. of Comp: 38
 Mill Height: 2000 mm
 Media Diameter: 80 mm

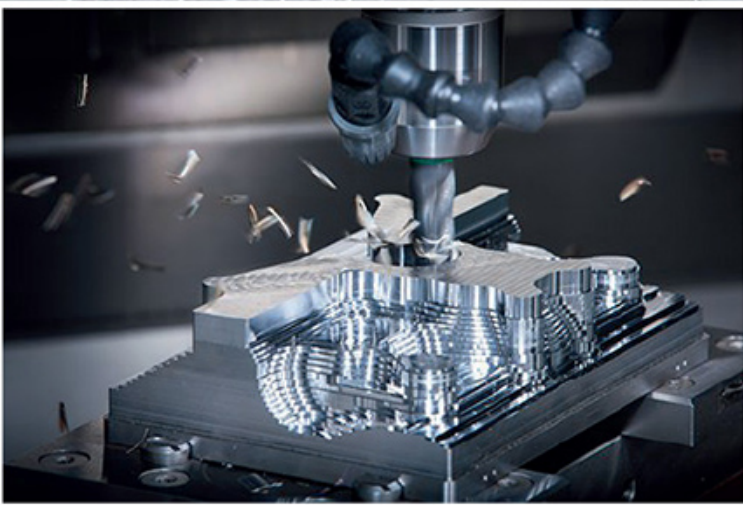
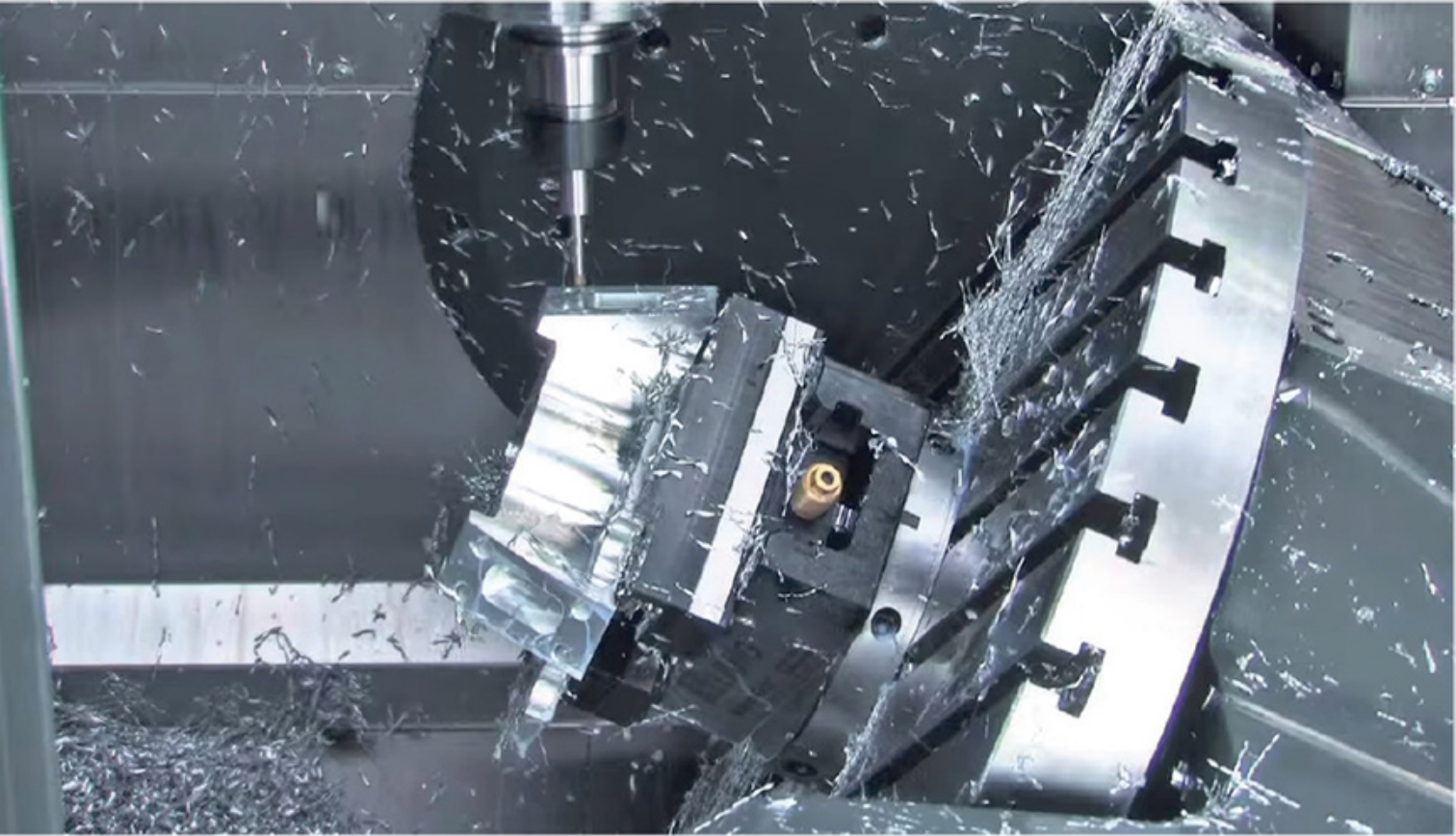


Other Specifications:
 Mill Inlet & Outlet Angle from base, height include nose

Media Height	Media Angle	Media Inlet Angle	Media Outlet Angle	Media Inlet Speed Rate	Media Outlet Speed Rate
200	180	90	90	65	5.68 5.91 12.8 80

Miltraj - Liner design software





MOULD

For more than 50 years FKK group has been designing and manufacturing molds according to our customer specifications. Our latest technology CNC machines works 7/24 a week and 365 days a year.

MANUFACTURING

PLANT



www.fkk.com.tr

RESEARCH AND DEVELOPMENT UNIT (R&D)



FKK Group's R&D department works closely with universities to make new formulas and solutions for top quality products.

Our company has its own laboratory which has got latest technology equipments for all kind of rubber processing tests.

LABORATORY EQUIPMENTS

- Computer equipped tensile testing bench
- Ozone testing machine
- Density measurement machine
- Rheometry
- Stereo microscope with camera
- Corrosion test machine
- Deflection - load character measuring machine
- Shore A and Shore D polymer hardness measurement machine
- Metal hardness measurement apparatus
- Magnetic mixer
- Ash oven
- Ageing (Etuv) equipment
- Permanent deformation machine
- Sensual weighing machine



ISO 9001:2008 ISO/TS 16949:2009 ISO 14001:2004 TS EN ISO/IEC 17025 OHSAS 18001:2007

FKK GROUP

RUBBER MIXING PLANT



FKK Group have 5,000 tones of rubber mixing capacity. Our long term plan is to make a new investment for latest technology rubber mixing factory to increase our capacity to 10,000 tones by 2023.

We always use top quality rubber raw materials for our production.

RUBBER AND ADVANTAGES

There are many advantages of rubber as a material, but most are associated with its inherent elasticity. Unlike most materials, rubber will very quickly recover its original form, even after large deformations. Under modest pressure it will also mould itself closely to harder and less than perfectly even surfaces, especially metals. Together with its resistance to wear, these properties make it ideal for a wide variety of sealing applications. Chemically speaking, rubber is an elastic material made up of long chain molecules known as polymers. Such polymers occur naturally in the sap of Hevea and Ficus trees, but for industrial purposes are now more often synthesised from a variety of other chemical compounds having short chain molecules, or monomers. In their raw form polymers generally lack most of the properties required in finished rubber products. It is not until these polymers are mixed together with other materials, or compounded, that these properties are achieved. There are four main ingredients essential to a finished compound:

The basic raw material, this being the polymer itself.

The Reinforcing - most commonly carbon, or in the case of coloured compounds silica. The reinforcing gives the compound its mechanical strength, and determines many of its characteristics.

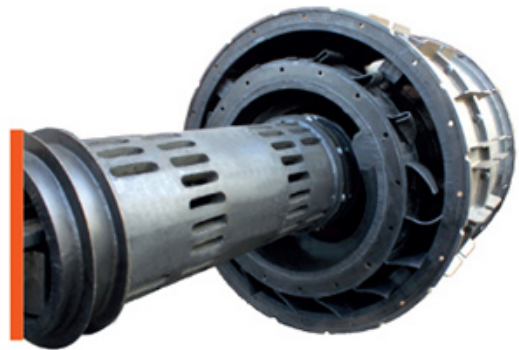
Accelerators, or chemical catalysts that promote the cross-linking of the long chain molecules within the compound. It is this cross-linking which gives rise to the compound's ability to recover its initial form.

Additives, in the form of small quantities of oils, fatty acids and waxes. Additives enhance the performance of a compound in downstream manufacture, depending on its end use.





FKK Group successfully produced and installed discharge head rubber liners to SAG Mill 8,5 x 4,6 m. at one of the largest gold mine in Europe



FKK Group specializes in the design and manufacture of Rubber Pulp Discharge systems for AG/SAG and Ball Mills. We are able to manufacture different kinds of rubber, polyurethane and vulkollan' spare parts for mining sector.

7/24 Technical Support Service

When you choose FKK grinding mill liners you will use from our confidential organization services.

We are always at your service with our experienced technical staff.

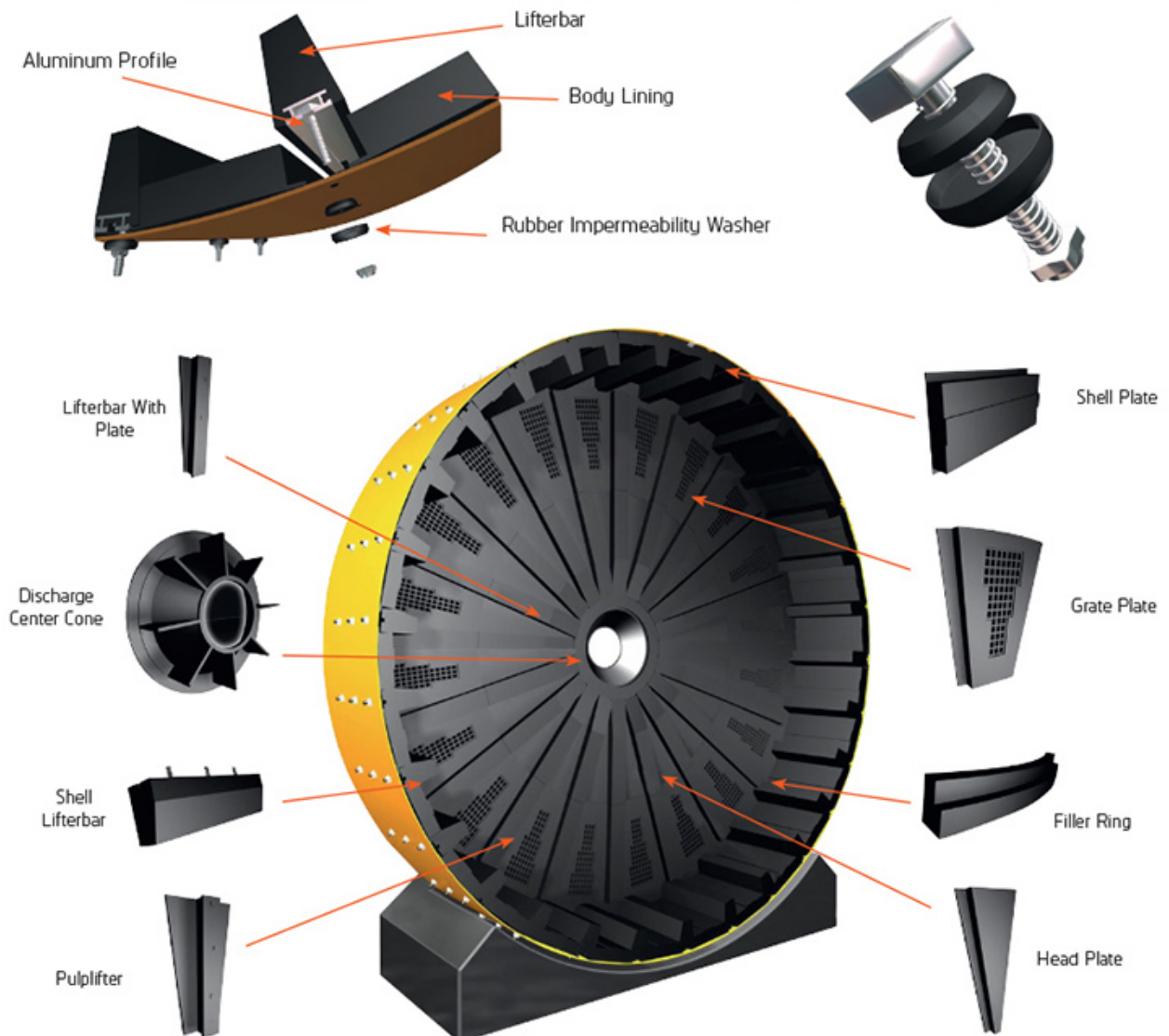
Our products produce with cooperation of mineral processing industries. FKK grinding mill liners are produced and designed for unwanted problems in operations.

As a part of your complete grinding mill linings programs, you can use our technology for improving your grinding projects.

As know, the most important aims of firms which manufacturing the materials and giving services in national or international markets are quality and decreasing the cost of materials.

To reach these aims, laboratory has an important role.

Our firm, by using modern laboratory instruments has reached to the mentioned aims.





+ THE ADVANTAGES RUBBER MILL LINERS

LOWER COST

These are very cost effective as
COST PER TON OF ORE GRIND IS LOWER.

LONGER LIFE

Rubber Mill liners have LONGER OPERATIONAL LIFE.

LESS MAINTENANCE

Rubber Mill Liners are engineered to resist abrasion, increasing the interval between maintenance intervals.

FASTER / SAFER

Rubber Components are lighter and easier to handle

REDUCED NOISE

Rubber Mill Liners REDUCE THE NOISE LEVEL to safer levels by absorbing impact against the shell

REDUCED WEIGHT

Rubber Liners are about 1/8 by weight of steel liners of same size

REDUCED INVENTORY

Rubber Mill Liners have a PREDICTABLE WEAR RATE so inventory planning is easy.

NO LEAKAGE

Rubber mill liners seal to the shell eliminating slurry leakage from the mill.

REDUCED POWER

Light weight of Rubber Mill reduces the current draw of the mill.

EASY TO MANAGE SPARES

Shorter lead times insure quick delivery of required spares.



IT IS
RESISTANT TO
CORROSION.

ADAPT TO
PROVIDE
MAXIMUM
GRINDING
EFFICIENCY

WEAR RESISTANT
AND
STRONG.

IT IS RESISTANT
TO HIGH
TEMPERATURES.

80°C

RUBBER MILL LININGS
CHOICE
OF
PROFESSIONALS



SUITABLE FOR **ALL TYPES OF** GRINDING MILLS

We have supplied rubber mill liners
for more than 900 mills worldwide.

Autogenous mills
Semi-autogenous mills
Ball mills
FGD mills at power plants
Rod mills
Pebble mills
Continuous mills
Batch mills
Pebbles Mills
Cylpeb Mills
All types of special design mills



FKK Group service 7/24 customer satisfaction vision. We have been transporting our products to 55 countries in 7 continents. We are working with world's leading transporting companies in land, sea and air.



7 CONTINENT 55 COUNTRIES

FAST DELIVERY





www.fkk.com.tr

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