

Press release

Presse-Information

Service de presse

**Efficient Wear Protection
for the Iron and Steel Industry**

Mastering Wear Problems with the Aid of Linings

For years the demand for iron and steel has grown all over the world. Steel scrap is in high demand. The soaring economy of China alone has put enormous pressure on producers due to its hunger for steel. All this despite the fact that steel production is at an all time high. At the same time this market situation poses a greater challenge for the production plant of any steel producer, where, maximum availability and minimum losses due to shutdowns are vital.

Wear is present throughout iron and steel production facilities, from abrasive and impact wear, combined with corrosion, to temperature and thermal shock stress. Linings supplied by Kalenborn economically protect plant components against such attacks because Kalenborn offer a complete array of wear protection materials: ceramic and metallic materials, plastics and rubber. A further problem encountered in iron and steel plants is the material flow in silos and bunkers where mass flow is required instead of funnel flow. Kalenborn offer a range of slide promotion materials which are suitable for many applications.

Long-term duty cycles are achieved with the following materials:

- ABRESIST fused cast basalt
- KALCOR zirconium corundum
- KALCOR-S sintered zirconium corundum
- KALOCER high alumina ceramics
- KALCRET hard compound
- KALSICA silicon carbide ceramics
- KALMETALL-C hard casting
- KALMETALL-W hard overlay welding
- KALINOX slide promotion steel
- KALEN slide promotion plastics

Abrasion, Impact Stress and High Temperatures

The choice of the optimal material for the specific application depends on the type of wear that occurs and on the plant component itself. Quite frequently only a combination of different materials will meet all requirements. Kalenborn offer solutions for most wear problems that are appropriate both from a technical and economic viewpoint.

ABRESIST fused cast basalt has been successfully used for lining raw coal bunkers in the coking section. It offers both wear protection and slide promotion. The downstream processing steps require stronger protection – through to the extremely wear resistant silicon carbide ceramics which are used for coke benches.

Fused cast basalt and hard compound materials are chosen for dust collecting cyclones, pipes, transfer chutes, and bunkers. However, ceramic and metallic materials have also proven reliable for these applications. ABRESIST and KALMETALL-W are offered for bunkers in sintering plants. For intense impact wear Kalenborn offer a special solution termed KERAFLEX: This is a ceramic-rubber-steel bonding in which ceramic plates have been firmly vulcanized.

Almost all high temperature plant components within the sintering system to the coolers and sieves can be protected by hard overlay welding. Whereas – depending on the specific application - cyclones and fans integrated in the dust collecting section are

lined with fused cast basalt, ceramic and metallic materials or with hard compound. The material choice for each case is governed by the actual stress that occurs.

The core unit of iron production, the blast furnace, puts maximum demands on wear protection. KALOCER high alumina ceramics have been effectively used in the feeding from burden bunkers through to the throat stopper. Depending on the particular situation metallic protective linings may be useful as well.

Distributing chutes and throat armor are efficiently protected by KALMETALL-W. Dust collecting cyclones are successfully lined with KALCOR zirconium corundum combined with KALCRET hard compound.

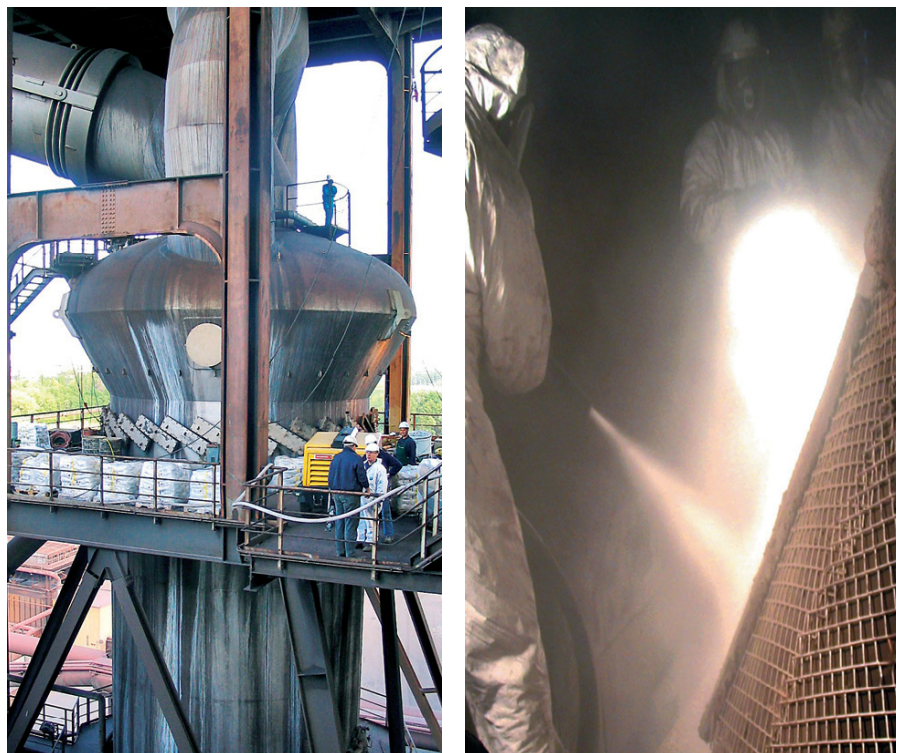
There is no “ingenious solution” for slag granulation. Economic efficiency will only be achieved by making the appropriate selection out of a wide range of materials. The same is true for systems set-up in the converter shop and the rolling mill.

The know-how necessary for installation of the linings is just as important as the choice of the appropriate material. The specific situation with respect to repair and changeover periods is critical. Based on their extensive experience Kalenborn are capable of offering optimal solutions for any application – including complete service for preventive maintenance.

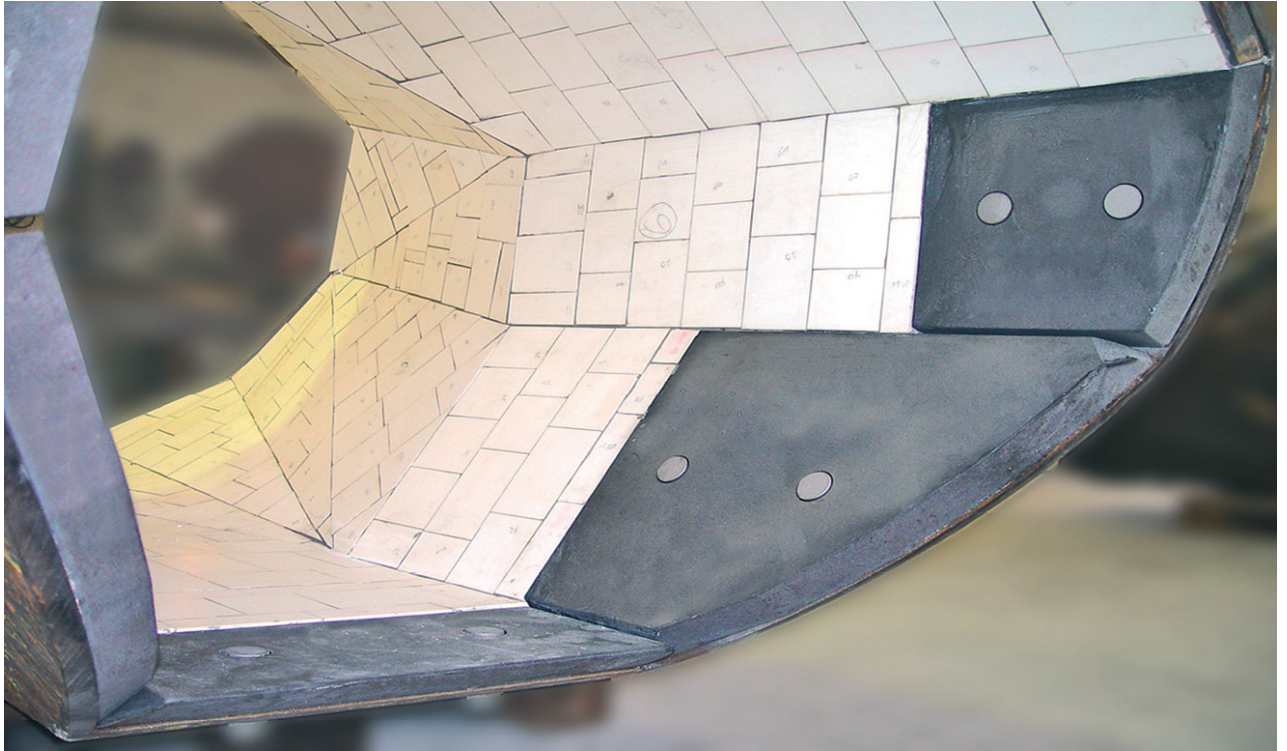
“kalpraxis” brochure 07.06 contains 16 pages of detailed information and numerous typical applications of wear protection in the iron and steel industry. To download this informative brochure visit www.kalenborn.de.



Collecting hopper integrated in the dust collection system for sintered material and operated at temperatures of 400°C: efficiently protected by KALCOR zirconium corundum



Short lining times for protecting a dust collecting cyclone with sprayed-on KALCRET-BTS hard compound; the application rate exceeds 5 m²/h



Octagonal hopper for blast furnace charging with three-dimensionally cut shaped elements of KALOCER high alumina ceramics and KALMETALL-C hard casting – each 50 mm thick; the design avoids the risk of blow-through phenomena in the joints



Installation of a pressure compensating pipe at the blast furnace
– the self-supporting structure of KALMETALL-W 100 30+6
hard overlay welding has a diameter of 450 mm