



APPLICATION-AREA DOSSIER, AUGUST 2026

Application area glass: Refractory practice at the melting furnace, working end and feeder

Glass melting furnaces run for years without interruption once heated up – with container glass, campaigns of more than ten years are normal. The lining has to survive this entire campaign: fusion-cast AZS blocks in glass contact, a silica crown above the melt, and graded insulating layers behind it. Any weak point in material or workmanship shortens the campaign and endangers glass quality – replacement during operation is only possible to a limited extent.

Wear concentrates on a few zones. At the glass line, the transition between the glass bath and the furnace atmosphere, corrosion is strongest – here convection, oxidation and aggressive condensates act together. Glass phase can also exude from AZS blocks; the consequences are cords, bubbles and stones in the glass. In the regenerators, alkali vapours and fly dust attack the checkerwork until individual flues sinter together or become blocked.

Many types of damage can be managed hot: overcoating worn palisade blocks, ceramic welding on the crown, sealing joints, targeted cooling at the glass line. Once the lining has reached the end of its life, the cold repair follows: controlled cooling, demolition, new lining and reheating to a defined curve – the silica crown in particular forgives no mistakes during temperature changes. Here a robust schedule decides over weeks of lost production.

Critical zones from the melting furnace to the feeder

- ☐ **Glass line**
At the transition between the glass bath and the furnace atmosphere, the furnace corrodes fastest; high-zirconia AZS palisade blocks and targeted cooling extend the service life here.
- ☐ **Throat**
The constriction between the melting end and the working end sees the highest flow velocity and is one of the most heavily stressed components of the furnace.
- ☐ **Furnace bottom**
Multi-layer construction of bottom blocks and ramming masses; metal droplets from the batch can locally drill their way downwards.
- ☐ **Silica crown**
Light and creep-resistant, but sensitive to alkali and borate vapours; pitting is inspected regularly and repaired hot.

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| ☐ Exudation | During heat-up, glass phase emerges from AZS blocks; it causes cords and knots, but subsides after the initial phase. |
| ☐ Regenerator checkerwork | Heat storage made of checker bricks; alkali condensates and fly dust lead to sintering, blockage and chemical attack depending on the temperature zone. |
| ☐ Working end | Lower temperatures, but the highest demand for freedom from defects: every corrosion product passes from here almost directly into the end product. |
| ☐ Feeder channel | Channel and cover blocks guide the glass to the forming process at a homogeneous temperature; their wear shows up as stones and cords in the article. |
| ☐ Feeder equipment | Tube, plunger and orifice ring meter the gob; they are planned wear parts and are changed during operation. |


Every extra campaign month is money in the bank

Inspection during shutdown

Common mistakes

- Hot repairs without a reliable condition diagnosis: anyone who overcoats or welds without knowing the remaining wall thicknesses and the damage pattern conceals damage instead of controlling it.
- Disregarding heat-up and cool-down curves on the silica crown – in the range of the quartz inversions, temperature changes that are too rapid lead to cracks and spalling.
- Selecting materials on purchase price alone: at the glass line and the throat, block quality determines the length of the campaign – glass defects cost more than the price premium.

PRACTICAL NOTE

Whether a hot repair during operation or a complete cold repair with demolition and new lining – at the glass melting furnace, preparation, material expertise and a sound schedule decide the next campaign. Further practice sheets on application areas and materials can be found at sbs-rs.de/fachwissen.

Questions about your furnace?

We assess lining, zones and condition — with a reply within 24 hours on working days.

+49 89 541 960 200

info@sbs-rs.de

www.sbs-rs.de/en/fachwissen