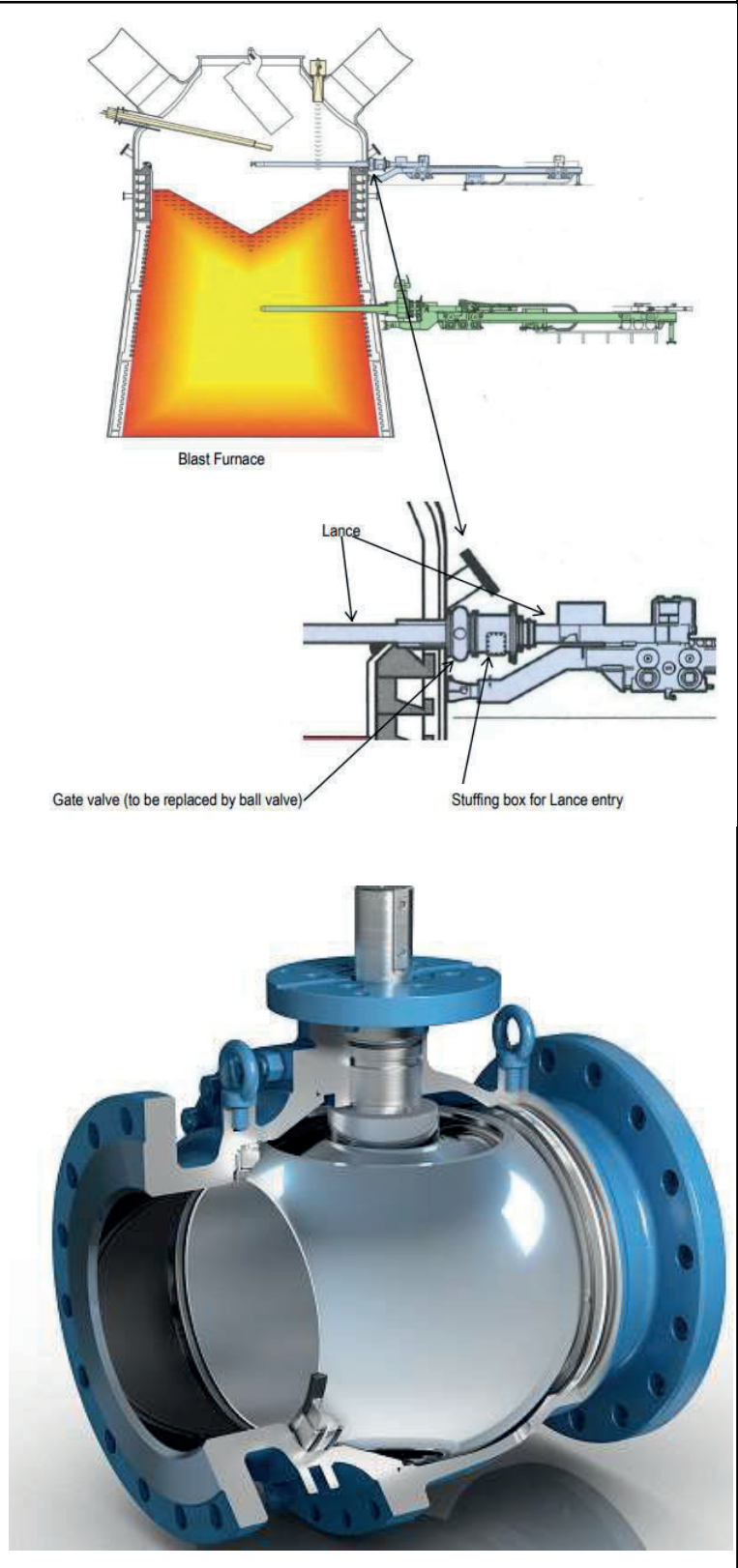


KLINGER Fluid Control

Application Case for Steel Industry

Klinger Ballostar KHI for probe lance blast furnace

<p>Application location: Blast furnace</p>
<p>Media: Blast furnace gas</p>
<p>Media properties: Hot, dirty and abrasive gas Contains nitrogen, CO₂, CO and hydrogen</p>
<p>Temperature on blast furnace wall: 100°C to 300°C (with peaks 400°C to 500°C)</p>
<p>Ambient temperature: Minus 40°C to 40°C Pressure in the blast furnace max. 3 Bar Differential pressure max. 4 Bar</p>
<p>Operations: Max. 12 operations per day</p>
<p>Blast furnace atmosphere: CO - 25% CO₂ - 22% H₂ - 7,5% N₂ - 46% O₂ - 0%</p>



Initial situation:

Previously for the probe lance, a gate valve DN300 was used. A series of leakage and blockage of the gate valve occurred due to the high temperature and appeared forces. The gate valve was chosen because of the short body length but could not withstand the harsh conditions of this application.

KLINGER solution:

Requirements on the KLINGER valve:

DN300 but with flange connection DN500, PN16

Appearing radial forces of 9,81 kN plus weight of the probe lance with load- total force 20kN

Shortest possible body length

TA Luft or VDI2440 approval of the stem sealing

Antiblow out design

Gehäusematerial 1.0619, ball stainless steel hard chromed

Sealing system: 1. valve side metal, 2. valve side KFC (soft seated), gas tight leakage rate A acc. EN12266

6 purge connections G1/2" on KFC sealing side and 4 purge connections G3/4" for cavity flushing

Hydraulic actuator

The KHI ball valve is mounted on a DN500 nozzle on the furnace wall. The stuffing box of the probe lance is installed on the other side of the ball valve. There is no madditional mechanical support for the probe lance stuffing box. If the probe lance is not centered exactly, additional forces occur on the stuffing box of the probe lance. The forces on the ball valve will be created by thermal expansion of the blast furnace wall and the probe lance. Gas tightness is very important because ongoing works are taken behind the probe lance and emitting blast furnace gas is lethal.

KLINGER BALLOSTAR ball valve type KHI 500/300 VII-AF-M/KFC PN16 drl.. free stem. ball material SS-Fe/Cr. incl. purge connections. adapter plate acc. ISO5211.

