

RECOVERY BOILER:

The application:

- » In the pulp & paper production industry after the cooking process in the digester (cooking of raw wooden chips along with chemicals) , pulp and also as a side product, black liquor will be won.
- » Pulp will be further processed to paper products and black liquor will be dried in the evaporation process to heavy black liquor.
- » Heavy black liquor will be burned in the recovery boiler to generate heat for steam.
- » To produce electricity, the gained steam from the combustion process of heavy black liquor powers a turbine to generate electricity.
- » So out of the side product “black liquor” from the cooking process, electricity is produced.
- » On the recovery boiler some valves for heavy black liquor are in use.
- » Black and heavy black liquor is still containing cellulose from the pulping process and is very abrasive and corrosive. The temperatures of heavy black liquor is around 180°C and PN25.



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The KLINGER solution for heavy black liquor:

- » Two ball valve series will be used in this application: 3-piece Model KHA and 2-piece model KH(SV)I.
- » Because of the higher solid content (wood fibers are still present in the media), only metal seats are mandatory.
- » Heavy black liquor is very abrasive and corrosive which makes a stainless steel or duplex body necessary.

KH(SV)I construction for heavy black liquor:

- » (1) Triple stem sealing with 3 O-Rings of AFLAS (FEPM) material. Temperature range of the O-Rings 0°C to +200°C.
- » (2) Elastic sealing element metal in stainless steel – insensitive to solids or impurities in the media. Simple, robust and reliable construction is also resistant to pressure shocks or unexpected pipeline forces. Impurities can easily circulate behind the sealing system is therefore resistant to clogging and blocking of the valve.
- » (3) Ball made of casted ductile iron (one piece construction – no weldings – no risk of crack corrosion). The casting is insensitive to pressure and temperature shocks and has high mechanical stability. The ball surface is chrome coated and corrosion resistant. The coating has the highest possible surface hardness and the lowest surface roughness. Therefore the ball is resistant to solids in the media. Media particles cannot stick on the surface due to smooth surface and low roughness which could damage the seal seat during operation.
- » (4) The casted stainless steel body parts are very compact, robust and insensitive to pipeline forces or pressure shocks. The process connections are available in flanged or weld end version. The trunnion is sealed with an additional O-Ring.

KHA construction for heavy black liquor:

- » (a) The Labyrinth PTFE stuffingbox consists of PTFE and stainless steel discs. Temperature range up to 300°C. The Labyrinth stuffingbox fulfills the requirements of TA-Luft and VDI2440.
- » (b) The sealing element is made of metal stainless steel - the support and cover disc construction combines elastic properties and robust mechanical abilities. The prestressed diaphragm springs ensure the contact of the seat with the ball.
- » (c) The solid standard ball is made of stainless steel 1.4401 or 1.4408 and is pressure balanced. When metal sealing elements are used in the valve, the standard ball will be chrome coated to avoid damages caused by the metal seats → scratch proof.
- » (d) The casted stainless steel body parts are very compact, robust and insensitive to pipeline forces or pressure shocks. Duplex housings and wetted parts are on demand available. The short dome and ISO TOP flange is also casted along with the center piece – no welding. The modular design allows to mix different connection pieces in one construction.

