REFCOMM
BUDAPEST
2-5 Oct 2017

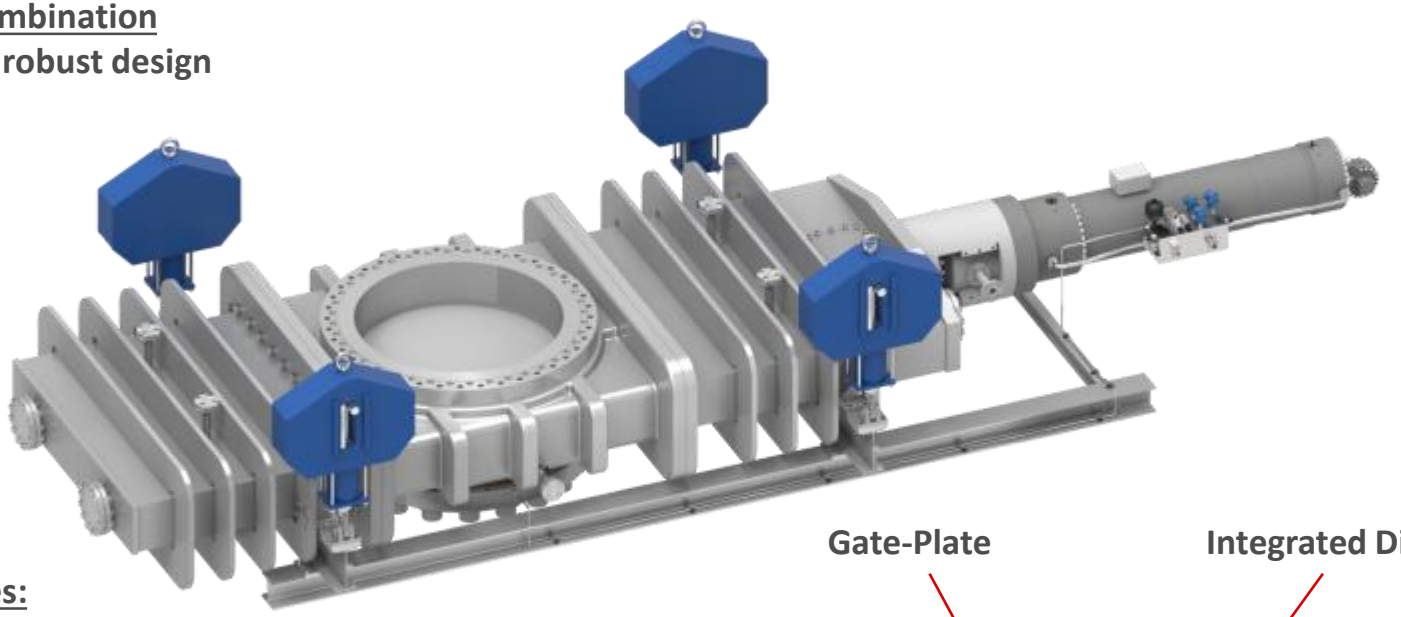
PAUL WURTH
SMS group

The new Paul Wurth developed Automatic Bottom Unheading Valve combines the advantages of existing classical concepts in an innovative way.

Wolfgang ZINGSEM,
Sales Manager Paul Wurth Oil & Gas

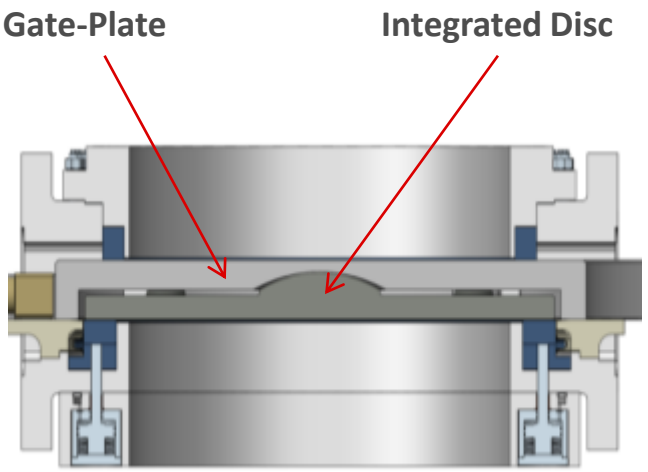
New Bottom Unheading Valve – Plate/Disc Combination

Plate/Disc Combination
Compact and robust design



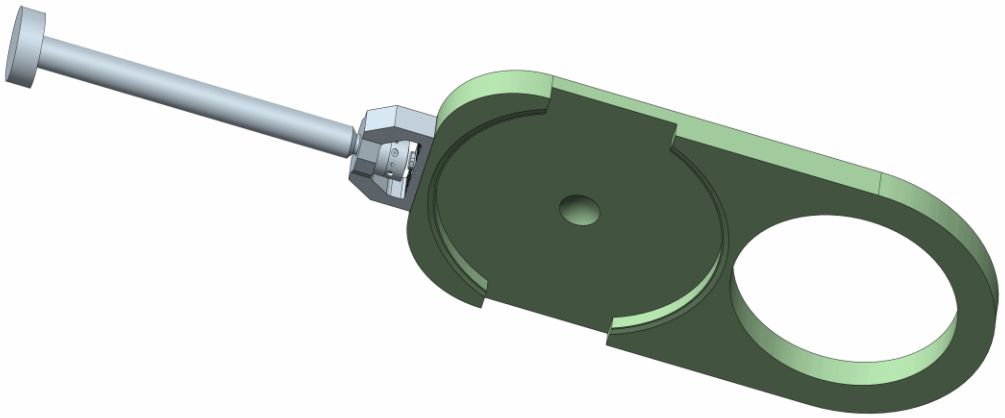
Typical Figures:

- Typical Size 60”
- ca: 9.500mm x 2.900mm x 1.100mm
- Weight abt. 42.000 kg
- Typical operating Temp. up to 550°C
- Typical Operating Pressure up to 10bar(g)
- Actuation hydraulic or electric



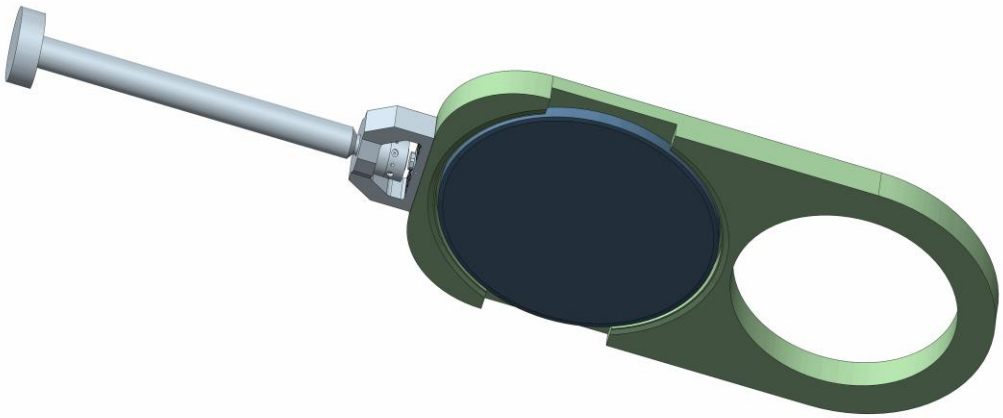
New Bottom Unheading Valve – Plate/Disc Combination

- Gate-Plate



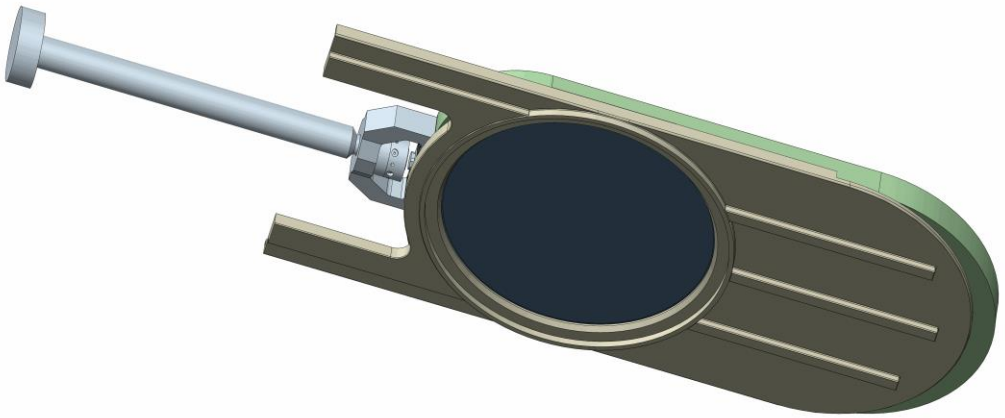
New Bottom Unheading Valve – Plate/Disc Combination

- Gate-Plate
- Disc



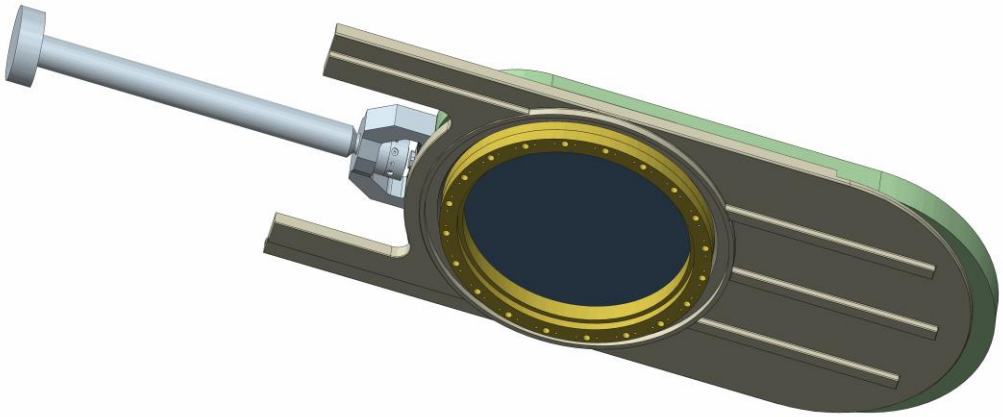
New Bottom Unheading Valve – Plate/Disc Combination

- Gate-Plate
- Disc
- Guide-Plate



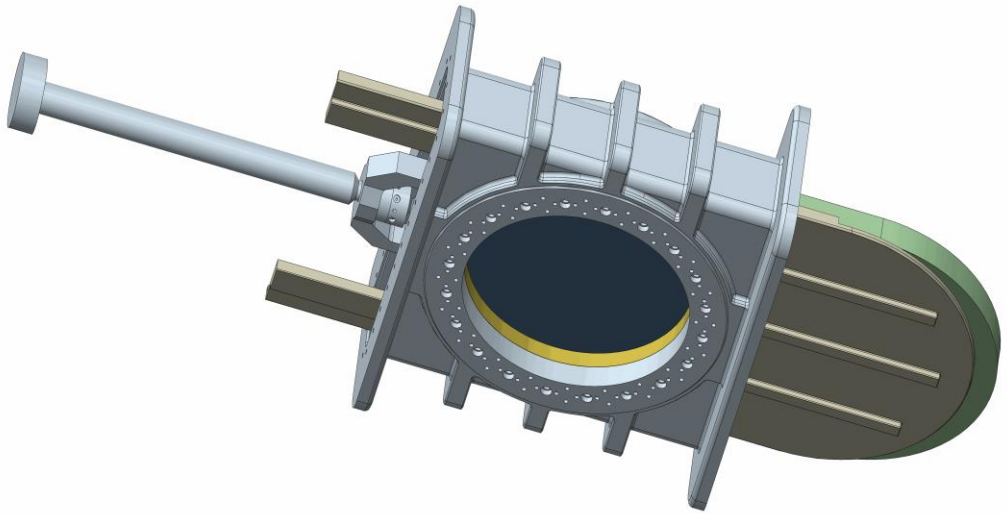
New Bottom Unheading Valve – Plate/Disc Combination

- Gate-Plate
- Disc
- Guide-Plate
- Floating lower Seat



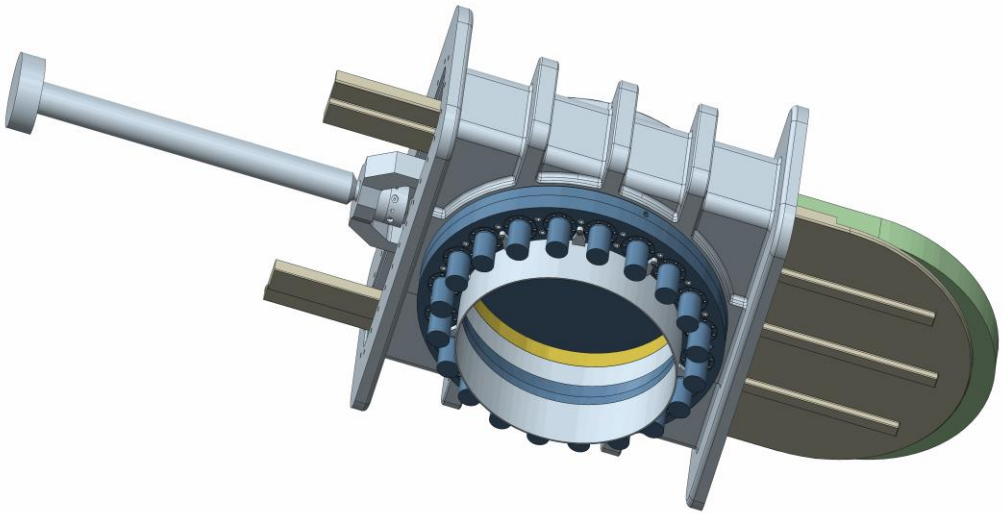
New Bottom Unheading Valve – Plate/Disc Combination

- Gate-Plate
- Disc
- Guide-Plate
- Floating lower Seat
- Valve Body



New Bottom Unheading Valve – Plate/Disc Combination

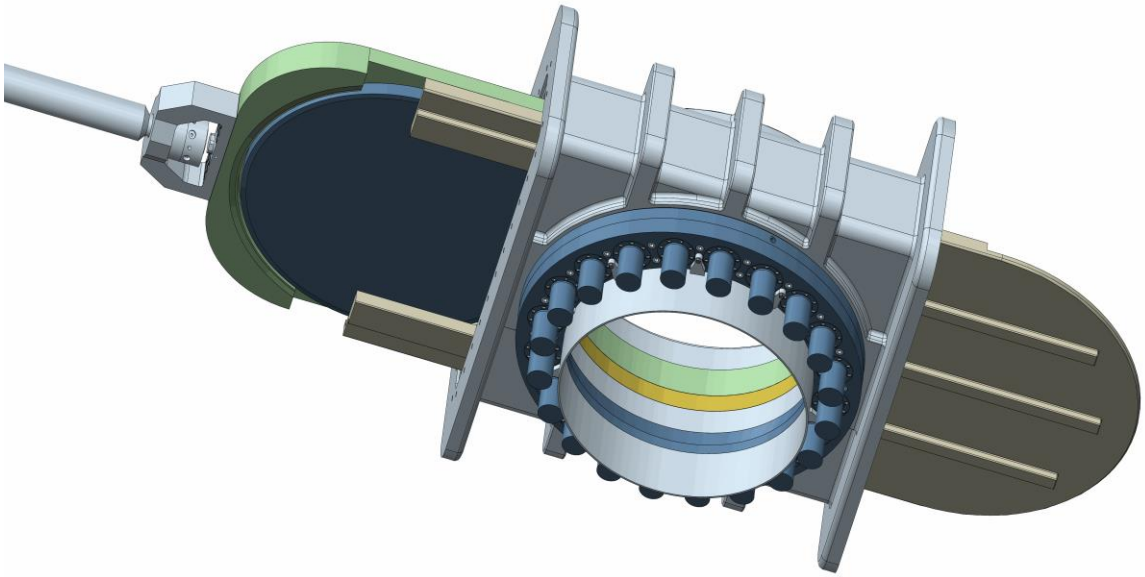
- Gate-Plate
- Disc
- Guide-Plate
- Floating lower Seat
- Valve Body
- Seating Arrangement



Valve in closed position

New Bottom Unheading Valve – Plate/Disc Combination

- Gate-Plate
- Disc
- Guide-Plate
- Floating lower Seat
- Valve Body
- Seating Arrangement

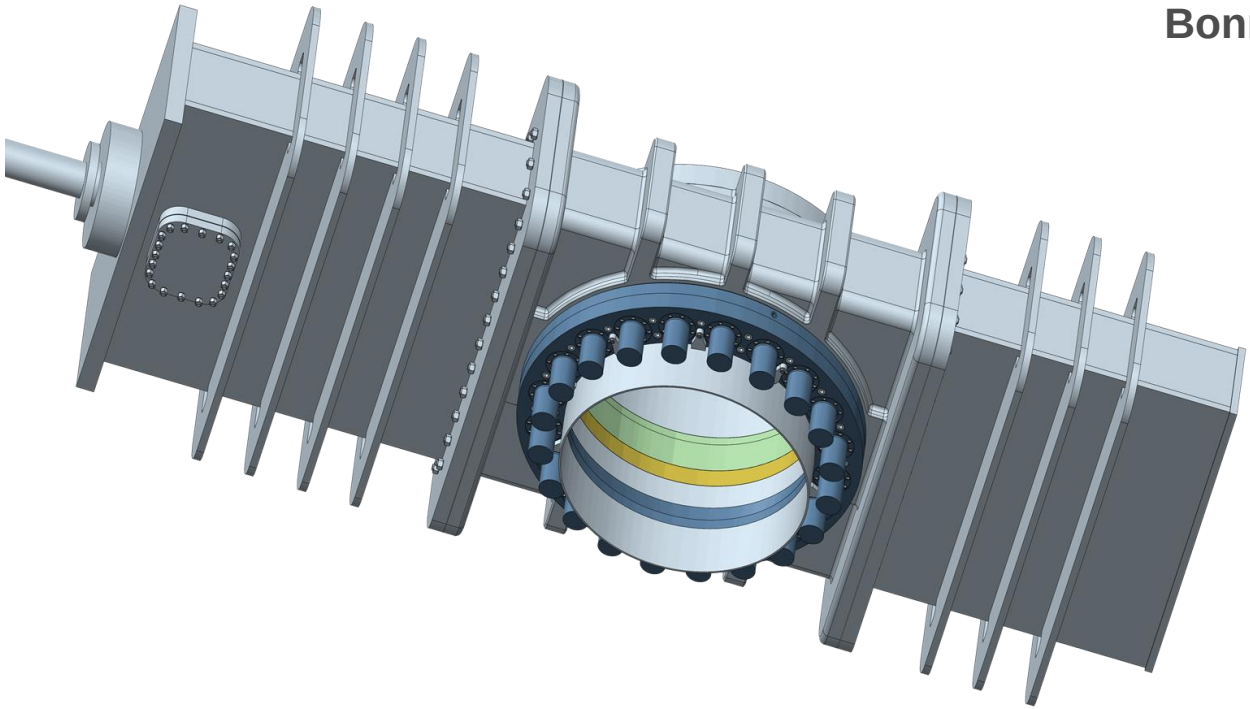


Valve in open position

New Bottom Unheading Valve – Plate/Disc Combination

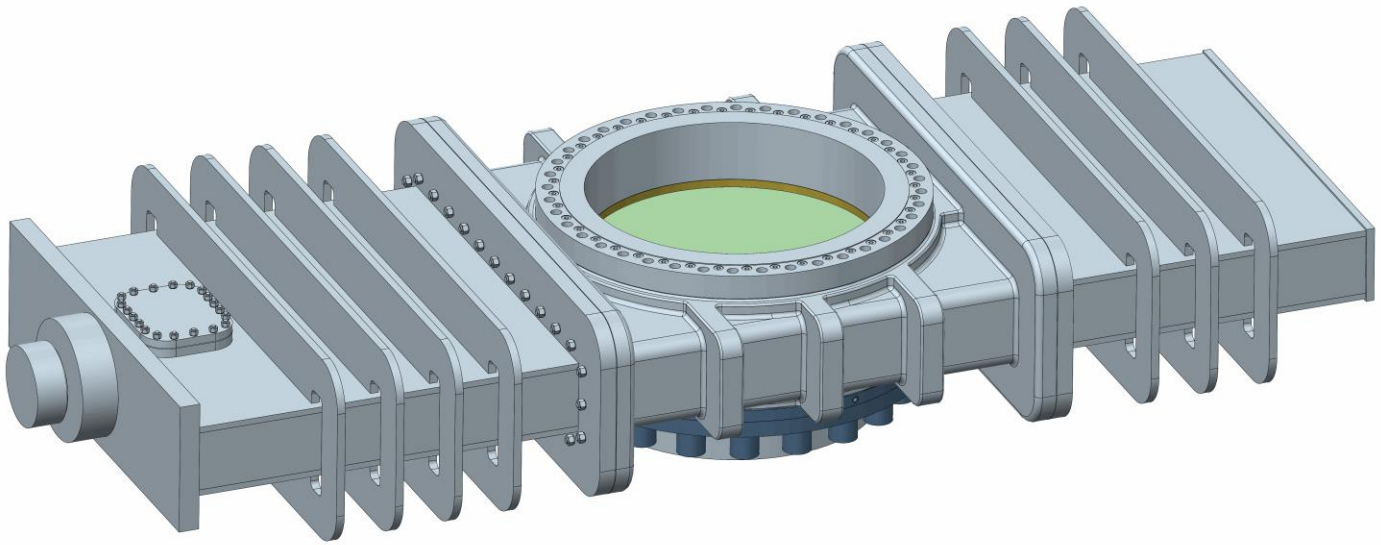
- Gate-Plate
- Disc
- Guide-Plate

- Floating lower Seat
- Valve Body
- Seating Arrangement
- Upper and lower Bonnets



View from the bottom

New Bottom Unheading Valve – Plate/Disc Combination

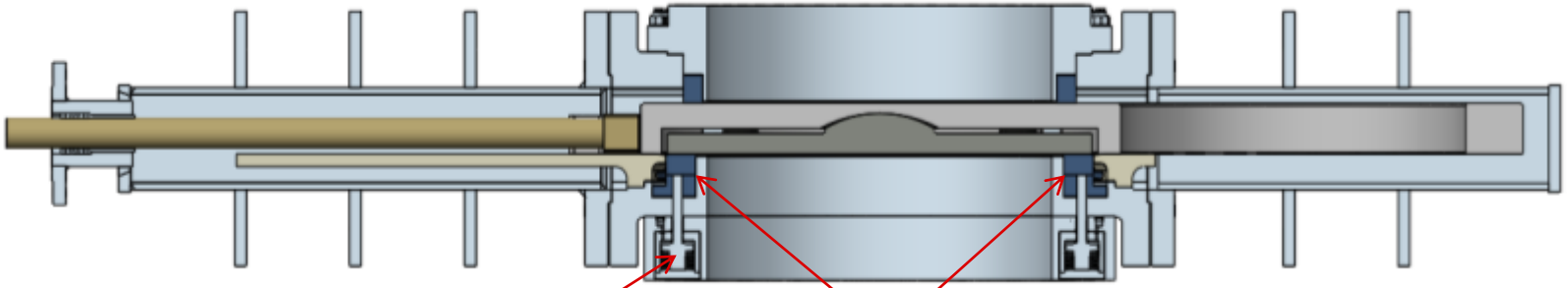


View from the top

New Bottom Unheading Valve – Plate/Disc Combination

PLATE / DISC COMBINATION

Valve in closed position

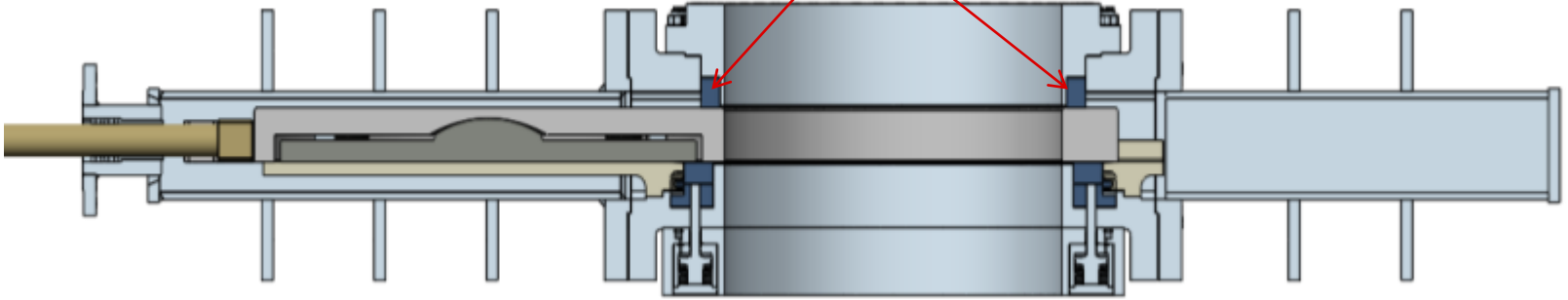


Floating lower seat ring

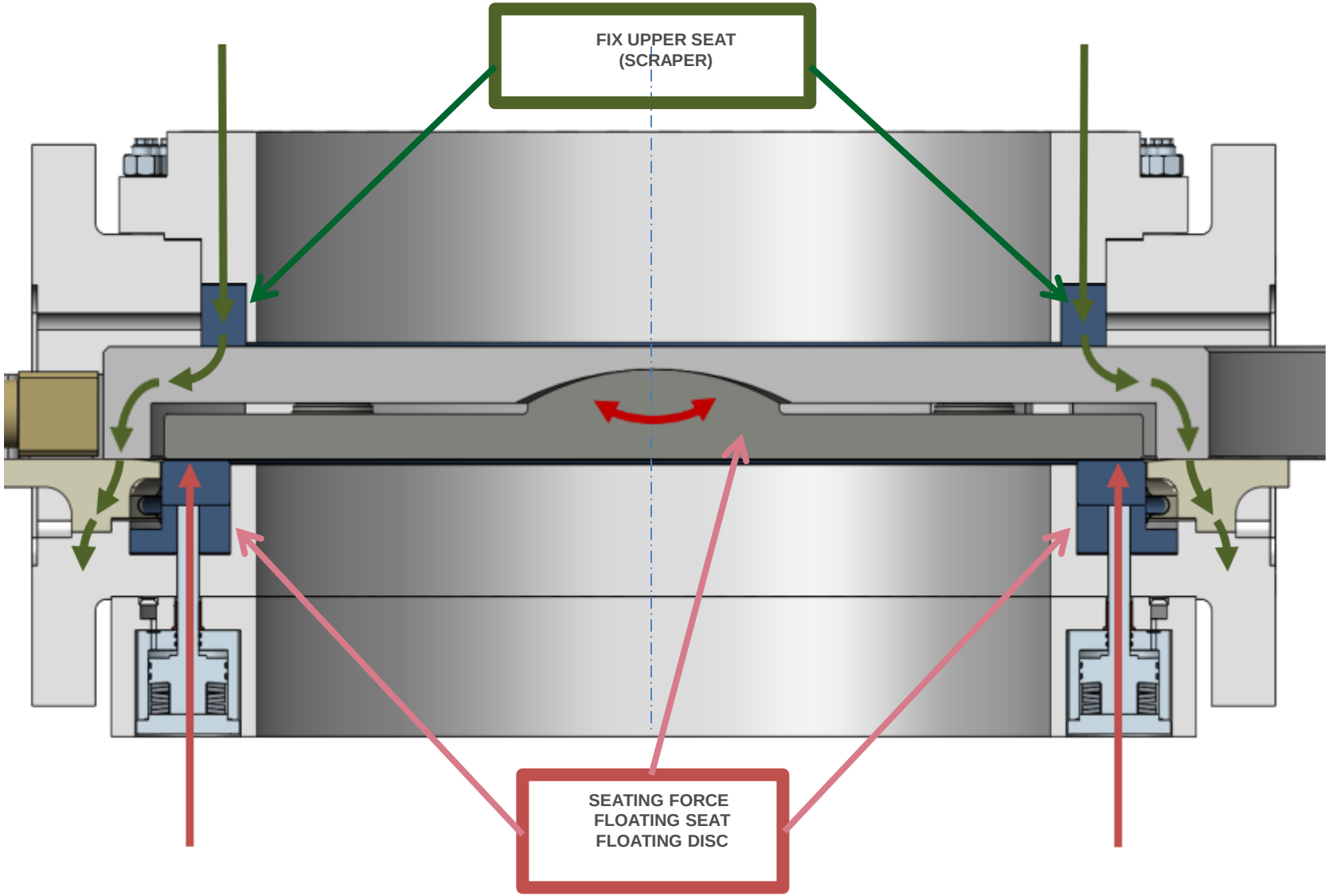
Seat released (hydraulic)
Seat engaged (belville springs)

Fix upper seat (scraper)

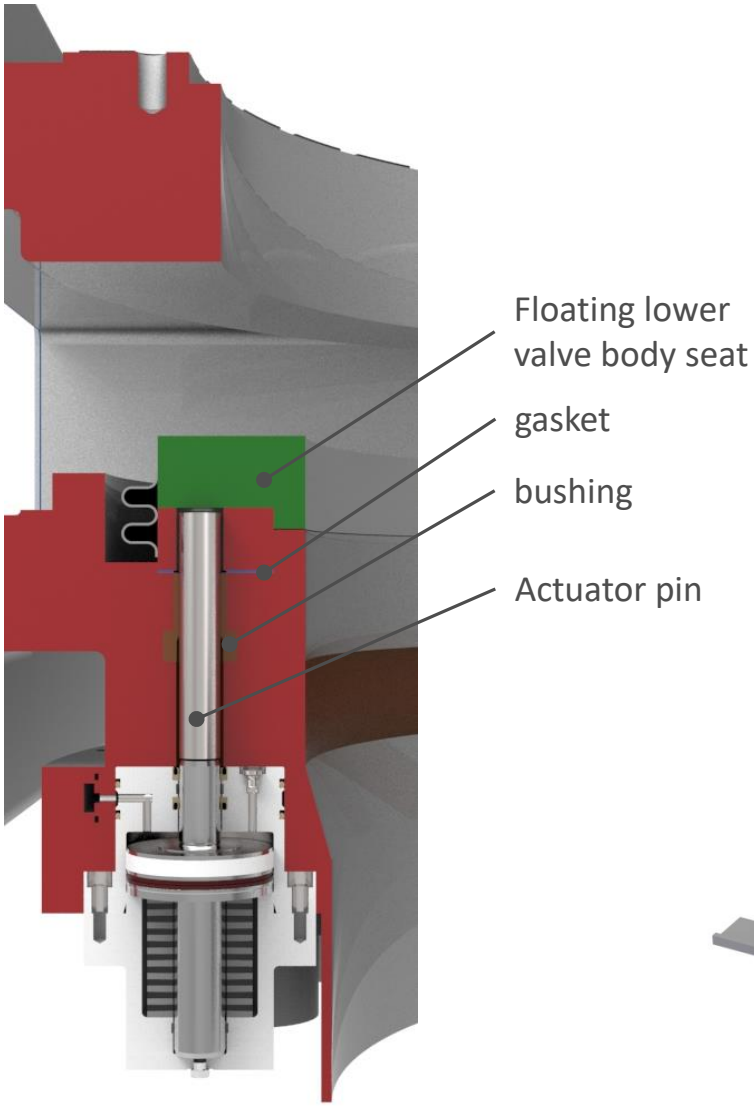
Valve in open position

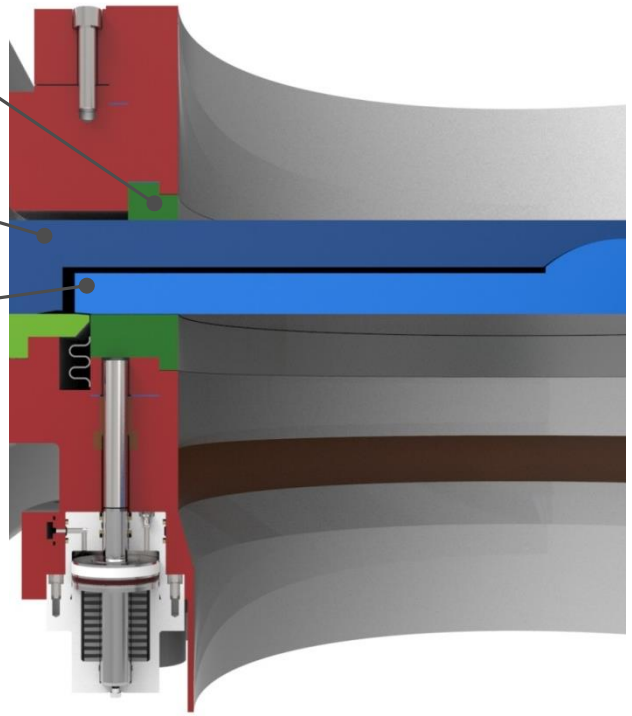


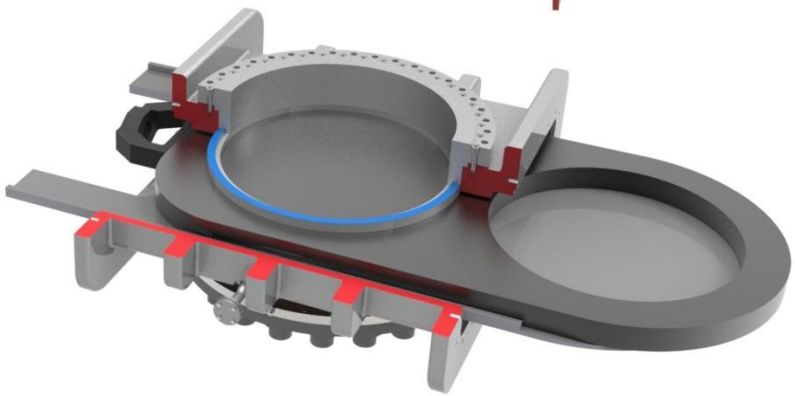
New Bottom Unheading Valve – Plate/Disc Combination



Plate/Disc Combination – Seating Arrangement

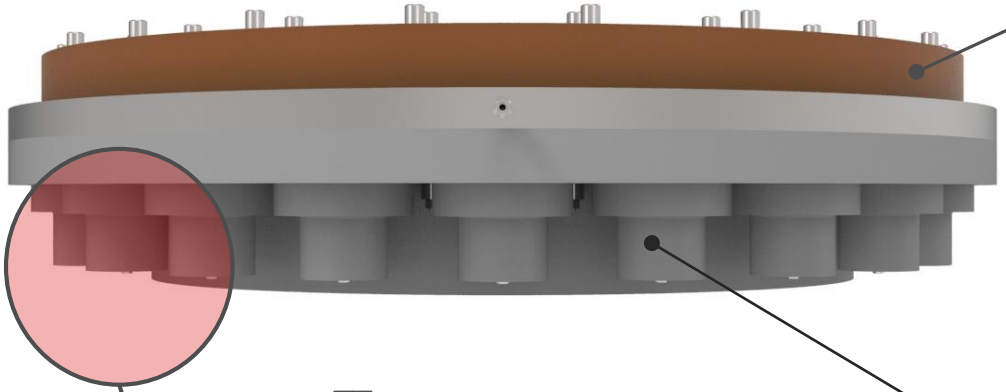






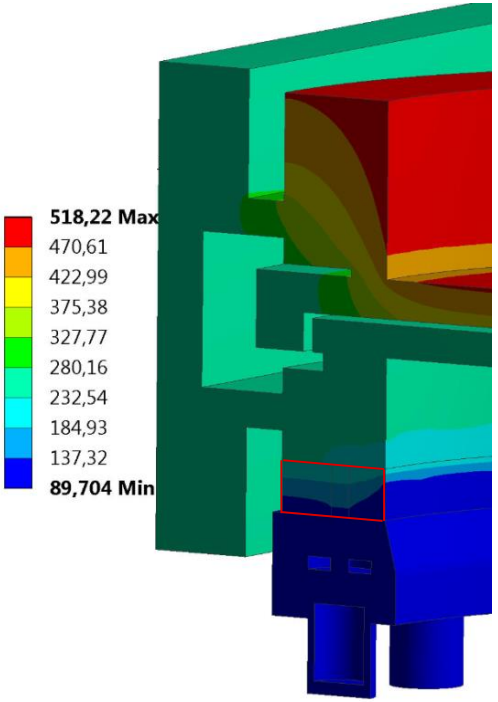
Plate/Disc Combination – Seating Arrangement

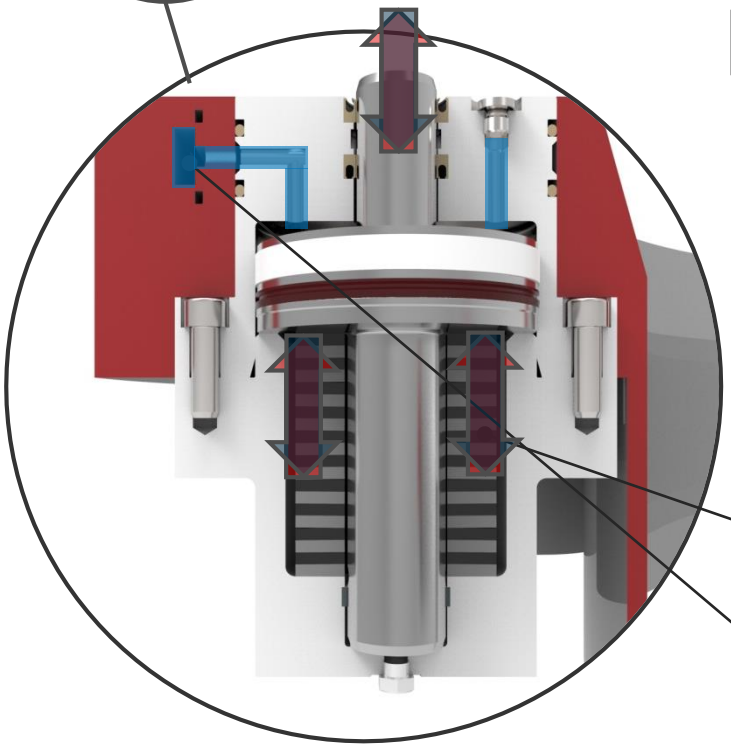
Insolation ring
To protect hydraulic cylinders
against process heat



SEATING CYLINDER

removable at installed Valve

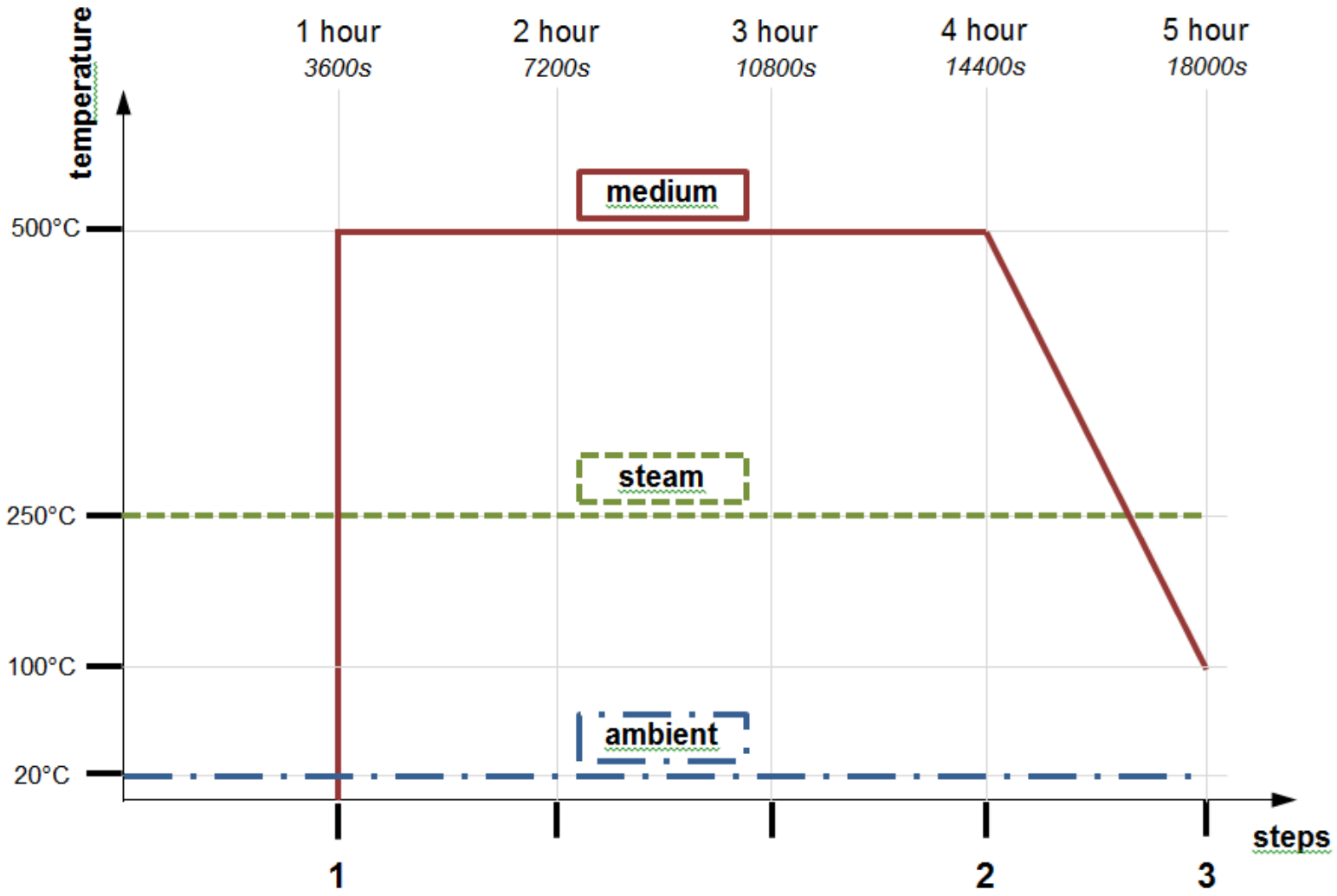




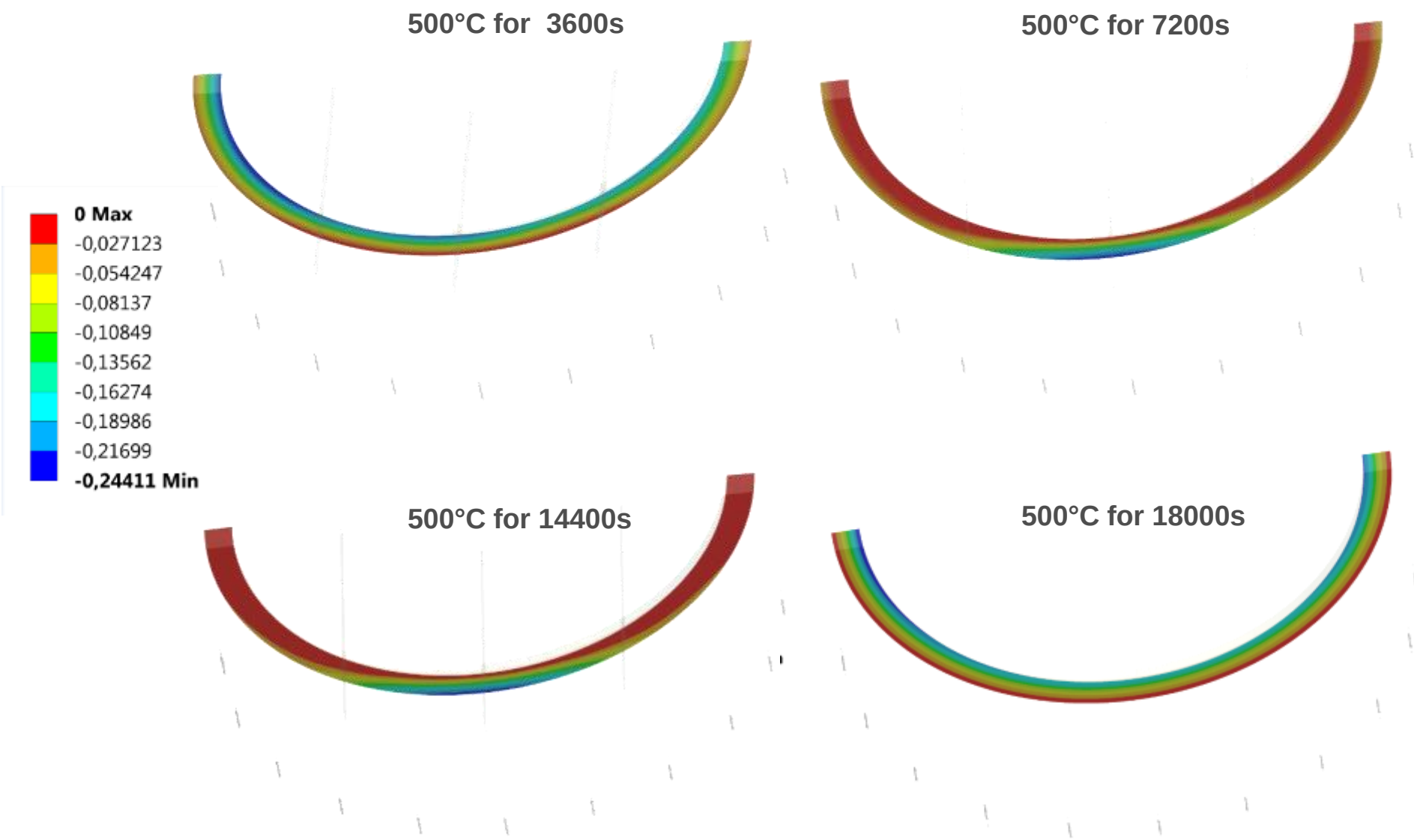
Seating force generated by belleville-spring-package
in OPEN and CLOSE valve-position

Seating force released by hydraulic pressure
during opening / closing of valve (travel)

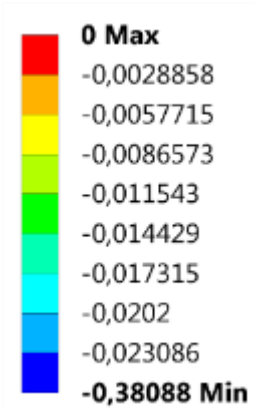
Thermal Deflection Calculation - Simulated Coking Cycle



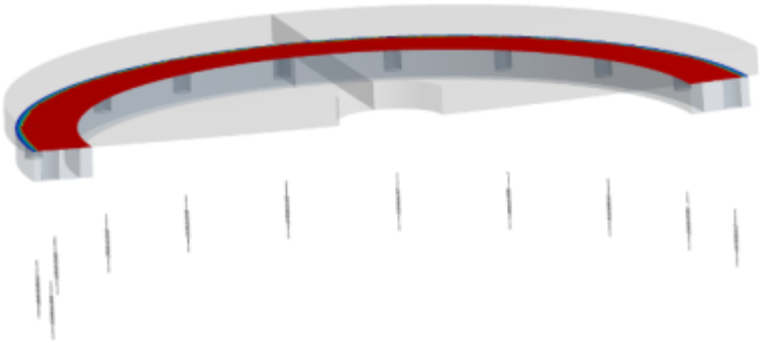
Simulated Coking Cycle, contact of upper seat to gate plate



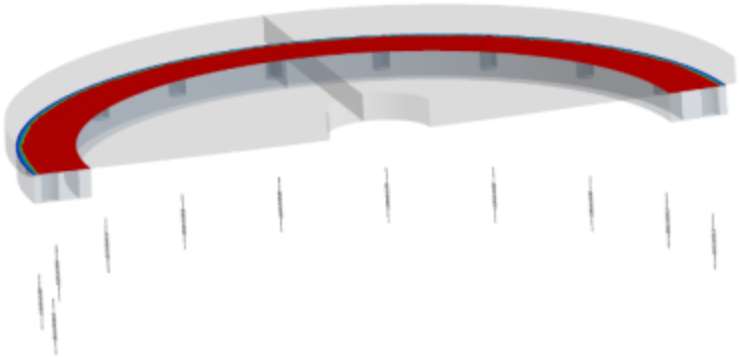
Simulated Coking Cycle, contact of lower seat to disc



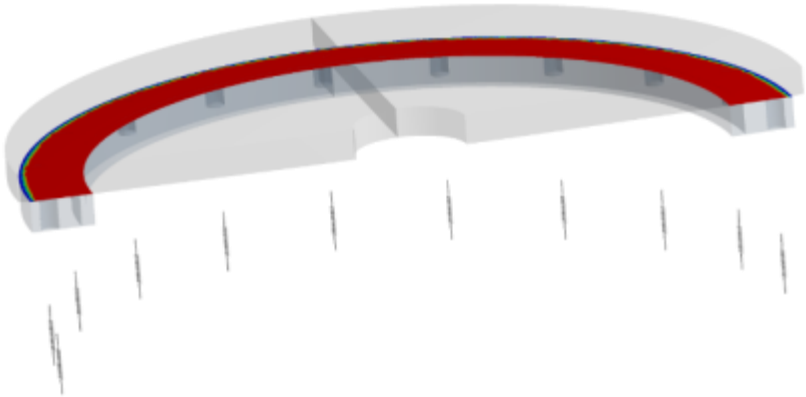
500°C for 3600s



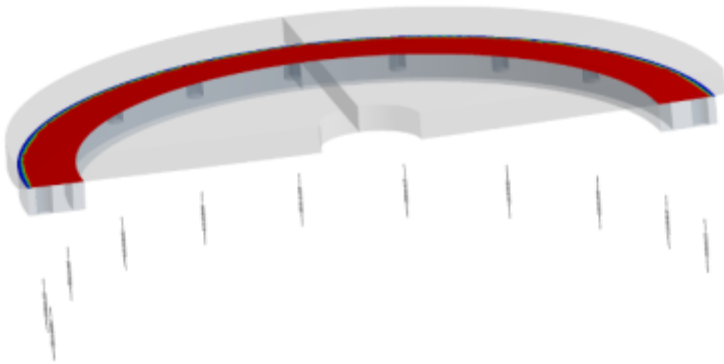
500°C for 7200s



500°C for 14400s



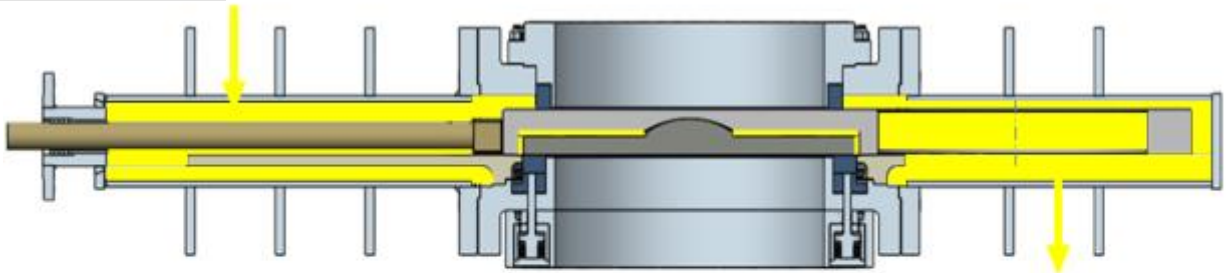
500°C for 18000s



New Bottom Unheading Valve – Plate/Disc Combination

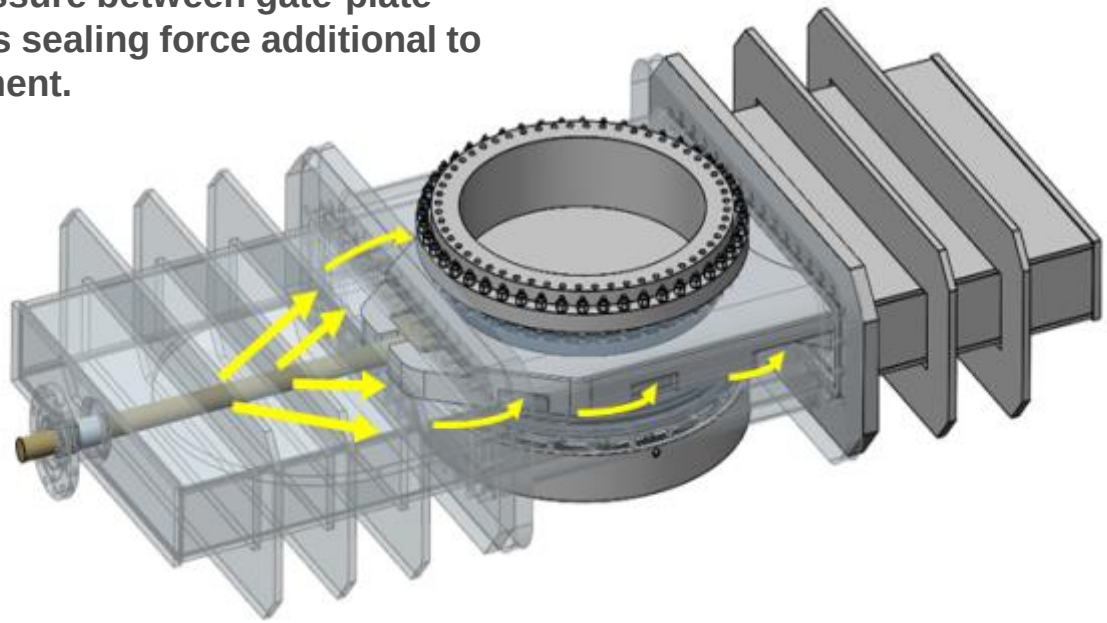
STEAM PURGE SYSTEM

Purge steam inlet



Condensate outlet

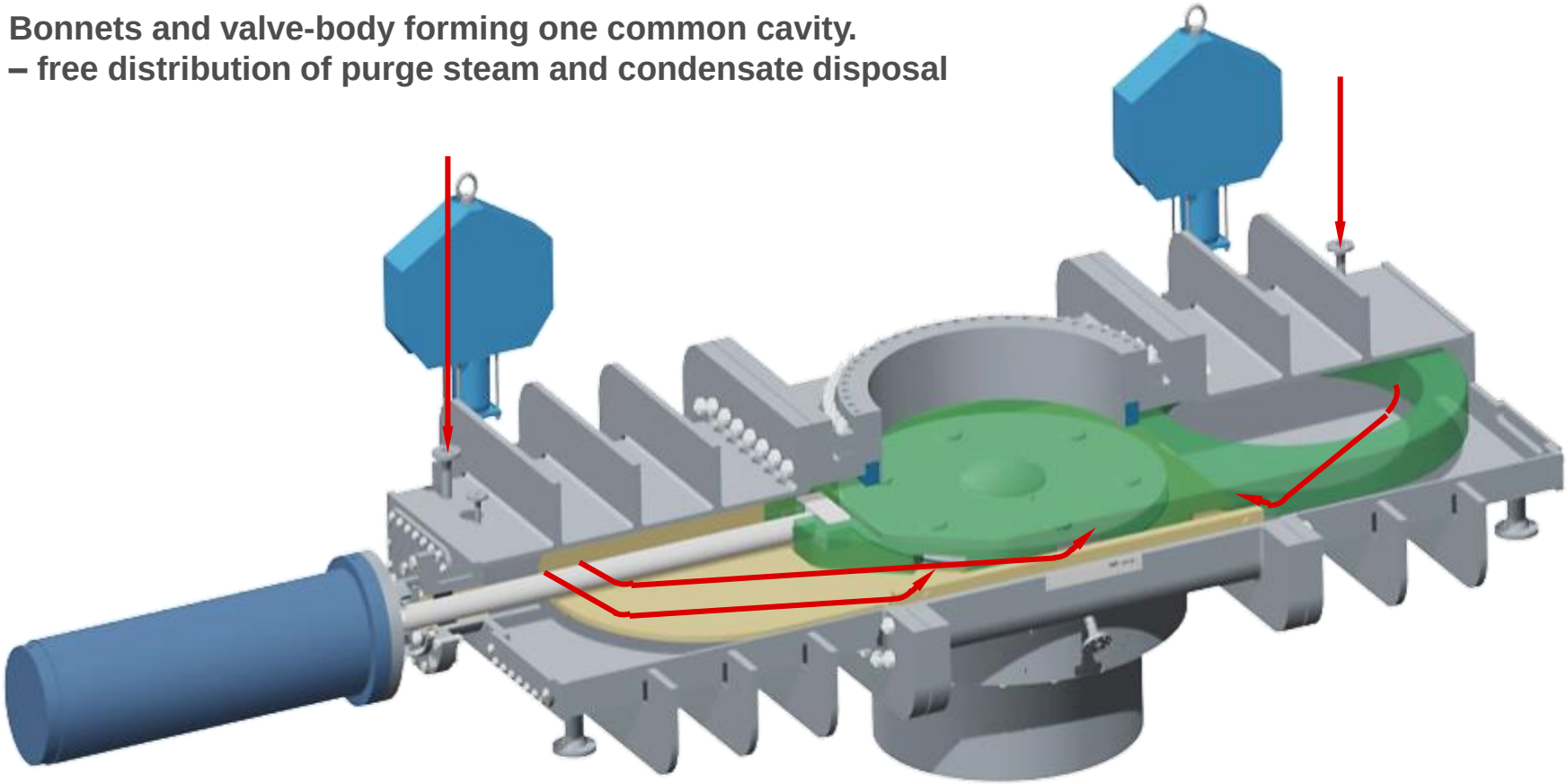
Purge steam pressure between gate-plate and disc provides sealing force additional to seating arrangement.



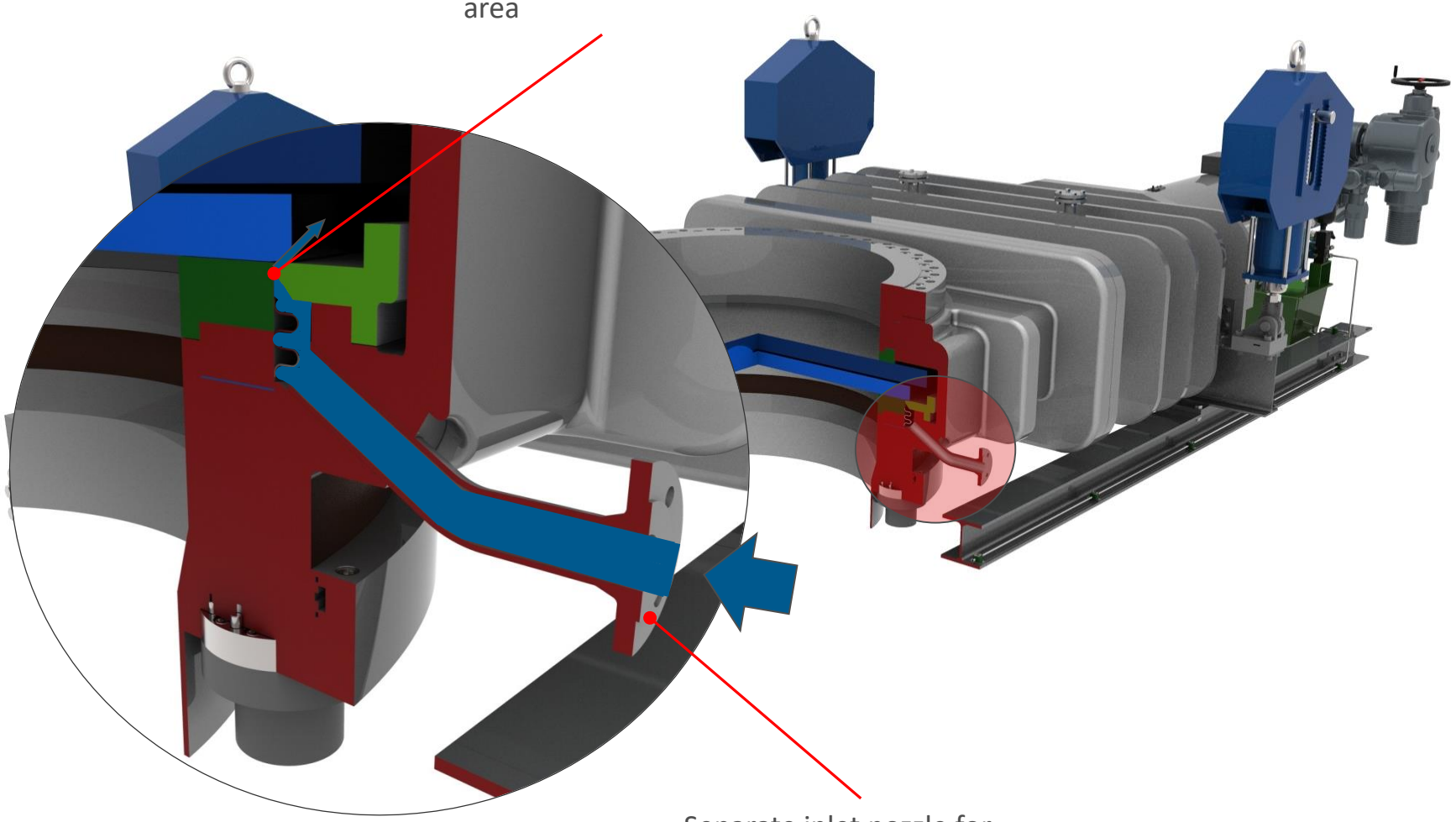
New Bottom Unheading Valve – Plate/Disc Combination

STEAM PURGE SYSTEM

Bonnets and valve-body forming one common cavity.
– free distribution of purge steam and condensate disposal



Plate/Disc Combination – Seat Purge



Plate/Disc Combination – Design Features Summary

- Combination of a Gate-plate with additional disc

- Fix upper valve-body seat / scraper
→ provides a positive scraping / tightening force with gate-plate surface

- Disc fitted into the gate-plate by means of a spherical segment
→ Self adjusting, independent sealing element
→ redundant sealing system providing double isolation functionality

- Floating lower valve-body seat
→ Seat is not subject to deformation caused by any thermal or pressure effects

- External, mechanical seating system, hydraulically released
→ high tightness in open and closed valve position
→ low friction during opening and closing

- light weight

- small footprint

- Only few moving parts within the valve body

PAUL WURTH

SMS group

Oil & Gas Division

Thank you very much for your attention and please visit our stand in the exhibition hall

PAUL WURTH

SMS group

Oil & Gas Division

- Attachment to the Presentation -

Company Information for reference :

Paul Wurth history

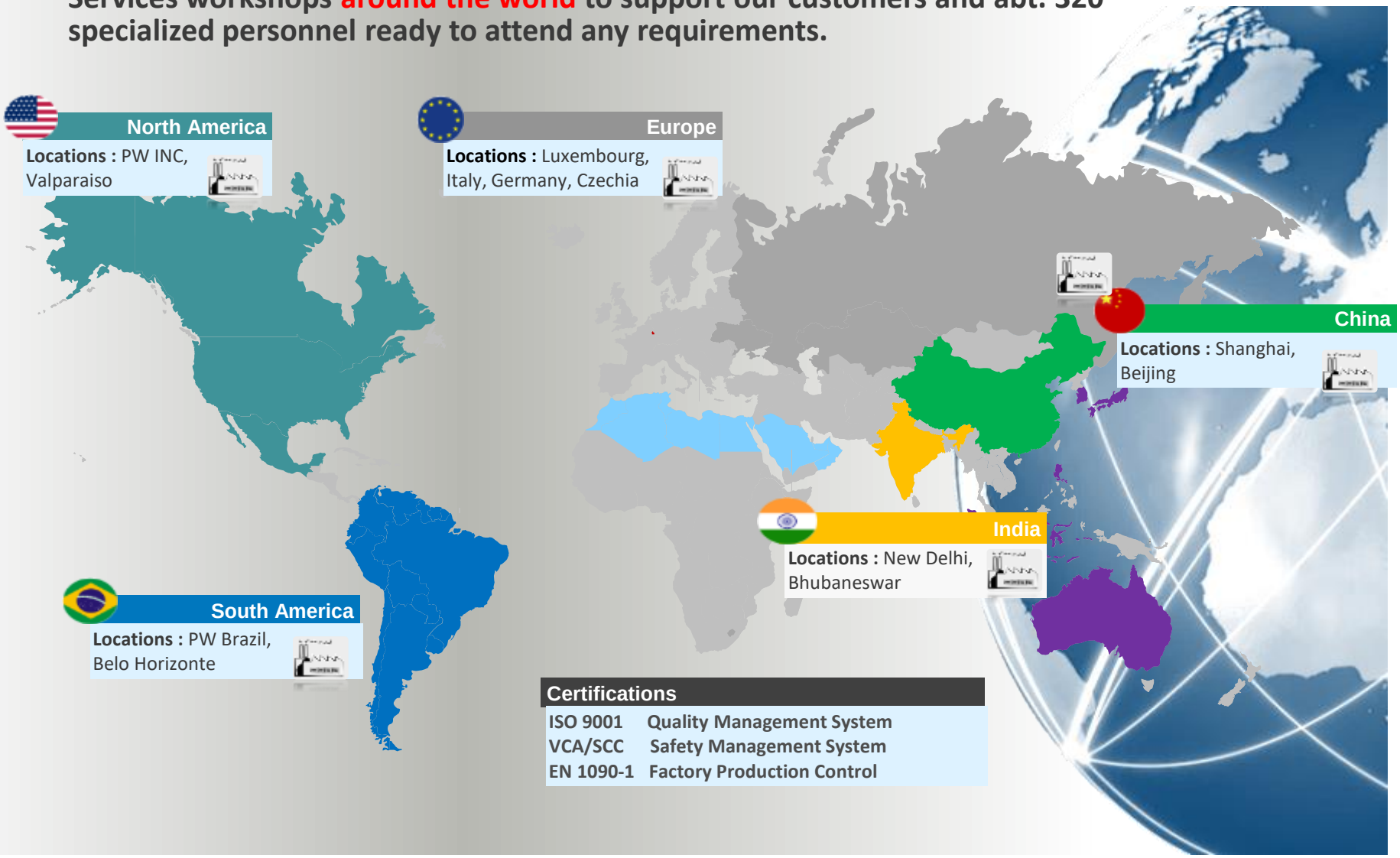
Organic growth	1870	Eugène Muller builds a **boilermaking facility** in Luxembourg Hollerich, known as "Kesselfabrek".
	1890	Business is taken over by Paul Wurth. The firm specialises in **metal erection works**, especially the construction of metal bridges and blast furnace shells.
	1951	Paul Wurth acquires from a British firm the licenses needed to supply **complete blast furnaces** with all the accessories.
	1954	Construction of a **first blast furnace** at Seraing in Belgium.
	1969	Invention of the **Bell Less Top®** charging system, which revolutionizes iron & steel industry the world over.
	1977	**First subsidiary** (Brazil) – development of sales & engineering network.
External growth (2000– 2014)	2003	Creation of **TMT Tapping – Measuring – Technology**.
	2004	Fabrication activities transferred to Arcelor Dommeldange. Paul Wurth becomes a **pure engineering company**.
	2004	Integration of **Didier - M&P Energietechnik** specialised in hot blast stove technology and refractory & lining concepts (**Paul Wurth Refractory & Engineering GmbH**)
	2005	Take-over of the blast furnace, coke making and direct reduction activities as well as the staff from **SMS Demag S.p.A.** and creation of **Paul Wurth Italia S.p.A.**
	2009	50.4% shareholding in **CTI Systems**, specialised in automated intralogistics systems. In 2011, stake increased to 75.2%. In 2013, stake brought to 100%.
	2012	Creation of **Paul Wurth IHI Corp., Ltd** in Japan.
	2012	Paul Wurth becomes part of the **SMS group**, Germany.
	2014	Construction license for **Midrex®** direct reduction plants
	2016	**Foundation of Oil and Gas Division**

Global Player

- About **1 500** qualified staff
- **27 Group members** in 15 countries, incl. 19 operational entities
- Joint ventures: TMT, Paul Wurth IHI, VCL, P&A Industrial Engineering, Paul Wurth Kovrov, Amova
- Other countries covered by Representations

Maintenance, Repair & Overhaul Services – Paul Wurth

Services workshops around the world to support our customers and abt. 320 specialized personnel ready to attend any requirements.



Certifications	
ISO 9001	Quality Management System
VCA/SCC	Safety Management System
EN 1090-1	Factory Production Control

Heavy duty valves - for refineries and petrochemical plants

- **Paul Wurth is the world market leader for metallurgical plants like blast furnaces and innovative equipment around these processes.**

- **For more than 20 years, Paul Wurth has been designing and supplying a complete spectrum of specialized heavy duty valves for highly severe operating conditions for metallurgical plants.**

- **Since Jan. 2016 Paul Wurth has established its Oil & Gas Division in order to offer heavy duty valves to the refineries and petrochemical industry.**

  For this business segment, we have the support of a Sales & Engineering team of abt. 60 experienced and qualified engineers in Germany, Czech Republic and Luxembourg.