

01

Application Brochures

Thermal Solar Plants



Application Brochures

Thermal Solar Plants

The reliable partner for your solar plant

BVALVE® Flow,
Systems &
Controls



SUMMARY

01

References

Projects

08 CSP
Map

10 Supply
references

14 Tech. Assistance
references

02

Valves for HTF

Solar field · Collectors · Heat exchanger

20 Gate and globe bellows sealed valves
for HTF Loop

22 Check valves for HTF

23 Trunnion ball valves

24 Globe HTF Loop control valves

25 Globe control valves for HTF

26 Butterfly control valves

27 Balanced safety valve for HTF Loop

27 Safety valve for Heat Exangers

28 Diaphragm seal pressure gauges

29 Pressure transmitters with
diaphragm seal

03

Valves for Molten Salt

Molten Salt Tanks

32 Breather valves

34 Safety valves for thermal storage

35 Butterfly valves for thermal storage

36 Bellows sealed globe and gate
valves for thermal storage

04

Valves for steam and condensate

Superheater · Steam generator Reheater · Condensate tank

40 Turbine By-pass HP and LP control valves

41 HP and LP control valves for steam
and water services

41 Drain control valves

43 Safety valves

43 Silencers for safety valves

44 IP and LP control valves

45 Magnetic levels

45 Transparent levels

46 Pressure transmitters

47 Bourdon tube pressure gauges

05

On-Site Technical Assistance

CSP Services

50 Commissioning systems and devices

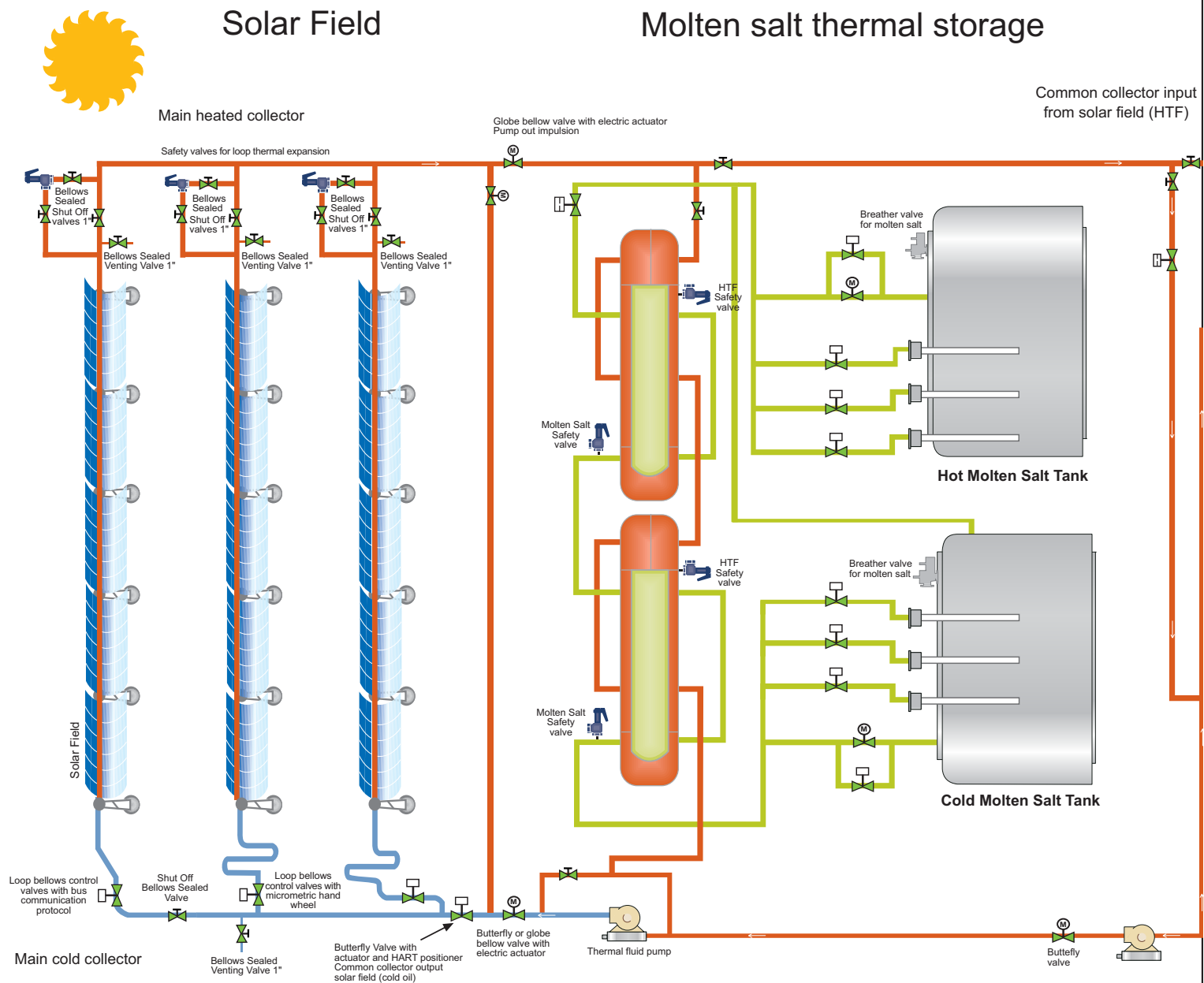
50 Professionalism BVALVE

51 Automation manual valves

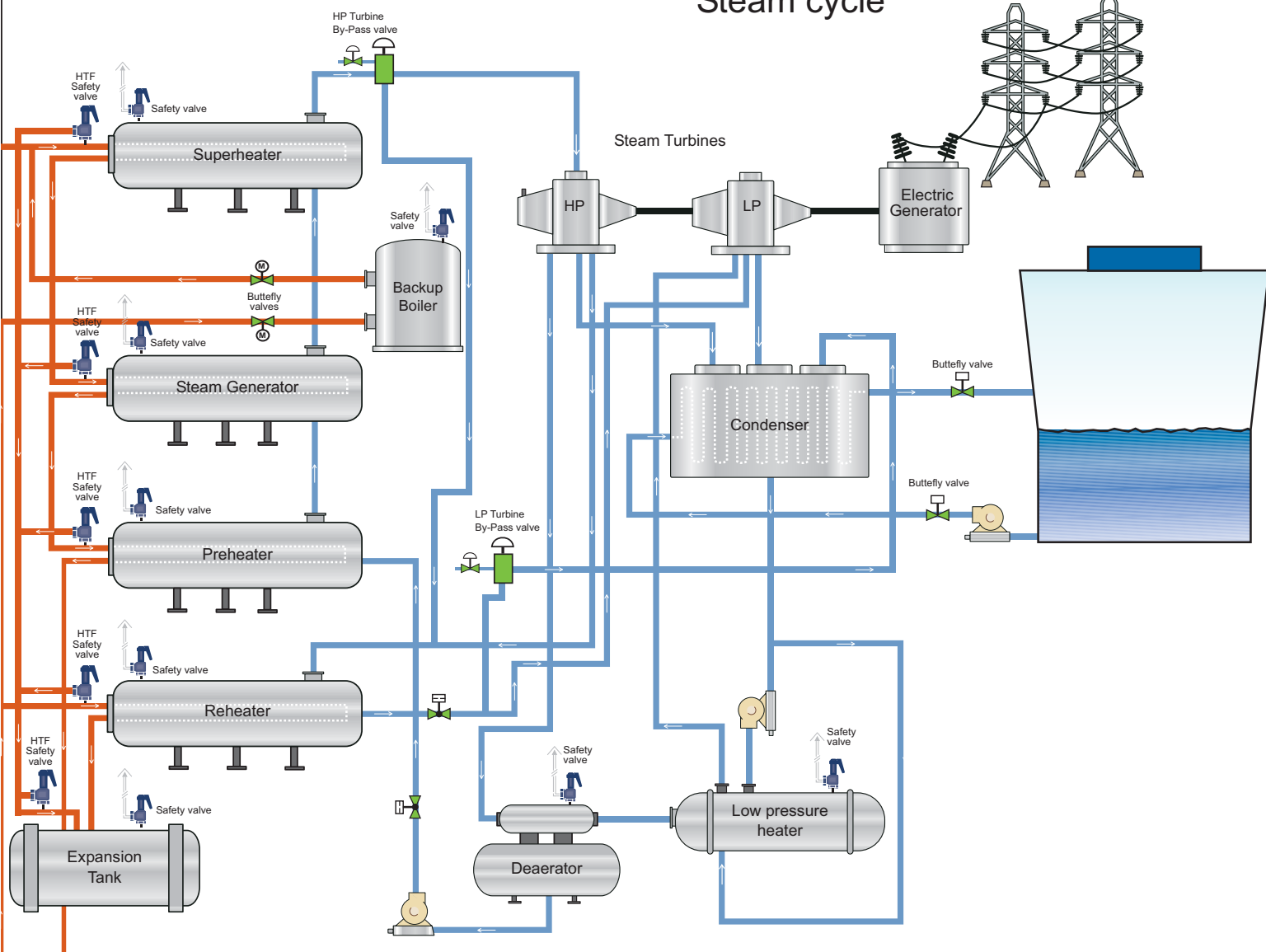
52 Reparation valves

53 Requirements for perfect machining

54 Automatic test bench



Steam cycle



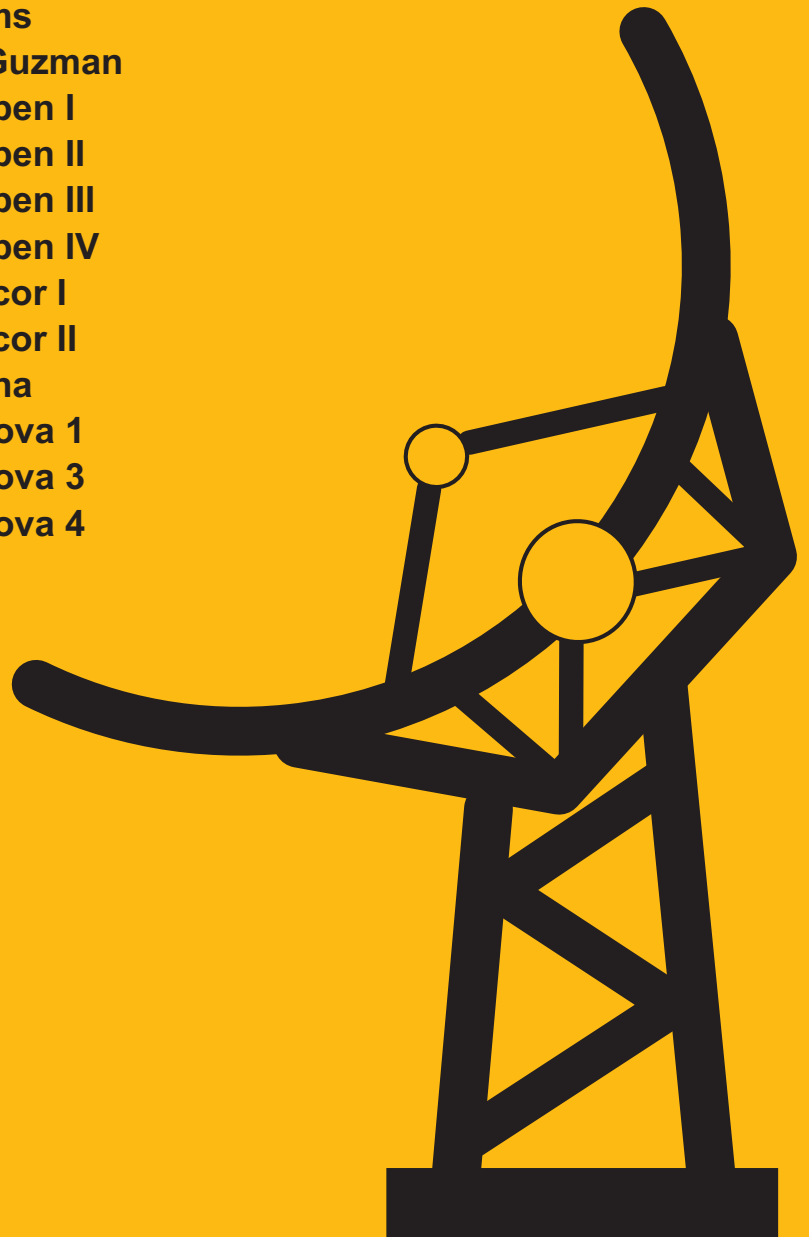
OUR
EXPERIENCE

IS YOUR
GUARANTEE

Ain Ben Mathar
Agua Prieta
Andasol I
Andasol II
Andasol III
Atacama I
Bokpoort CSP project
Borges Blanques
Casablanca
Enersol
Eureka 5
Extresol I
Extresol II
Extresol III
Gemasolar
Hass – R'mel
Helios I
Helios II
Helioenergy I
Helioenergy II
Kaxu solar one
Khi solar one
Kuraimat
La Africana
La Risca
Lebrija I
Majadas
Manchasol I
Manchasol II
Mojave solar plant
Moron
Olivenza

Orellana
Ouarzazate CSP Project
Palma Del Rio I
Palma Del Rio II
Puerto Errado 2
Repow PS 10
Repow PS 20
Samcasol 2
Samcasol 1
Shams
Sol Guzman
Solaben I
Solaben II
Solaben III
Solaben IV
Solacor I
Solacor II
Solana
Solnova 1
Solnova 3
Solnova 4

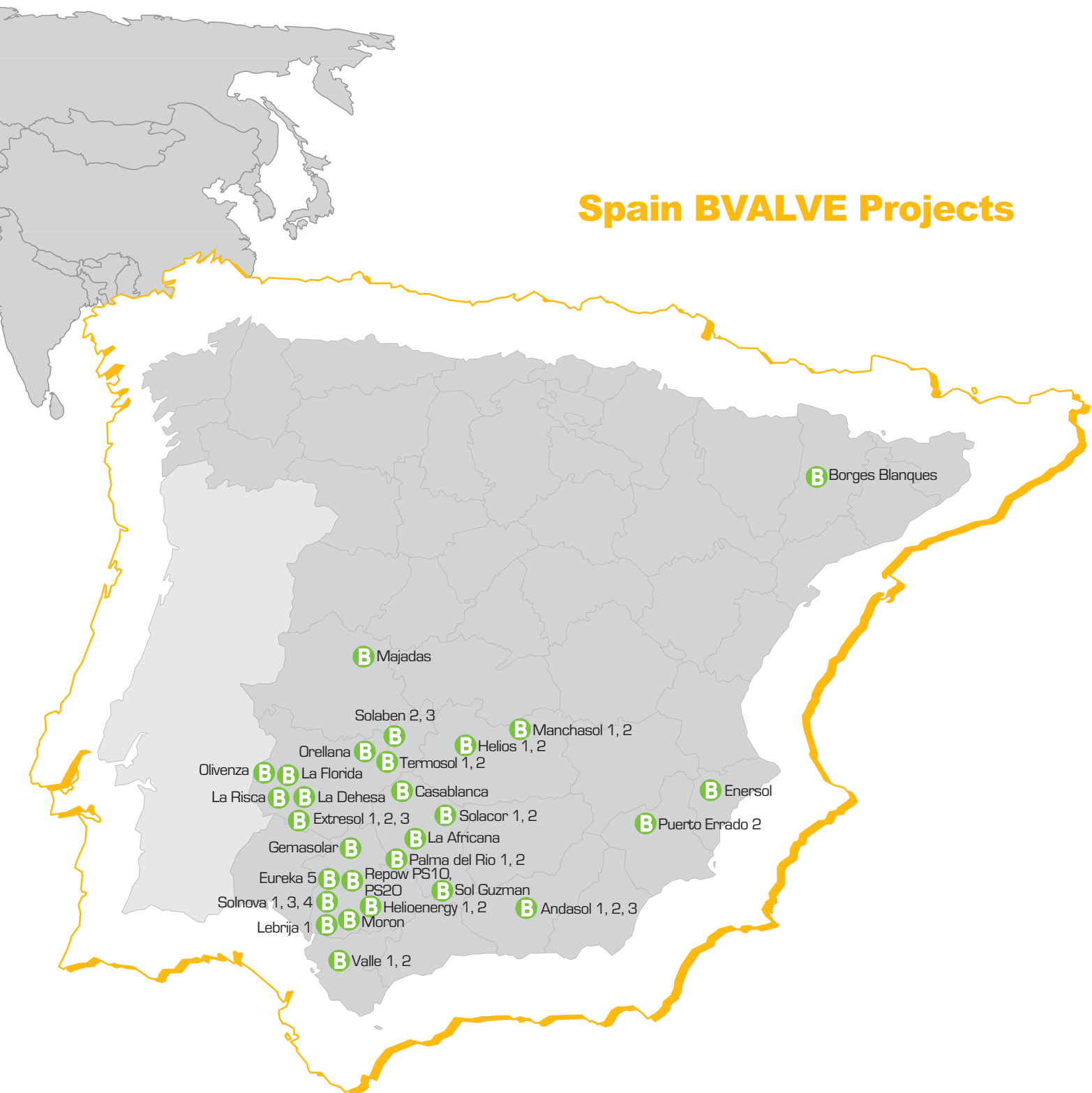
Termosol 1
Termosol 2
Tonopah
Valle I
Valle II
Xina Solar One



Worldwide BVALVE Projects



Spain BVALVE Projects



More than 100 projects supplies on CSP around the world

Country	Project	Customer	Valve Type	Service	Supply Qty	Size	Rating
AMERICA							
Chile	ATACAMA I	Abeinsa EPC	Manual Valves for Several Service	Steam / Water / Molten Salt	150	From 1/2" up to 8"	150# ... 2500#
Mexico	AGUA PRIETA	Abeinsa EPC	Triple Offset Butterfly Control Valves	HTF	6	From 14" to 20"	300# / 600#
Mexico	AGUA PRIETA	Abeinsa EPC	Bellows Sealed Globe Control Valves	Regulation Loop	26	3"	300#
Mexico	AGUA PRIETA	Abeinsa EPC	Safety Valves	HTF	26	From 1/2" up to 8"	150# ... 600#
Mexico	AGUA PRIETA	Abeinsa EPC	Triple Offset Butterfly Valves	HTF	50	From 12" up to 20"	300# / 600#
Mexico	AGUA PRIETA	Abeinsa EPC	Bellows Sealed Gate Valves	HTF	350	From 1/2" to 6"	300# / 600#
USA	MOJAVE	Abeinsa EPC	Triple Offset Butterfly Valves	HTF	230	From 6" up to 30"	300# / 600#
USA	MOJAVE	Abeinsa EPC	Bellows Sealed Globe Valves	HTF	6500	From 1/2" to 12"	300# / 600#
USA	MOJAVE	Abeinsa EPC	Bellows Sealed Globe Control Valves	Regulation Loop	292	3"	300#
USA	MOJAVE	Abeinsa EPC	Bellows Sealed Globe Control Valves	HTF / Steam	65	From 2" to 10"	300# / 600#
USA	MOJAVE	Abeinsa EPC	Safety Valves Silencers	Steam	15	From 10" up to 28"	150#
USA	MOJAVE	Abeinsa EPC	Globe / Gate / Check Valves	Steam / Water	1800	From 1/2" to 24"	150# ... 2500#
USA	MOJAVE	Abeinsa EPC	Swing Check Valves	HTF	30	From 1/2" up to 24"	300# / 600#
USA	MOJAVE	Abeinsa EPC	Globe Control Valves / On-Off Valves	HTF	68	From 1/2" up to 10"	300# / 600#
USA	SOLANA	Abeinsa EPC	Safety Valves	HTF / Steam	80	From 1/2" up to 8"	150# ... 600#
USA	SOLANA	Abeinsa EPC	Pressure and Vacuum Safety Valves	Molten Salt	16	12"	150#
USA	SOLANA	Abeinsa EPC	Bellows Sealed Gate Valves	Molten Salt	145	From 3/4" to 12"	300#
USA	SOLANA	Abeinsa EPC	Globe / Gate / Check Valves	Steam / Water	800	From 1/2" to 24"	150# ... 2500#
USA	SOLANA	Abeinsa EPC	Swing Check Valves	HTF	35	From 1/2" up to 24"	300# / 600#
USA	SOLANA	Abeinsa EPC	Safety Valves	HTF / Steam	87	From 1/2" up to 8"	150# ... 600#
AFRICA							
Argel	HASS R' MEL	Abeinsa EPC	Bellows Sealed Globe Control Valves	Regulation Loop	90	3"	300#
Argel	HASS R' MEL	Abeinsa EPC	Safety Valves	HTF	120	From 1/2" up to 8"	150# ... 600#
Argel	HASS R' MEL	Abeinsa EPC	Safety Valves	Steam / Water	45	From 1/2" up to 8"	150# ... 600#
Argel	HASS R' MEL	Abeinsa EPC	Bellows Sealed Gate Valves	HTF	850	From 1/2" to 8"	300# / 600#
Morocco	AIN BEN MATHAR	Abeinsa EPC	Bellows Sealed Globe Control Valves	Regulation Loop	90	3"	300#
Morocco	AIN BEN MATHAR	Abeinsa EPC	Safety Valves	HTF	120	From 1/2" up to 8"	150# ... 600#
Morocco	AIN BEN MATHAR	Abeinsa EPC	Safety Valves	Steam / Water	45	From 1/2" up to 8"	150# ... 600#
Morocco	AIN BEN MATHAR	Abeinsa EPC	Bellows Sealed Gate Valves	HTF	850	From 1/2" to 8"	300# / 600#
Morocco	OUARZAZATE	UTE Quarzazate Solar	Triple Offset Butterfly Valves	Molten Salt	8	6" and 14"	300# / 600#
Morocco	OUARZAZATE	UTE Quarzazate Solar	Globe Valves	Molten Salt	35	2" and 4"	300#
Morocco	OUARZAZATE	UTE Quarzazate Solar	Bellows Sealed Globe Valves	HTF	3363	From 1/2" to 8"	300# / 600#
Morocco	OUARZAZATE	UTE Quarzazate Solar	Triple Offset Butterfly Control Valves	HTF	25	From 10" to 48"	300# / 600#
Morocco	OUARZAZATE	UTE Quarzazate Solar	Swing Check Valves	HTF	19	From 1" up to 14"	300# / 600#
Morocco	OUARZAZATE	UTE Quarzazate Solar	Triple Offset Butterfly Valves	HTF	146	From 6" up to 28"	300# / 600#
South Africa	BOKPOORT	UTE Solafrika	Bellows Sealed Globe Valves	HTF	1590	From 1/2" to 8"	300# / 600#
South Africa	BOKPOORT	UTE Solafrika	Swing Check Valves	HTF	20	From 1" up to 14"	300# / 600#
South Africa	BOKPOORT	UTE Solafrika	Triple Offset Butterfly Valves	Molten Salt	11	6" and 10"	300# / 600#
South Africa	BOKPOORT	UTE Solafrika	Triple Offset Butterfly Valves	HTF	109	From 6" up to 40"	300# / 600#
South Africa	KAXU	Abeinsa EPC	Triple Offset Butterfly Control Valves	HTF	24	From 10" to 40"	300# / 600#
South Africa	KAXU	Abeinsa EPC	Globe Control Valves / On-Off Valves	Steam / Water	19	From 1/2" up to 8"	300# / 600#
South Africa	KAXU	Abeinsa EPC	Bellows Sealed Globe Control Valves	Regulation Loop	12	3"	300#
South Africa	KAXU	Abeinsa EPC	Safety Valves	HTF / Steam	240	From 1/2" up to 8"	150# ... 2500#
South Africa	KHI	Abeinsa EPC	Safety Valves	Steam / Water	55	From 1/2" up to 8"	150# ... 2500#
ASIA							
UAE	SHAMS I	Abeinsa EPC	Safety Valves	HTF / Steam	250	From 1/2" up to 8"	150# ... 600#
UAE	SHAMS I	Abeinsa EPC	Triple Offset Butterfly Valves	HTF	35	28"	300# / 600#
UAE	SHAMS I	Abeinsa EPC	High Pressure Globe Valves	Steam	10	From 2" up to 4"	2500# / 4500#
UAE	SHAMS I	Abeinsa EPC	Safety Valves	HTF / Steam	350	From 1/2" up to 8"	150# ... 600#
EUROPE							
Spain	ANDASOL I	Cobra	Triple Offset Butterfly Control Valves	HTF	20	From 8" to 28"	300# / 600#
Spain	ANDASOL II	Cobra	Triple Offset Butterfly Control Valves	HTF	20	From 8" to 28"	300# / 600#
Spain	ANDASOL III	Duro Fleguera / Flagsol	Bellows Sealed Globe Valves	HTF	2150	From 1/2" to 10"	300# / 600#
Spain	ANDASOL III	Duro Fleguera / Flagsol	Bellows Sealed Globe Control Valves	Regulation Loop	190	3"	300#
Spain	ANDASOL III	Duro Fleguera / Flagsol	Safety Valves	HTF	190	From 1/2" up to 8"	150# ... 600#
Spain	ANDASOL III	Duro Fleguera / Flagsol	Globe Control Valves / On-Off Valves	HTF	78	From 1" up to 12"	300# / 600#

More than 75.000 valves supplied

Country	Project	Customer	Valve Type	Service	Supply Qty	Size	Rating
EUROPE							
Spain	ANDASOL III	Duro Fleguera / Flagsol	Turbine By-Pass Valves	Steam	4	From 4" to 8"	300# / 600#
Spain	ANDASOL III	Duro Fleguera / Flagsol	Triple Offset Butterfly Valves	SALES	8	4"	300# / 600#
Spain	ANDASOL III	Duro Fleguera / Flagsol	Globe / Gate / Check Valves	Steam	2600	From 1/2" to 24"	150# ... 2500#
Spain	ANDASOL III	Duro Fleguera / Flagsol	Globe Control Valves / On-Off Valves	Steam	15	From 1/2" up to 8"	300# / 600#
Spain	EXTRESOL I	Cobra	Triple Offset Butterfly Control Valves	HTF	15	From 10" to 30"	300# / 600#
Spain	EXTRESOL II	Cobra	Triple Offset Butterfly Control Valves	HTF	15	From 10" to 30"	300# / 600#
Spain	EXTRESOL III	Cobra	Triple Offset Butterfly Control Valves	HTF	15	From 10" to 30"	300# / 600#
Spain	HELIOENERGY I	Abeinsa EPC	Bellows Sealed Gate Valves	HTF	1380	From 1/2" to 8"	300# / 600#
Spain	HELIOENERGY I	Abeinsa EPC	Safety Valves	HTF / Steam	130	From 1/2" up to 8"	150# ... 600#
Spain	HELIOENERGY II	Abeinsa EPC	Bellows Sealed Gate Valves	HTF	1380	From 1/2" to 8"	300# / 600#
Spain	HELIOENERGY II	Abeinsa EPC	Safety Valves	HTF / Steam	130	From 1/2" up to 8"	150# ... 600#
Spain	HELIOS I	Abeinsa EPC	Bellows Sealed Gate Valves	HTF	1380	From 1/2" to 8"	300# / 600#
Spain	HELIOS I	Abeinsa EPC	Safety Valves	HTF / Steam	130	From 1/2" up to 8"	150# ... 600#
Spain	HELIOS II	Abeinsa EPC	Bellows Sealed Gate Valves	HTF	1380	From 1/2" to 8"	300# / 600#
Spain	HELIOS II	Abeinsa EPC	Safety Valves	HTF / Steam	130	From 1/2" up to 8"	150# ... 600#
Spain	LA AFRICANA	TSK	Triple Offset Butterfly Control Valves	HTF	10	From 20" to 28"	300# / 600#
Spain	LA RISCA	IDOM	Safety Valves	HTF / Steam	35	From 1/2" up to 8"	150# ... 600#
Spain	LA RISCA	IDOM	Bellows Sealed Globe Valves	HTF	600	From 1/2" to 4"	300# / 600#
Spain	LEBRIJA	SIEMENS	Safety Valves	HTF / Steam	55	From 1/2" up to 8"	150# ... 600#
Spain	LEBRIJA	SIEMENS	Safety Valves Silencers	N2	8	4"	150#
Spain	MAJADAS	IDOM	Safety Valves	HTF / Steam	35	From 1/2" up to 8"	150# ... 600#
Spain	MAJADAS	IDOM	Bellows Sealed Globe Valves	HTF	600	From 1/2" to 4"	300# / 600#
Spain	MANCHASOL I	Cobra	Triple Offset Butterfly Valves	HTF	153	From 6" up to 30"	300# / 600#
Spain	MANCHASOL I	Cobra	Bellows Sealed Globe Valves	HTF	1750	From 1/2" to 6"	300# / 600#
Spain	MANCHASOL I	Cobra	Safety Valves	HTF / Steam	280	From 1/2" up to 8"	150# ... 600#
Spain	MANCHASOL I	Cobra	Triple Offset Butterfly Control Valves	HTF	15	From 10" to 30"	300# / 600#
Spain	MANCHASOL II	Cobra	Triple Offset Butterfly Valves	HTF	153	From 6" up to 30"	300# / 600#
Spain	MANCHASOL II	Cobra	Bellows Sealed Globe Valves	HTF	1750	From 1/2" to 6"	300# / 600#
Spain	MANCHASOL II	Cobra	Safety Valves	HTF / Steam	280	From 1/2" up to 8"	150# ... 600#
Spain	MANCHASOL II	Cobra	Triple Offset Butterfly Control Valves	HTF	15	From 10" to 30"	300# / 600#
Spain	OLIVENZA	IDOM	Safety Valves	HTF / Steam	35	From 1/2" up to 8"	150# ... 600#
Spain	OLIVENZA	IDOM	Bellows Sealed Globe Valves	HTF	600	From 1/2" to 4"	300# / 600#
Spain	OLIVENZA	ACCIONA	Bellows Sealed Globe Valves	HTF	650	From 2" to 14"	300# / 600#
Spain	ORELLANA	IDOM	Safety Valves	HTF / Steam	35	From 1/2" up to 8"	150# ... 600#
Spain	ORELLANA	IDOM	Bellows Sealed Globe Valves	HTF	650	From 1/2" to 12"	300# / 600#
Spain	ORELLANA	ACCIONA	Bellows Sealed Globe Valves	HTF	650	From 2" to 14"	300# / 600#
Spain	ORELLANA	ACCIONA	Triple Offset Butterfly Valves	HTF	120	From 8" up to 28"	300# / 600#
Spain	PALMA DEL RIO I	ACCIONA	Safety Valves	HTF / Steam	40	From 1/2" up to 8"	150# ... 600#
Spain	PALMA DEL RIO II	ACCIONA	Safety Valves	HTF / Steam	40	From 1/2" up to 8"	150# ... 600#
Spain	PUERTO ERRADO 2	NOVATEC / TSK	Safety Valves	Steam / Water	29	From 1/2" up to 8"	150# ... 2500#
Spain	PUERTO ERRADO 2	NOVATEC / TSK	Globe / Gate / Check Valves	Steam / Water	450	From 1/2" to 16"	300# ... 900#
Spain	PUERTO ERRADO 2	NOVATEC / TSK	High Pressure Globe Valves	Steam / Water	20	1/2" and 3/4"	2500# / 4500#
Spain	SOLACOR I	Abeinsa EPC	Bellows Sealed Gate Valves	HTF	1380	From 1/2" to 8"	300# / 600#
Spain	SOLACOR I	Abeinsa EPC	Safety Valves	HTF / Steam	130	From 1/2" up to 8"	150# ... 600#
Spain	SOLACOR II	Abeinsa EPC	Bellows Sealed Gate Valves	HTF	1380	From 1/2" to 8"	300# / 600#
Spain	SOLACOR II	Abeinsa EPC	Safety Valves	HTF / Steam	130	From 1/2" up to 8"	150# ... 600#
Spain	SOLNOVA I	Abeinsa EPC	Safety Valves	HTF / Steam	130	From 1/2" up to 8"	150# ... 600#
Spain	SOLNOVA III	Abeinsa EPC	Safety Valves	HTF / Steam	130	From 1/2" up to 8"	150# ... 600#
Spain	SOLNOVA IV	Abeinsa EPC	Safety Valves	HTF / Steam	130	From 1/2" up to 8"	150# ... 600#
Spain	TERMOSOL I	NEXTERA / SENER	Triple Offset Butterfly Control Valves	HTF	15	From 10" to 30"	300# / 600#
Spain	TERMOSOL II	NEXTERA / SENER	Triple Offset Butterfly Control Valves	HTF	15	From 10" to 30"	300# / 600#
Spain	VALLE I	Cobra	Bellows Sealed Globe Valves	HTF	1750	From 1/2" to 6"	300# / 600#
Spain	VALLE I	Cobra	Triple Offset Butterfly Control Valves	HTF	4	From 10" to 30"	300# / 600#
Spain	VALLE I	Cobra	Bellows Sealed Globe Valves	HTF	1600	From 1/2" to 6"	300# / 600#
Spain	VALLE II	Cobra	Bellows Sealed Globe Valves	HTF	1600	From 1/2" to 6"	300# / 600#
Spain	VALLE II	Cobra	Bellows Sealed Globe Valves	HTF	1750	From 1/2" to 6"	300# / 600#
Spain	VALLE II	Cobra	Triple Offset Butterfly Control Valves	HTF	4	From 10" to 30"	300# / 600#
Spain	VALLE I	Cobra	Triple Offset Butterfly Control Valves	HTF	2	From 10" to 28"	300# / 600#
Spain	VALLE II	Cobra	Triple Offset Butterfly Control Valves	HTF	2	From 10" to 28"	300# / 600#





More than 10 years supporting you on-site

2015 CSP TECHNICAL ASSISTANCE

Customer	CSP Plant	Technical Assistance
Abeinsa EPC	Kaxu Sudafrica	REPLACEMENT. Pneumatic actuator of OHL 36" triple excentric butterfly valve + pneumatic system review.
Torresol Energy	Valle II	PREVENTEST. On-site set pressure adjustment for 8 PSV installed in steam generation.
Errado Solar	Errado Solar	REPAIR 10" manual gate valve.
Errado Solar	Errado Solar	REPAIR several 10" manual gate valves from steam circuit.
Cobra Instalaciones	Andasol I & II	REPAIR. 30 PSV in several areas, also 14 control globe valve and a 10 " electric actuator gate valve.
Abengoa Solar	Solaben I&II	REPAIR. 3 PSV from HTF Boilers.
Abengoa Solar	Solaben I&II	PREVENTEST. On-site set pressure adjustment for 3 PSV from HTF Boilers.

2014 CSP TECHNICAL ASSISTANCE

Customer	CSP Plant	Technical Assistance
Novatec	Errado Solar	REPAIR. 9 manual gate valves (2"-12") from Power Island.
Novatec	Errado Solar	REPAIR. 9 manual gate valves (2"-12") from Power Island.
Opemasol	Andasol 3	REPAIR. PSV from steam circuit in Power Island.
Opemasol	Andasol 3	PREVENTEST. On-site set pressure adjustment for PSV from steam circuit in Power Island.
Next Era	Termosol 1	DIAGNOSIS of butterfly valves and pneumatic system check.
Cobra Energia	Extresol	REPAIR. several gate valves.
Abengoa Solar	Helioenergy	PREVENTEST. On-site set pressure adjustment for PSV and certificate.
Abeinsa EPC	Kaxu	AUTOMATION system for OHL triple excentric butterfly valves (ON / OFF) also including commissioning.
Next Era	Termosol 1	DIAGNOSIS & ADJUSTMENT. Two 28" OHL triple excentric butterfly valves.
Next Era	Termosol 1	REPAIR. Two 28" OHL triple excentric butterfly valves.
Abengoa Solar	Helioenergy	PREVENTEST. On-site set pressure adjustment for PSV and certificate.
Abengoa Solar	Solaben	PREVENTEST. On-site set pressure adjustment for 8 PSV in HTF circuit.
CT. Manchasol 1	Manchasol 1	REPAIR. 13 PSV installed in steam generator circuit and molten salts tanks.
CT. Manchasol 1	Manchasol 1	PREVENTEST. On-site set pressure adjustment for 39 PSV and certificate.
CT. Manchasol 2	Manchasol 2	REPAIR. 5 electric actuator gate valves + 2 pneumatic actuator from butterfly valves.
Siemens SA	Siemens Lebrija	REVIEW & TEST PROCEDURES. for Solar Field Loop PSV.
Novatec	Errado Solar	REPAIR. 9 manual gate valves (2"-12") from Power Island + Two 2" globe valves.
Termosol Energy	Valle III	PREVENTEST. On-site set pressure adjustment for 6 PSV from HTF Boilers.
Cobra Energia	Manchasol 1 & 2	REPAIR. 8 gate valves from steam generator vents.
Abengoa Solar	Solaben II	REPAIR. 3 PSV from HTF Boilers.
Cobra Instalaciones	Extresol	REPAIR. Triple excentric butterfly valve.
Abengoa Solar	Solacor I & II	REPAIR. 8 gate valves from steam generator purges.

Hundreds of assistances in plants

2013 CSP TECHNICAL ASSISTANCE

Customer	CSP Plant	Technical Assistance
Abeinsa EPC	Helioenergy	REPAIR. Several PSV of high and low turbine pressure line.
Abeinsa EPC	Helioenergy	PREVENTEST. On-site set pressure adjustment of high and low turbine pressure line PSV's.
Acciona	Orellana	REVIEW & ADJUSTMENT. of electric actuators installed butterfly valves.
Abener	Shams 1 (Abu Dhabi)	REPAIR. Several electric actuator from Solar Field.
Solar Milenium	Andasol 3	SUPERVISING & COMMISSIONING. Repair of HORA 10" valves and subsequent commissioning.
Bidarte-Acciona	Majadas	REPAIR. 16 PSV in several areas.
UTE La Africana	La Africana	REPAIR. 8 globe valves from HTF circuit.
Extresol	Extresol 2	REPAIR. 16" OHL triple excentric butterfly valves from HTF circuit.
Andasol 3	Andasol 3	REPAIR. HORA valve form HTF circuit.
Extresol	Extresol 1,2,3	REPAIR. 32 several kind of valves.
Extresol	Extresol 2	REPAIR. Several 28" OHL triple excentric butterfly valves.
CTS Olivenza	Olivenza	REVIEW & REPAIR. 6 manual gearbox and 6 PSV.
Abener	Helioenergy	REPAIR. PSV from steam circuit in Power Island
CTS Orellana	CTS Orellana	REPAIR. Several 28" OHL triple excentric butterfly valves
Abeinsa EPC	Helioenergy	REPAIR. 5 manual shut off valves from Solar loops.
SOLANA GENERATING STATION	Solana (Mojave-EEUU)	REPAIR. 22 vacuum/pressure valves
Andasol 3	Andasol 3	CONSULTANCY about automation of turbine purge valves
UTE Abener Teyma emirates 1	Emirates	REPAIR & PREVENTEST. Electric actuators and On-site set pressure adjustment for PSV and certificate.
Extresol	Extresol 3	REPAIR. Pneumatic and electric valves from HTF and Molten Salts systems.
Abeinsa EPC	Helioenergy	REPAIR. Several manual shut off valves from Solar loops.



BVALVE The reliable partner



for your solar plants

BVALVE





BVALVE

02

Valves for HTF

Solar field · Collectors · Heat exchangers



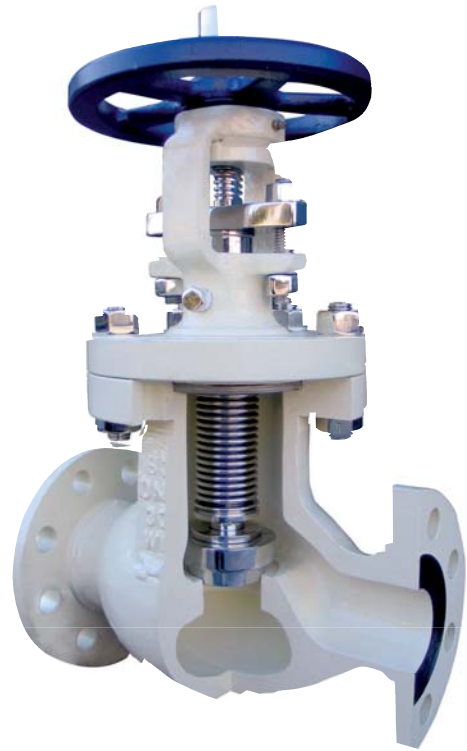
Gate and globe bellows sealed shut-off valves for HTF Loop

Bellows sealed valves are extremely important on the solar field to prevent the HTF leaks to the environment.

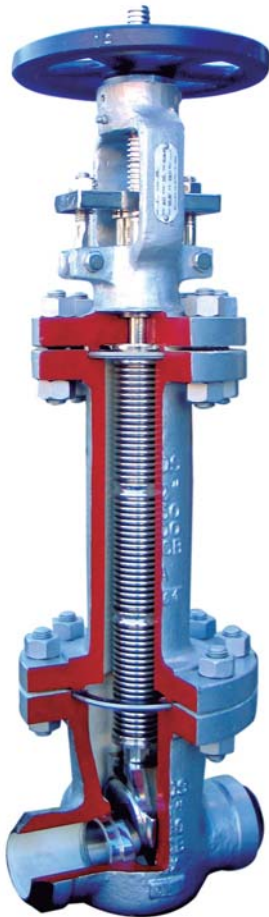
We have to consider that around 6.000 bellows sealed valves are installed at the solar field. The part that prevent the leak to the atmosphere is the BELLOW, this is why we have to consider high quality valves to avoid thousands of problems in the solar field.

FEATURES:

- Sizes 1/2" - 20"
- ASME design as per ANSI 150, 300 or 600 Lbs
- BW, SW or flanged ends
- AISI 316Ti or AISI 321 stainless steel bellows designed for 10,000 cycles
- Leak bellows detector
- Zero leakage acc. API 598 (bubble tight)
- Stellite trim 5
- TA-Luft certified
- Grooved bonnet gasket
- Opening indicator
- Carbon steel body



Gate and globe bellows sealed shut-off valves for HTF Loop



Check valves for HTF

FEATURES:

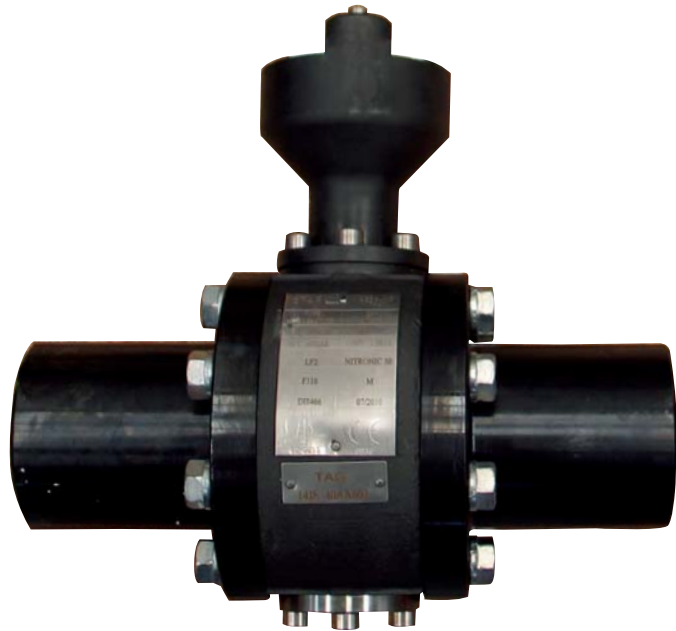
- Sizes 1/2" - 36"
- ASME design as per ANSI 150, 300 or 600 Lbs
- BW, SW or flanged ends
- Zero leakage acc. API 598
- Stellite trim 5
- Carbon steel body WCB



Trunnion ball valve

FEATURES:

- Forged steel ball valves
- Typical size 3"
- Three pieces bolted construction
- Solid ball
- Anti blow out proof stem design
- Double block and bleed
- High integrity shut-off at low and high pressure
- Antistatic device
- Firetest approved
- Floating seats spring energized
- ISO 5211 top cover flange for easy automation
- Purge port



HTF Loop globe control valves

The HTF loop control valves have a special relevance at the solar field due to the extreme conditions and fluctuations of HTF. These fluctuations have to be regulated and equilibrated with high accuracy and quickness to get uniform flow rate at loops of the solar field.

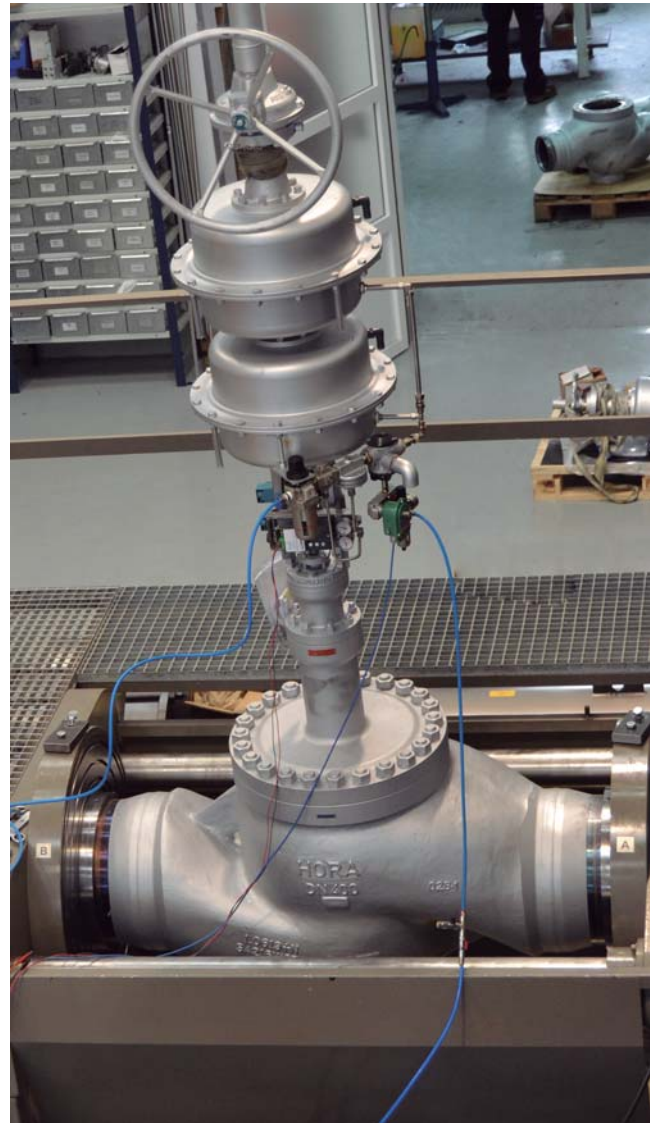
- Long life service
- Custom characteristic curve to ensure the accuracy
- High-Quality stainless-steel bellows that can achieve more than 30.000 cycles
- Highly-developed pressure balancing system that reduces the actuating forces and energy consumption, even above 40 bar
- TA-Luft certified and the highest environmental safety demands
- Micrometric hand wheel positioning system allowing accuracies range of 1.39%
- Flexibility, valves can be automated by a pneumatic or electrical actuator without removing the valve from the pipe. This enables simple and particularly cost-effective implementation of new technologies facilitating an efficiency increase



Globe control valves for HTF

FEATURES:

- Valves designed for operation under highly critical pressures, temperatures and pressure drop conditions
- Sizes from 1/2" to 24", straight-through
- Ratings from 150, 300, 600 Lbs
- BW or flanged ends
- Internals with anticavitation cages or multistage type design
- Shells manufactured in WCB, WC6
- Fitted with pneumatic or electrical actuator
- Bellows designed for 30.000 cycles

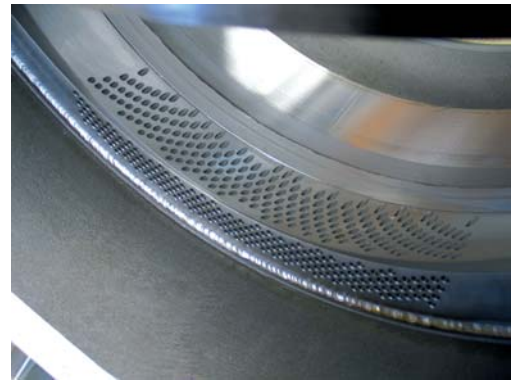


Butterfly control valves

Triple butterfly eccentric control valves are mainly used to control the high flows of main collectors and also are installed for ON/OFF applications. Even though these valves are mainly designed to manage high flow ratios, it is proven that our valves have a high controllability performance also at low opening ratios. i.e. 10%.

FEATURES:

- Triple eccentric design
- BW ends
- Solid seat ring execution
- TA-LUFT certified
- Zero leakage acc. API 598 and EN12266 in both directions (bubble tight)
- Trunnion design with dual bearings of pure stellite
- Butterfly protection in open position by means of safety bar
- Sizes 6" to 60"
- Ratings 150, 300 & 600 Lbs
- 100% butterfly surface protection by means of hardening treatment with KANINGEN® (harder than stellite 6)
- Fire safe design as per API 6 FA/BS 6755
- Fitted with gearbox, pneumatic or electrical actuator
- Free of maintenance
- Face to face long pattern design to protect sealing surfaces
- Special packing design to prevent the leakage and the valve blocks



Detail of anticavitation insert



Balanced safety valve for HTF Loop

Valve designed and tested specifically for operation under backpressure up to 25 relative bar and set pressure up to 30 relative bar. It can discharge more than 9 m³/h of HTF under these pressure conditions, which has been certified in our ASME VIII accredited dynamic test bench.

- Inconel bellows and spring
- BW/SW ends
- Stellite nozzle and disc
- Indicator of leak due to bellows break
- Size 1" x 1"
- Back pressure up to 83%

Safety valve for Heat Exchangers

Demands on the safety valve when using thermal oil:

- Excellent heat resistance
- Sizes 1" D 2" up to 8" T 10"
- Capability to transport mid to large sized capacities
- No external loss of creeping medium
- Compensation for high backpressure



Diaphragm seal pressure gauges

The pressure gauges with stainless steel diaphragm seal and capillary are used to measure the process pressure on site. Due to the high temperature of the fluid process (HTF), the internal volume between the diaphragm and the pressure gauge must be filled with a special fluid suitable for temperatures up to 405°C.

Pressure measuring in this kind of fluid (HTF), it is very important a flush mounted diaphragm seal process connection without any free space; this is because when the temperature of the HTF decrease, it becomes more viscous, building up in conventional process connections and causing errors in the measurement.

FEATURES:

- Full stainless steel system
- External zero adjustment
- Dry or liquid filled case
- CE marking
- Dial size: DN100, DN150
- Accuracy: class 1.0 per DIN 837-1
- Ranges: -1 to 1600 bar
- Capillary in stainless steel
- Process connection:
 - Flanged with stainless steel diaphragm seal
- Internal filling fluid:
 - Special oil for 405°C process temperature
- Environmental protection:
 - IP65
 - IP67 optional



Pressure transmitter with diaphragm seal

Relative, absolute and differential pressure transmitters are available. BVALVE pressure transmitter accurately measures gauge pressures and transmits proportional 4 to 20 mA signal.

The transmitter utilizes the unique micro machined capacitive silicon sensor with state of the art microprocessor technology to provide exceptional performance and functionality.

Different diaphragm seal process connection with special filling fluid for 405°C.

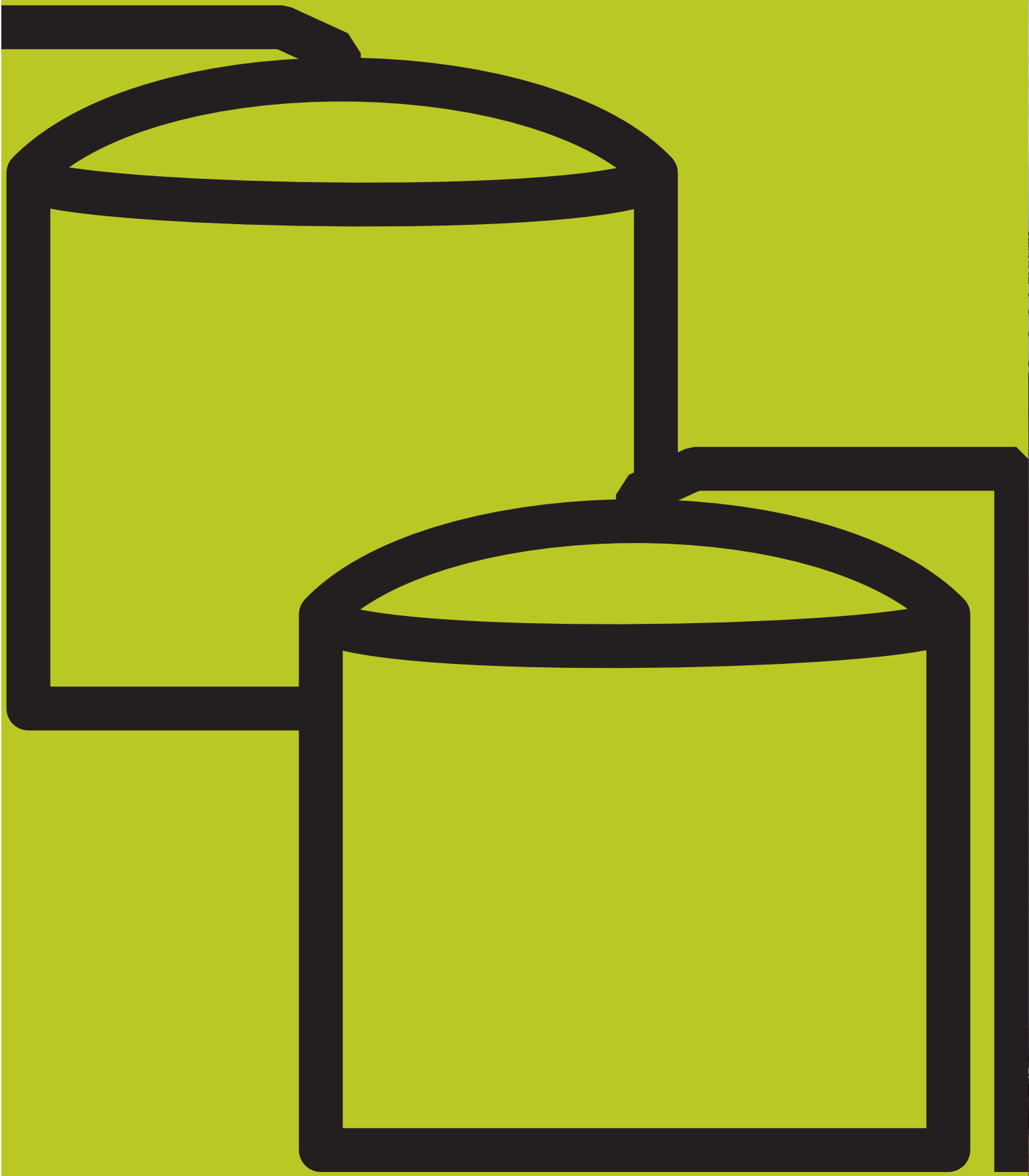
Remote revision with capillary is also available.

Many types of diaphragms materials available.

FEATURES

- Standard Accuracy: 0.065%
- 5 digits LCD meter with 3 push buttons
- Minimum environmental influence
- Power supply: 10.5 to 45Vdc
- Output signal 4-20 mA
- Approvals for hazardous locations
 - ATEX - intrinsic safety
 - ATEX - Flameproof enclosures
 - CSA
 - FM factory mutual
 - ICEZ
- Communication:
 - Fuji/Hart protocol (standard)
 - Fieldbus foundation H1
- Environmental protection: IP67 and NEMA 4X
- Rangability: 100:1





BVALVE

03

Valves for Molten Salt Molten Salt Tanks



03 Valves for Molten Salt BVALVE

Breather valves

BVALVE breather valves are safety equipment designed to protect tank against breaking or imploding. As long as the pressure in the tank remains above the valve vacuum setting and/or below the valve pressure setting, no venting or breathing occurs. If the valve does not discharge to the atmosphere, a flange is available too. This is also valid in case nitrogen is used on vacuum inlet.

- New shape for fluid dynamic improvements
- Pipeaway connection on Pressure and process side
- Pallet guide outside the process
- Gasket in special materials for molten salt

FEATURES

- Size: 4" (100 mm) through 12" (200 mm)
- Construction: carbon steel, stainless steel with special gaskets for temperatures up to 400° C
- Metal/metal seats bubble tight up to 90% of set pressure
- Setting pressure: +2,5 mbar to +50 mbar
- Setting vacuum: -2,5 mbar to -30 mbar
- Flange rating: ANSI 150, PN16



BVALVE Valves for Molten Salt 03



03 Valves for Molten Salt BVALVE

Safety valves for thermal storage

Safety valves for the Thermal Storage Unit

For this application we offer an API Safety Valve with a proper configuration which makes it suitable for prevailing conditions. Alternatively, when the API standard is not required, a High Performance safety valve with the same configuration as the API valve can be used. The High Performance valve allows the use of a smaller nominal diameter for the same performance.

Demands on the safety valve:

- High quality standards
- Flow orifices ranging from D to T
- Sizes from 1" x 2" up to 8" x 10" (standard)
- Additional sizes up to 16" x 20" (XXL series)
- Ranges 150, 300, 600 Lbs
- RF or BW process connections
- Special design for high temperatures (up to 565°C)
- Salt corrosion resistance
- Gasket in special materials for molten salt
- High-quality, temperature resistant inconel bellows material
- Improved seat tightness to prevent leakage of molten salt



Butterfly valve for thermal storage

FEATURES

- Triple eccentric design
- BW ends
- Solid seat ring execution (maintenance-free)
- TA-LUFT certified
- Zero leakage acc. API 598 and EN 12266 in both directions (bubble tight)
- Temperature up to 565°
- Trunnion design with dual bearings of pure stellite
- Butterfly protection in open position by means of safety bar
- Sizes 6" to 60"
- Ratings 150, 300 & 600 lbs
- 100% butterfly surface protection by means of hardening treatment with KANINGEN® (harder than stellite 6)
- Fire safe design as per API 6 FA/BS 6755

Triple Offset Butterfly Valves - High Temperature Configurations

Metal-to-Metal seat design ensures a perfect sealing under high temperatures keeping small torques due to the triple eccentric design.

Special features

- Excellent performance as control valve and shut-off valve
- Extended bonnet design enables full pipe insulation and protects the actuator from process temperature
- Operability is not affected by temperature
- Special gaskets and packing materials are used to avoid valves block and leakage



03 Valves for Molten Salt BVALVE

Bellows sealed globe/gate valves for thermal storage

Bellows sealed valves working with molten salts are under extreme conditions such as high temperatures, corrosion or likely crystallization.

Bellows and special packing design of these valves guarantee a long life service, achieving more than 10.000 cycles, without any kind of leakage or maintenance. Providing a solid solutions to several applications.

- Operability is not affected by temperature
- Special gaskets and packing materials are used to avoid leakage

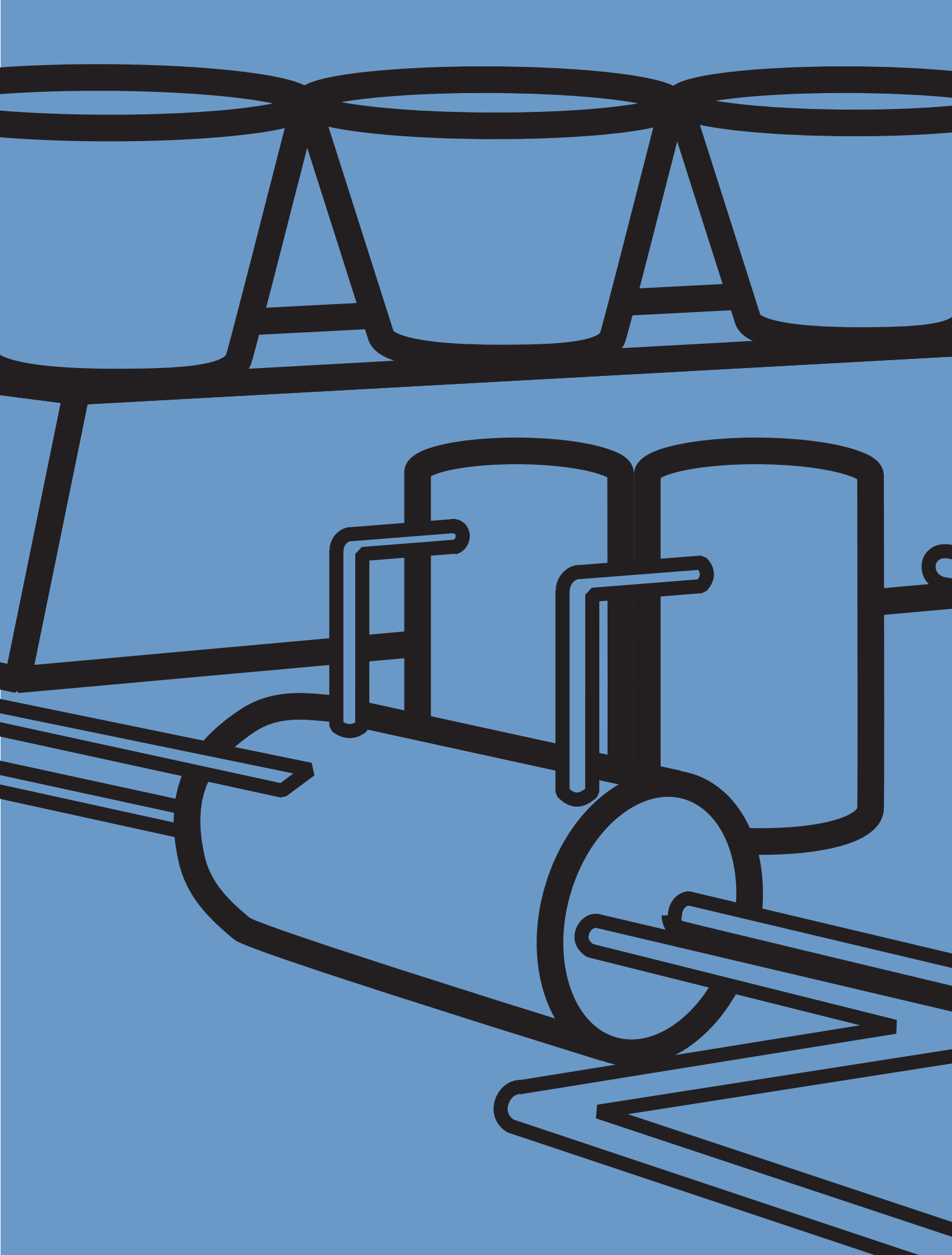


Bellow sealed globe/gate valves for thermal storage

FEATURES

- ASME design as per ANSI 150, 300 or 600 lbs
- BW, SW or flanged RF/RTJ ends
- AISI 316Ti stainless steel bellows designed for 10,000 operations
- Indicator of leak due to bellows break
- Total tightness to close as per API 598, zero leakage (bubble tight)
- Sizes 1/2" to 20"
- Stellite seat and/or cone + gate, trim 5
- TA-Luft
- Special gaskets and packing gas molten salts





BVALVE

04

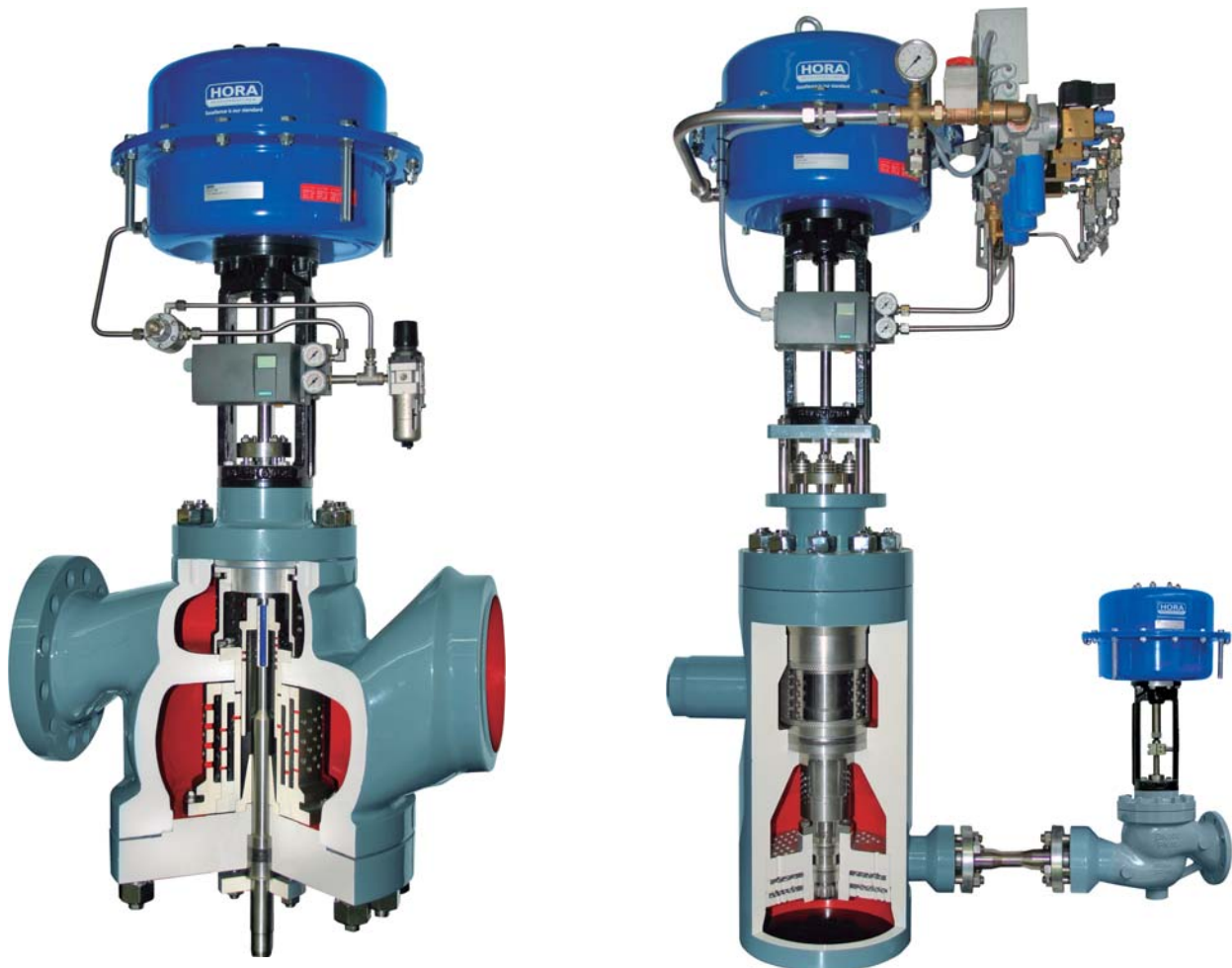
Valves for Steam / Water
Power Island



Turbine By-pass HP and LP control valves

FEATURES

- Valves with compact design with special internals to withstand the huge pressure drops in HP and LP turbine by-pass services
- By-pass valves can be manufactured in many different configurations like incorporating atemperatation devices and injection water control valve
- BW, flange connections
- ANSI 150, 300, 600, 900, 1500 and 2500 Lbs
- Cage or multistage valves with water injection
- Sizes designed specifically for the process conditions (8"-40")
- Shell manufactured in WCB carbon steel, WC6 or CF8M stainless steel, as well as F11
- Hardened internals to withstand the critical process conditions
- Fitted with pneumatic or electrical actuator
- High accurate working ratios
- High efficiency mixing water and steam in order to get the designed temperature and pressure valve

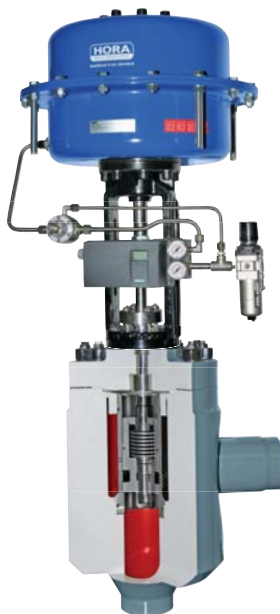


HP and LP control valves for steam and water services

FEATURES

Valves designed to operate under highly critical pressure, temperature and pressure drop conditions, and usually used on feedwater systems and pressure reduction control

- Sizes from 1/2" to 24", straight-through or angle flow
- Ratings from 150 to 2500 lbs
- BW or flanged ends
- Internals with anticavitation cages or multistage type
- Shells manufactured in WCB, WC6 carbon steel, CF8M stainless steel and F11 or F22 forged steel
- Fitted with pneumatic, electrical or hydraulic actuator
- High accurate working ratios



Drain control valves

APPLICATIONS

Boiler drains
Feedwater drains
Steam drum vents
Economizer header drains

END CONNECTIONS

Socketweld
Buttweld
Flanged

BALL VALVES

FEATURES

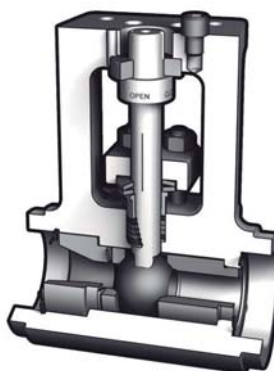
- Sizes 3/4" to 2-1/2"
- Mate-lapped for 100% contact
- Ensures absolute shutoff
- Corrosion resistant
- Seats are protected from flow in open / closed position
- 150-4500Lbs
- High proven design



GLOBE VALVES

FEATURES

- Sizes 1" to 4"
- Range 150-2500 Lbs
- Straight-through or angle flow
- Multistage trim





Safety valves

Bvalve, as the official representative of one of the leading safety valve manufacturers in the world, can provide full range of solutions in solar plant applications. Even in cases of critical operating ratio conditions, we can provide different options to fulfill process requirements in order to give an outstanding valves lifecycle by means of:

- Use of special high temperature materials in nozzles to prevent early erosion and under cycling temperature conditions.
- Improvement of seat tightness by special executions for enlarging maintenance period on the valves.
- Use valves in combination with bursting disks and/or change-over valves for steady long term service free of maintenance.
- Implementation of Supplementary Loading Systems (SLS) to improve the safety valve behaviour, reducing overpressure and blow-down, improving tightness and enlarging lifecycle of the valve.

SAFETY VALVES FEATURES

- BVALVE safety valves with API 526, PED 97/23/EC, category IV design, ASME VIII (UV stamp)
- Flow orifices ranging from D to T
- Sizes from 1" x 2" up to 8" x 10" (standard)
- Additional sizes up to 16" x 20" (XXL series)
- Ratings from 150 x 150 lbs to 2500 x 300 lbs
- RF or BW process connections
- WCB, WCG, LCB, CF8M shell materials
- Conventional and bellows valves (balanced)
- Stellite nozzle and disc
- Nozzle available in special materials for critical pressure conditions
- Accessories: test gag, opening indicator, leak indicator due to bellows break, pneumatic actuator, NACE NRO175, high temperature equipment (up to 565°C), integrated rupture discs, etc



CHANGE OVER VALVES FEATURES

- Indicated for using in critical points of the process where it is necessary to perform maintenance on the safety valves without shutting down the process.
- For installation at the inlet and outlet of the safety valves linked by a chain for simultaneous actuation
- Bellow designed for 10,000 or 100,000 operations, as required
- Sizes from 1" to 16"
- Additional sizes up to 20" (XXL series)
- Ratings 150, 300, 600, 900 and 1500 lbs
- Stellite closure surfaces
- TA-Luft certified



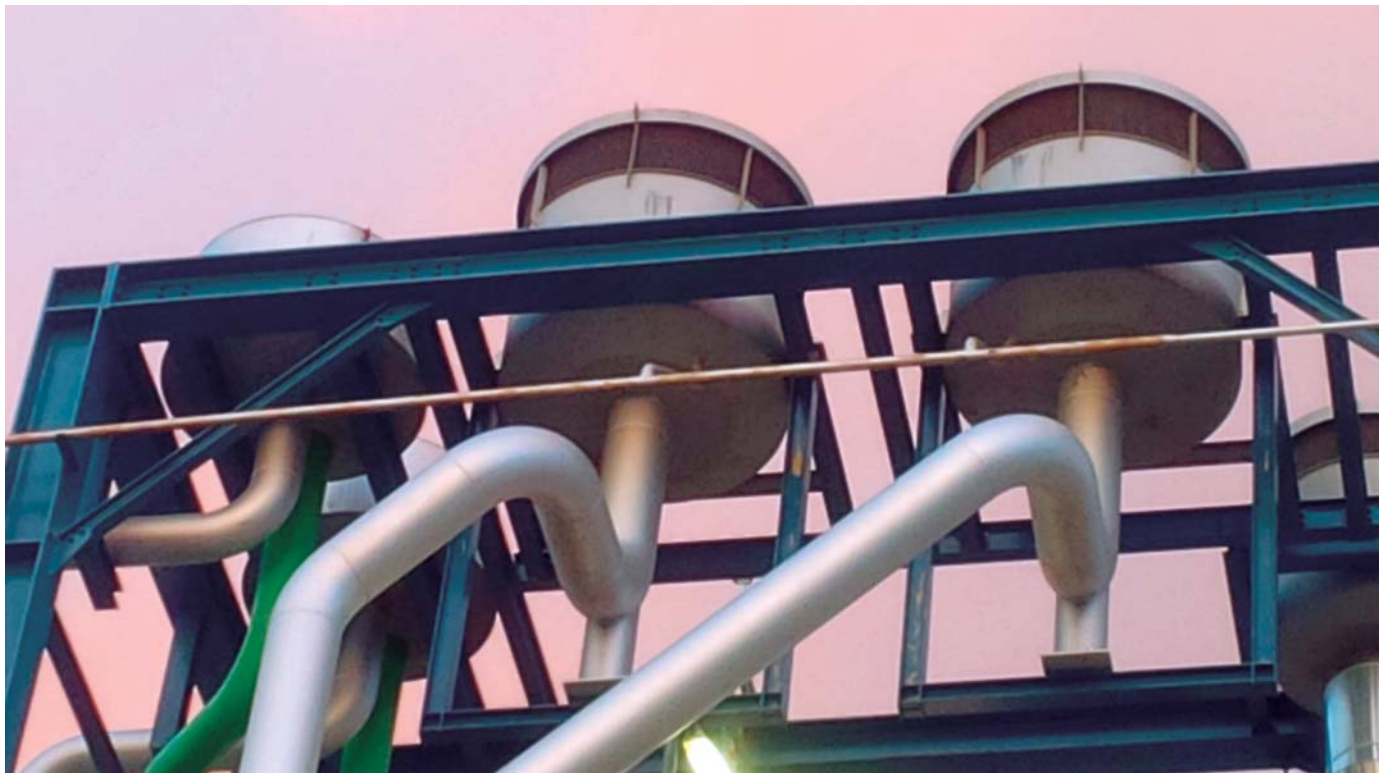
Silencers for safety valves

Silencers are mainly used in the power island, associated to the safety valves that protect the evaporators and associated equipments such as preheaters, superheaters and reheaters, to reduce the enviromental noise contamination.

FEATURES

Silencers are designed on the basis of the following information:

- Steam or gas flow
- Set pressure of the safety valve
- Admissible sound level at site
- Multiorifice cylinders
- Multiple absorption separators
- Noise reduction up to 60 dB



IP and LP control valves

FEATURES

- Valves designed for operation with IP and LP water or steam
- Compact and highly robust design
- Sizes 1/2 " to 8"
- ANSI 150, 300 and 600 lbs
- Shells manufactured in WCB, WC6 carbon steel, CF8M stainless steel
- Temperature range from -200°C to 530°C
- Class VI high bubble tight
- Cvs values from 0.046 to 626 g/min USA
- Fitted with pneumatic or electrical actuator
- Fitted with all types of pneumatic, electropneumatic and digital positioners
- Reduced weight
- Easy installation



Sliding gate technology



Globe valve technology



Magnetic levels gauge

APPLICATION

Metering of condensate water level in preheater tanks, intermittent blowdown tanks and storage tanks in the power island.

NA7-50 type magnetic level gauges provide the following features:

- Visual field level indication by means of graphic bar or fluorescent floats
- Possibility of redundant level metering by installation of a magnetostrictive transmitter in the main chamber (precision greater than 0.01% FE)
- Configuration of two alarms (max/min) through the installation of two adjustable magnetic breakers in the main chamber
- High precision metering with variations in fluid density due to temperature
- Highly robust metering system (extruded connections)

FEATURES

- A316 stainless steel chamber
- Chambers in Schedule 10 and schedule 40
- Maximum temperature up to 538°C
- Design pressure up to 316 bar
- Float manufactured in A316L and titanium
- Process connections by means of ANSI 150, 300 and 600 lbs flanges
- Fitted with vent and blowdown outlets
- Float designed and manufactured in accordance with process conditions (pressure, temperature and density)
- Calibrated indication scale manufactured in A316L stainless steel
- Metering lengths up to 20 metres

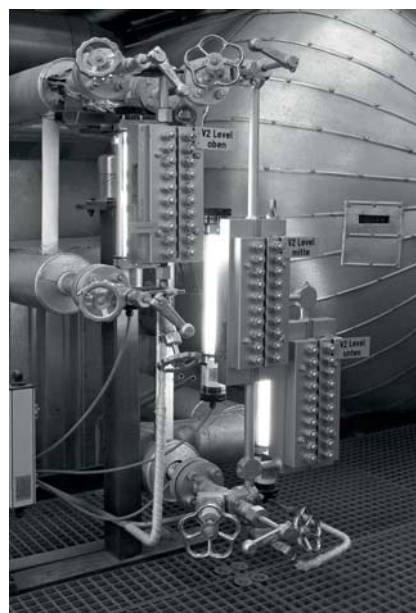


Transparent levels

Direct level indication in steam boilers with the Mica type transparent level gauges.

Possibility of illumination device to improve the visibility of the water level.

Maximum pressure up to PN320.



Relative, absolute and differential pressure transmitters

Pressure measuring and monitoring is very important in a power plant, so we can do it with different type of pressure transmitters depending of the process conditions.

Relative, absolute and differential pressure transmitters are mainly used to measure pressure, level and flow in steam and condensate.

High accuracy transmitters are required in this type of plants to be able to control each process.

Advantages of our pressure transmitters:

- **High accuracy up to $\pm 0.04\%$**
0.065% accuracy as standard, 0.04% accuracy as option.
The micro-capacitance silicon sensor assures this accuracy for all elevated or suppressed calibration ranges without additional adjustment.
- **Minimum environmental influence**
The "Advance Floating Cell" design" which protects the pressure sensor against changes in temperature, and overpressure substantially reduces total measurement error in actual field application
- **HART® bilingual communication protocol**
- **Application flexibility**
Various options that render the FCX-All suitable for almost any process applications include:
 - Full range of hazardous area approvals
 - Built-in RFI filter and lightning arrester
 - 5-digit LCD meter with engineering unit
 - Stainless steel electronics housing
- **Burnout current flexibility (Under Scale: 3.2 to 4.0mA Over Scale: 20.0 to 22.5mA)**
Burnout signal level is adjustable using Model FXW or Hand Held Communicator (HHC) to comply with NAMUR NE43.
- **Dry calibration without reference pressure**
Thanks to the best combination of unique construction of mechanical parts (Sensor unit) and high performance electronics circuit (Electronics unit), reliability of dry calibration without reference pressure is at equal level as wet calibration.



Bourdon tube Pressure Gauges

Bourdon tube pressure gauges are suitable for use in steam and condensates.

Stainless steel design for measuring gaseous and liquid media, design according to safety standards per DIN EN 837-1

For measuring pressure in steam and condensate applications, diaphragm seals are not required, syphon is enough to avoid the process temperature.

Many types of different syphons designs and materials are available depending of the installation point.

FEATURES

- Dial Size: DN63, 100, 150
- Accuracy class: 1.0 per DIN 837-1
- Ranges: -1 to 1600 bar
- Stainless steel material
- Dry / Glycerin filling.
- Pointer: pure aluminum, black
- Window: non-splintering glass
- Degree of protection: IP54, IP65 option

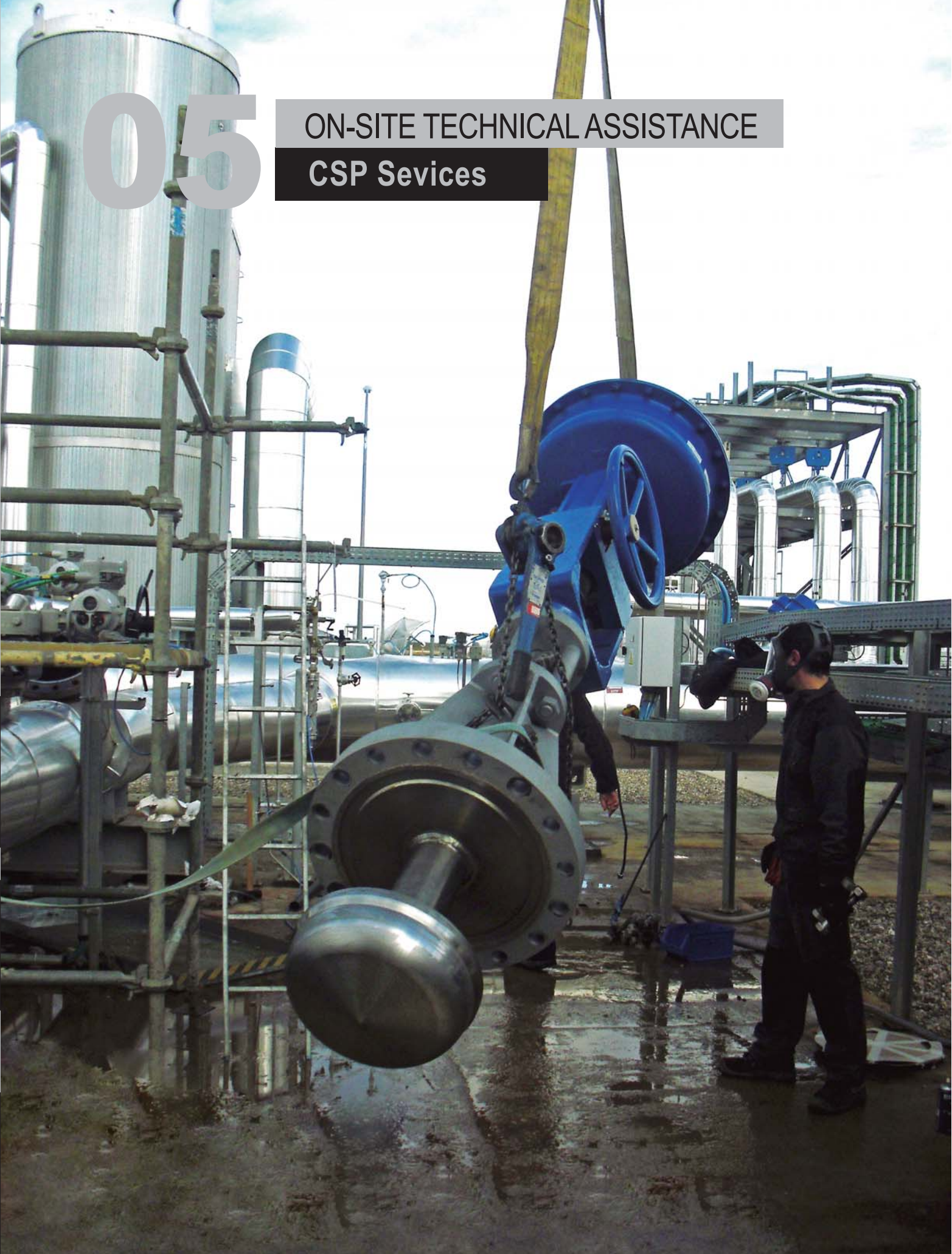




BVALVE

05

ON-SITE TECHNICAL ASSISTANCE CSP Sevices





Commisioning systems and devices

Bvalve staff has the experience, know-how, knowledge and equipment to do a correct commissioning for the valves supplied and industrial sensors:

- Instrumentation: Pressure and temperature transmitters, level sensors and flow measurement systems (dif. Pressure, mass, vortex and magnetic)
- Revision, verification test and modifications of pneumatic systems integrated on the valves.
- Configuration and setting of electro/pneumatic positioners SMART (by local or HART communication)
- Setting parameters for communication board on electric actuator (Modbus, Profibus-DP...) and support IT's department to solve communications troubles and programming PLC.

Professionalism BVALVE

BVALVE on-site service and maintenance guarantees:

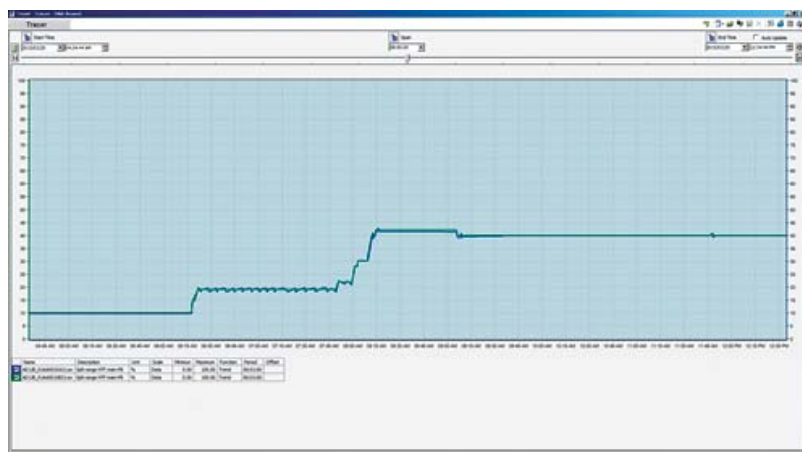
- Minimum problems during the start up
- Expansion of the average time between failures
- Maximum performance installation
- Greater useful life of the equipment
- Perfect adaptation of the equipment



Manual valves automation

Bvalve Flow, Systems & Controls makes a proper study and chooses the best actuator for the customer application. Our technicians may adapt an actuator to any valve, considering the following points:

- Valve type
- Actuator type (pneumatic or electrical)
- Current and futures process conditions
- Torque/thrust required for the actuator according to process conditions
- Control valve type
- Mechanical valve limits



36" tripple offset butterfly valve controlling flow of HTF on the daily starting up



Valves reparation

Bvalve has the necessary equipment to repair any kind of valve in the market.

- Gate valves
- On/off and control globe valves
- Feedwater control valves
- Pump protection valves
- Desuperheaters
- Steam conditioning valves
- Turbine by-pass valves
- Conventional ball valves
- Trunnion ball valves
- Butterfly valves (conventional to triple eccentric valves)
- Safety valves (Conventional, balanced and pilot valves)



We apply the most updated technology in lapping procedures reparation on the seat and plugs. This technology avoids over costs to your maintenance departments. Using our technology, you can forget the valve replacement in short periods of time.

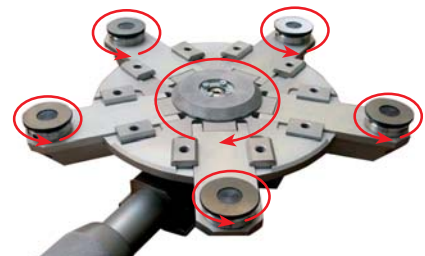
Our services include change of the inner parts of the valve, as well as, packing and gaskets, under customer enquiry. Complete cleaning procedure is applied after repairing the valves. Finally, the valve is painted on site.

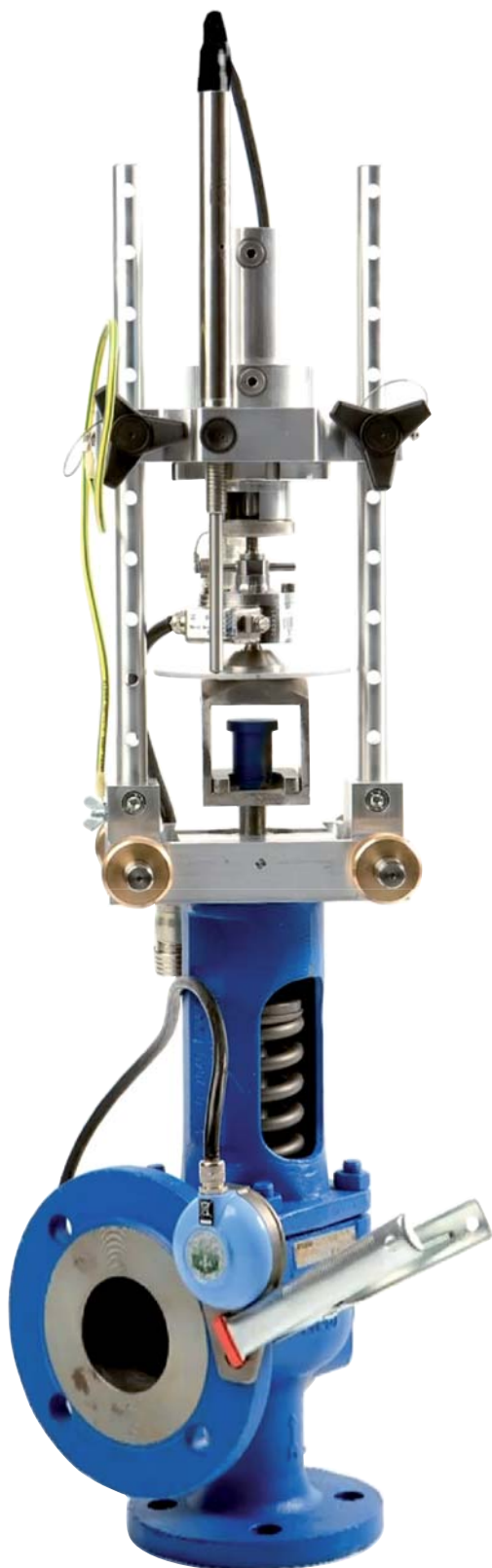
We can also offer a diagnostic service about the valves state, giving to the customer a detailed technical report including the actions to be done on the valves; we can also offer a jobs supervision of the works made by third party.



Requirements for perfect machining

- The lapping disc rotates in clockwise direction, while the eccentric discs do counterclockwise.
- The shaft is driven by a spring allowing precise adjustment of the working pressure.
- The rotation speed of which is adjustable using an abrasive perfect seat machining and accurate results.
- The accuracy in the media setting lapping machine along with the selection of speed, time and abrasive disk allows a perfect internal machining.





Automatic test bench

Our on-site test bench system is designed to determine the set pressure of the safety valve.

As a main benefit, you can certify the set pressure while the process is running, avoiding the valves disassembly from the pipe.

Our system is controlled by PC and determines automatically the set pressure adjusted on the safety valve.

The principle of operation is to determine the set pressure based on the 'first audible sound detected'. This point happens when the forces made by the spring and process pressure are equal.

Our system is able to detect the first audible sound using a sensor integrated in the system.

The obtained results with this technology are the same as obtained with the traditional methods, but with better accuracy.

Test method

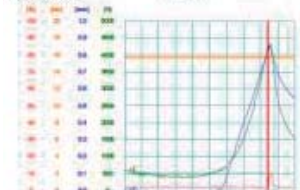
$$\text{Set pressure} = P_{\text{line}} + \Delta P$$

$$\text{Set pressure} = P_{\text{line}} + \frac{F_{\text{Preven Test}}}{A_{\text{seat}}}$$

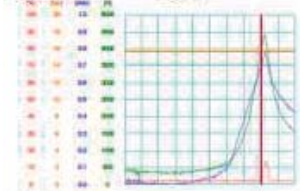
Setting safety valves on-site under process conditions



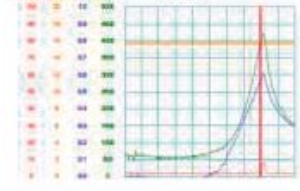
Test 1
Found set pressure: 18,5 bar
Pulling force: 4152 N
Line pressure: 15,7 bar



Test 2
Found set pressure: 18,5 bar
Pulling force: 4074 N
Line pressure: 15,8 bar



Test 3
Found set pressure: 18,5 bar
Pulling force: 3961 N
Line pressure: 15,8 bar



Bvalve experience

As a manufacturer, we know how the valves work, their tolerances, mechanical features, tightness limits and the correct way to install them.

As an official repair service, we can make a valve diagnostic, analyzing the obtained results.

We have experience to reset the valve pressure on-site, independently the valve type, size or fluid service (molten salts, HTF oil, steam and condensate, feed water...)

Bvalve advantage

Safety

We can guarantee the process pressure constant during the test.

Accuracy

The great experience and know how about safety valves, allows Bvalve to adjust the set pressure with a high accuracy avoiding leakages and pressure drops on the process.

Prevention

Our experience as a manufacturer and reparation services (on-site and at our workshop) able us to give to the customer detailed information about the condition of every part of the valve.

SOLAR DEPARTMENT:

Project Manager

Francisco Bort

fbort@bvalve.es

Technical Manager

Fabián Dasí

fdasi@bvalve.es

Business Development

Iker Zubizarreta

izubizarreta@bvalve.es

After Sales Service

Salvador Navarro

snavarro@bvalve.es

Polígono Industrial I1 Travessa de Peralta, 5A
46540 EL PUIG (Valencia) SPAIN
Phone: +34 961 473 161 Fax: +34 961 473 170
ventas@bvalve.es

www.bvalve.es

social media



BVALVE