

Products & Applications



Thermoplastic Valve Solutions

SAFI

« You are in good hands »

Founded in 1963, SAFI has unrivalled experience in handling corrosive and abrasive chemicals with thermoplastic materials in many applications.

SAFI designs, manufactures and supplies to a global customer base a wide range of thermoplastic valves for demanding industries.

Many of our valves can be adapted as a flexible solution, while our R&D department can offer a tailor-made solution to your own specification.

Through SAFI's network of companies, consultants and distributors we give a fast and dedicated response to your enquiries.



THERMOPLASTIC VALVES MANUFACTURER SINCE 1963

Why SAFI thermoplastic valves ? "Fit and forget"

At SAFI we understand the importance of product reliability and believe that thermoplastic valves are a great solution to corrosion :

- . Inert to corrosion of the **most aggressive** chemicals
- . **Less expensive** than alloy metals and **lined valves**
- . **Light weight**
- . Robust

SAFI offers valves that are reliable and trouble free over a long time. Our selection of polymer materials and valve design enable our valves to last many years without maintenance.

Quality equipment from Europe Product conformity to the most stringent standards.

Products & Applications

Real solution
for corrosive fluids

Built to last...

Environment



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Chemical process industries



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Metal & lined metal
valves replacement



P22



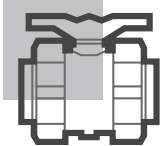
www.safi-valves.com



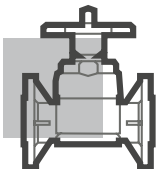
PRODUCT RANGE

Valves, strainers, flow control equipment which can be actuated and customized with useful accessories

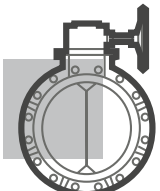
Ball Valve



Diaphragm Valve



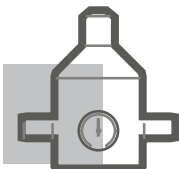
Butterfly Valve



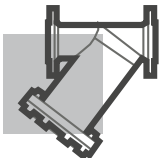
Check Valve



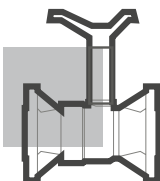
Flow Control



Strainer



Accessories



MATERIAL RANGE

GRPP

GRPP

Glass reinforced Polypropylene. Contains PPH, and 20% borosilicate glass reinforced of type «C» chemically resistant with UV stabilizer. Very good mechanical and UV resistance. Resistant to temperatures from -10°C to 100°C.

PVDF

PVDF

PolyVinylidene Fluoride. Excellent chemical and physical resistance. Supports temperature from -20°C up to 120°C, ultra-violets and extremely corrosive agents. Very good abrasive resistance. Very smooth surface which avoids the development of micro-organisms.

PPH

PPH

PolyproPylyene. Good mechanical and chemical properties. Good thermal stability from 0°C up to 90°C, as well as good shock resistance. Good chemical resistance in particular with salts, acids and alkalis and numerous organic solvents.

U-PVC

U-PVC

Unplasticised PolyVinyl Chloride. Widely used thanks to its good chemical behavior. But resists only to moderate temperature from 0°C up to 60°C and has a low shock resistance, which limits its application in the industry. Poor resistance to UV.

C-PVC

C-PVC

Chlorinated PolyVinyl Chloride. Superior density than U-PVC and greater range of thermal behavior from 0°C up to 90°C.

ATEX



PP-ATEX

PPH thermoplastic with carbon fibers which makes the plastic semi-conductive and compliant with the ATEX norm.

Why THERMOPLASTIC in environment ?

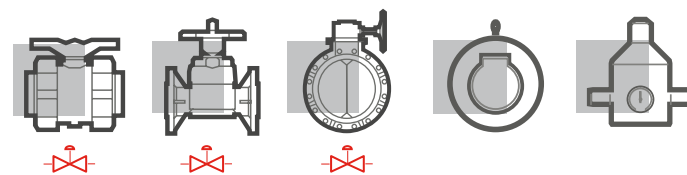
- o Excellent resistance to chemical products
- o No external corrosion
- o Good resistance to abrasion
- o Light weight
- o Easy maintenance

References

VEOLIA, SUEZ, VIRIDOR,
GEA WIEGAND

Environment

GRPP PVDF PPH U-PVC C-PVC ATEX



PRODUCT FOCUS

Actuator with Positioner

Ventilation Damper DN 900 in PPH

UV Resistant Coating

Tightness compliant
with standard EN 1751

Actuated ventilation damper



Environment

Applications of SAFI products

Water treatment

Drinking water process
Waste water treatment
Water treatment mobile water units
Desalination plants

Industrial process water

Water intake and filtration
Industrial water treatment
Gas scrubbers

Waste treatment & recycling

Landfills and gas collection
Incineration plant
Recycling facilities

Gas Fume Scrubbers Geothermal



Geothermal



Gas ventilation and scrubber

Why THERMOPLASTIC in chemical process industry ?

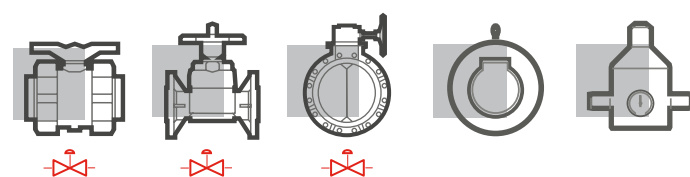
- o Excellent resistance to very aggressive chemical products
- o No external corrosion
- o Good resistance to abrasion
- o Light weight
- o Easy maintenance

References

BASF,
SOLVAY, ARKEMA,
BAYER, EVONIK,
SANOFI-AVENTIS,
QATAR CHEMICALS,
NCP CHLOROCHM,
...

Chemical process industry

GRPP PVDF PPH U-PVC C-PVC ATEX

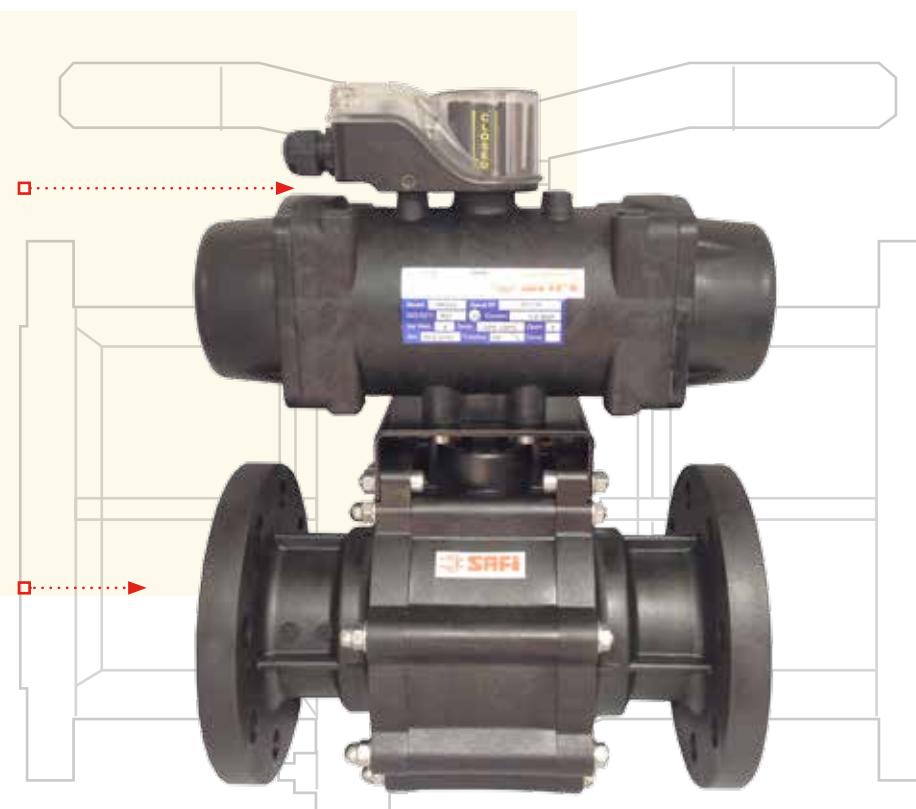


PRODUCT FOCUS

«Heavy Duty»
Pneumatic Actuator

4" Compact Flanged Ball Valve in GRPP

+ UV Resistant
+ Reinforced Metal Flanged



4" Actuated flanged ball valve



Applications of SAFI products

Production of raw chemical products

Chemical plants (chlore alkali, sulphuric acid, ...)
Polymer industry

Production of fine and derived chemical products

Fine chemicals
Pharmaceutical
Paints manufacturers
Detergents manufacturers
Body products manufacturers



HCl production



Sulphuric acid line



Why THERMOPLASTIC in transport and storage ?

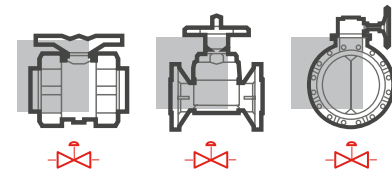
- o The same thermoplastic material can resist a wide range of chemicals
- o Excellent resistance to chemical products
- o No external corrosion
- o Good mechanical resistance
- o Attractive price

Reference

SCHOELLER ALLIBERT
PROMENS, BRENNTAG, UNIVAR

Transport and storage

GRPP PVDF PPH U-PVC C-PVC ATEX



PRODUCT FOCUS

Lockable Handle

IBC Ball Valve

Customizable connection to the container



IBC Ball valve



Transport and storage

Applications of SAFI products

Manufacturers of IBCs
Manufacturers of +1000L tanks
Manufacturers of Flexitanks
Chemical storage facilities
Chemicals distributors



Chemical discharge area



IBC tank

Why THERMOPLASTIC in mining ?

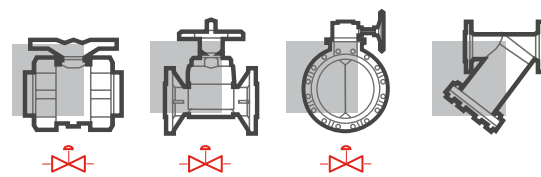
- o Excellent resistance to chemical products
- o No external corrosion
- o Good resistance to abrasion
- o Light weight
- o Easy maintenance
- o Attractive price compared to metals

References

ANGLO AMERICAN, ERAMET,
RIO TINTO, CODELCO, AREVA,
OFFICE CHÉRIFIEN DES PHOSPHATES,
MAADEN, SNC LAVALIN, BHP BILLITON,
IMPALA PLATS, SIBANYE GOLD

Mining

GRPP PVDF PPH U-PVC C-PVC ATEX



PRODUCT FOCUS

Special coating
and painted version gearbox

Hastelloy shaft

LUG type flanges
with 316 L threads

DN 400 Butterfly valve – LUG type



Mining

Applications of SAFI products

Mines

Copper mines
Zinc mines
Nickel mines
Uranium mines
Phosphate mines
Potassium mines
Gold mines
Rare earth

Processes

Heap leaching
ISL
Solvent extraction
Electrowinning
Acid plants



Heap leach process



Electrowinning

Why THERMOPLASTIC in surface treatment ?

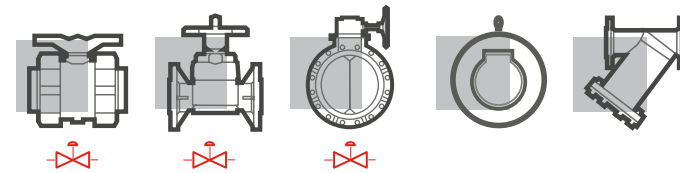
- o Excellent resistance to highly concentrated chemicals
- o No external corrosion
- o Good resistance to abrasion
- o Light weight
- o Easy maintenance

References

ARCELOR MITTAL, UGINE, AGFA, FEDERAL MOGUL

Surface treatment

GRPP PVDF PPH U-PVC C-PVC ATEX



PRODUCT FOCUS

Limit Switch Box

Double Acting Pneumatic Actuator

2" Diaphragm Valve in PVDF FPM Diaphragm

PVDF actuated diaphragm valve



Surface treatment

Applications of SAFI products

Metal pickling
Metal plating
Galvanizing
Photovoltaic panels construction
Semi-conductor industry
Glass manufacturing
Degreasing



Metal pickling



Zirconium sheet degreasing

Why THERMOPLASTIC in food products ?

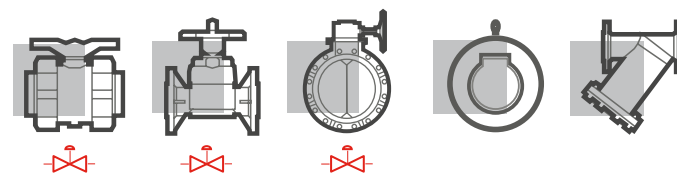
- o Excellent resistance to chemical products
- o Suitable for food products and potable water
- o Good resistance to abrasion
- o Light weight
- o Easy maintenance
- o Attractive price

References

UNILEVER, DANONE, MARS, KALLE, VISKASE, CHAPOUTIER

Food products

GRPP PVDF PPH U-PVC C-PVC



PRODUCT FOCUS

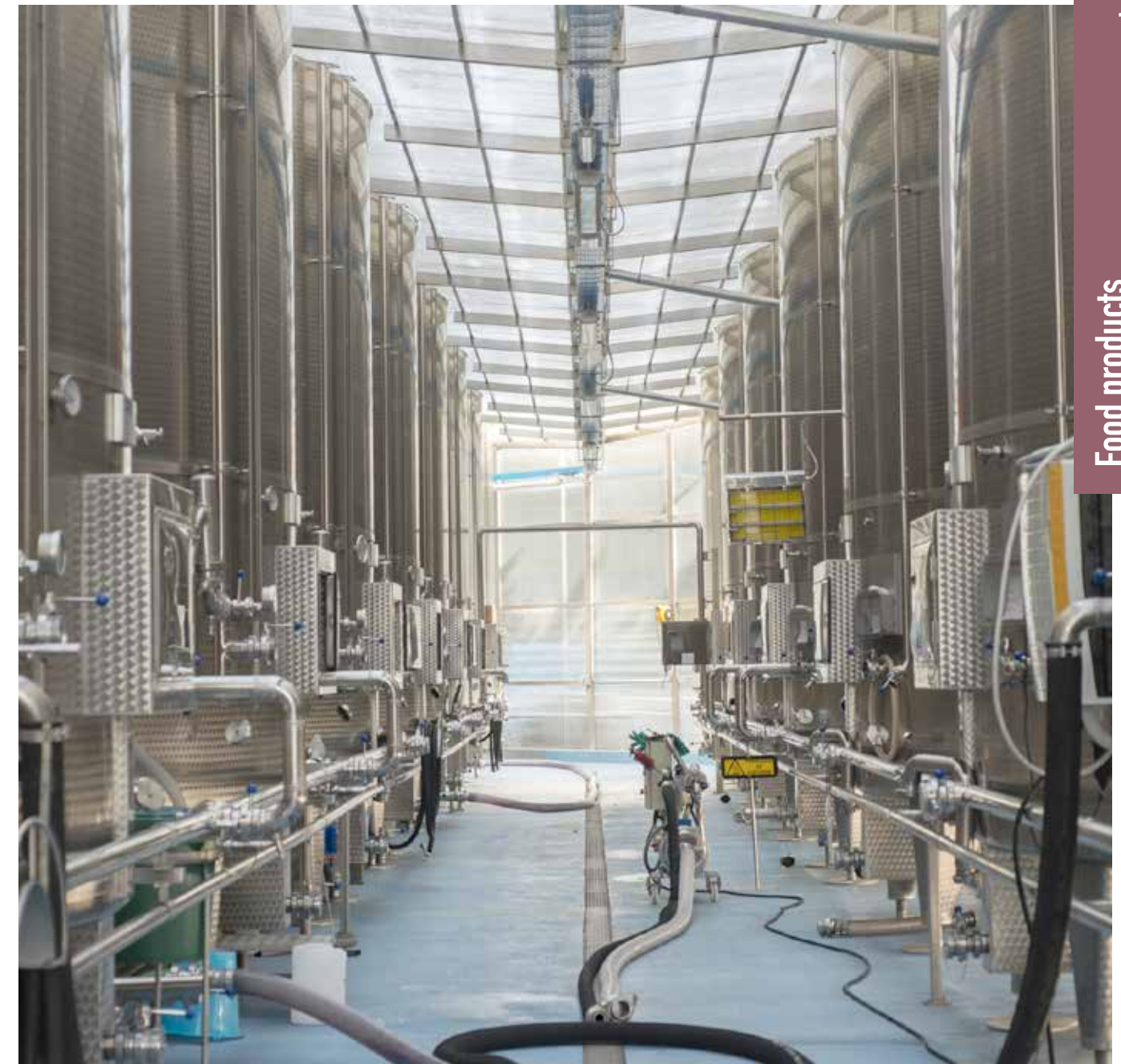
Electric actuator IP68 with signal feedback

Secure manual override

GRPP ball valve DN50



2" electrically actuated GRPP Ball valve



Food products

Applications of SAFI products

Food industry

CIP (cleaning in place)
Manufacturing process
Brine process
Waste treatment plant

Slaughter house

Beverage industry (Wine, sodas, brewery malt production)
Equipment cleaning
Water processing



H₂SO₄ line (sausage factory)



Slaughter house piping cleaning

Why THERMOPLASTIC in energy ?

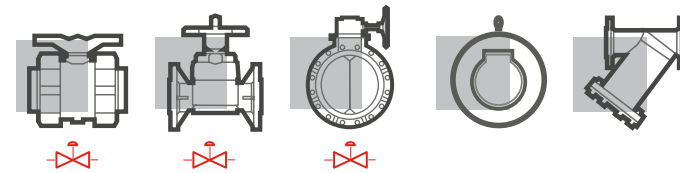
- o Long lasting resistance to chemical products
- o No external corrosion
- o Good resistance to abrasion
- o Light weight
- o Easy maintenance
- o Attractive price

References

EDF (ELECTRICITÉ DE FRANCE)
BRITISH ENERGY
E.ON, GENERAL ELECTRIC

Energy

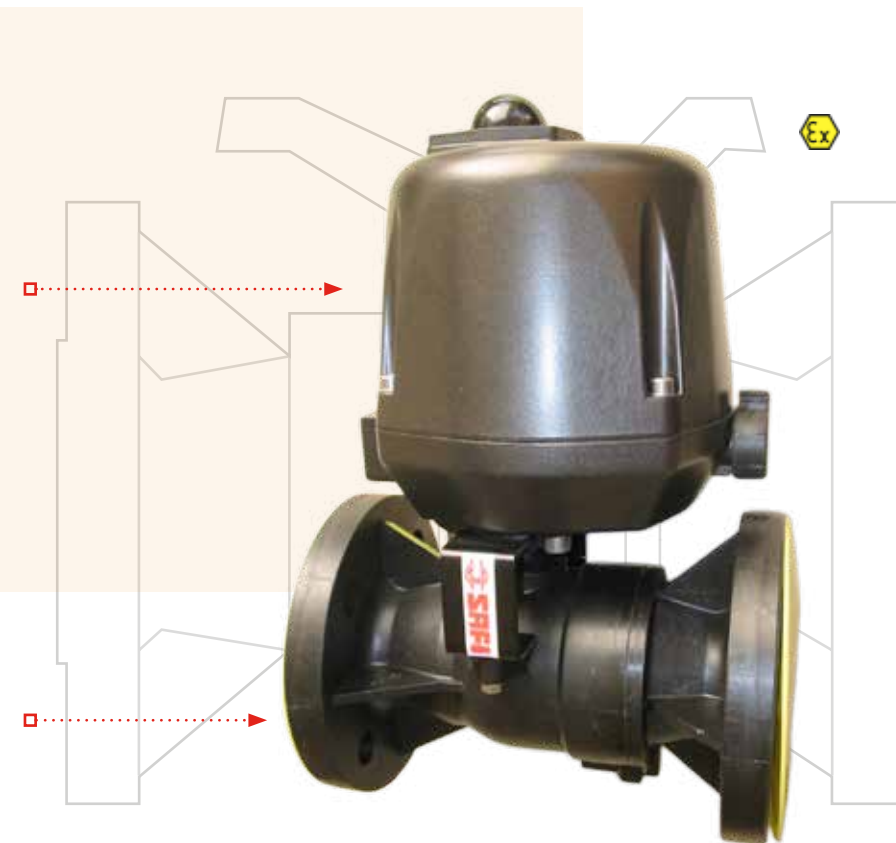
GRPP PVDF PPH U-PVC C-PVC ATEX



PRODUCT FOCUS

Electric Actuator
ATEX - 11260 Exd II BT 5

2" Flange Ball Valve (PP ATEX)



ATEX electric actuated ball valve



Applications of SAFI products

Power plants

Demineralised water
Anti-scaling treatment
Amibia treatment
Electrochlorination
Desalination
Water treatment
Sodium hypochlorite systems

Waste to energy

Methane
Biogas



Water demineralisation unit



Anti-scaling unit (H₂SO₄ 96%)

Why THERMOPLASTIC for OEM ?

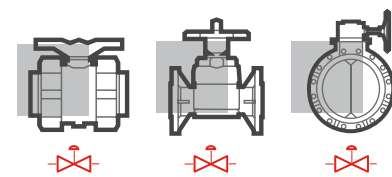
- o Excellent resistance to a wide range of chemical products
- o No external corrosion
- o Good resistance to abrasion
- o Light weight
- o Easy maintenance
- o High robustness

References

BIOQUELL, HONEYWELL,
JOHN DEERE, EXEL INDUSTRIES,
MEBCO

OEM (Original Equipment Manufacturer)

GRPP PVDF PPH U-PVC C-PVC



PRODUCT FOCUS



Modular crop sprayer valve



Applications of SAFI products

Battery manufacturing
Medical equipment (dialyse skids)
Bath and spa manufacturing
Fountains manufacturers
Material cleaning systems
Crops sprayers
Air flow control



Valve for ventilated pressurised suit



Crops sprayer modular valve

Why THERMOPLASTIC in oil & gas & refineries ?

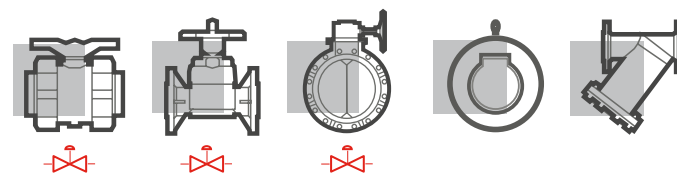
- o Excellent resistance to chemical products
- o No external corrosion
- o Good resistance to abrasion
- o Light weight
- o Easy maintenance
- o SAFI products are approved by TOTAL

References

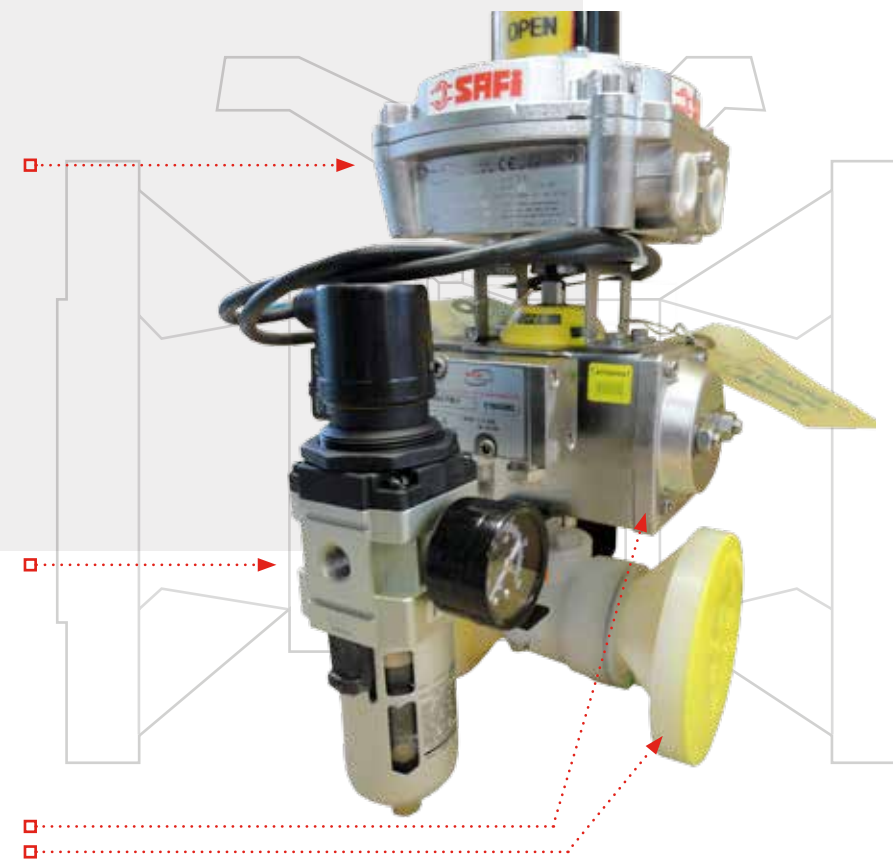
TOTAL, SHELL
PETRONAS, AGIP, ENI

Oil & Gas & Refineries

GRPP PVDF PPH U-PVC C-PVC ATEX



PRODUCT FOCUS



PVDF ball valve pneumatic actuated SS316



Oil & Gas & Refineries

Applications of SAFI products

- Offshore platforms and on shore extractions**
 - Electrochlorination
 - Waste water, drinking water, demineralized water skids
 - Prevention of contamination of the marine environment
- Refineries**
 - Alkilation process
 - Dozing plants
 - Scrubbers
 - Treatment of effluents
- Utilities**
- Chemical injection skids**
- FPSO**
 - Sodium hypochlorite processing



FPSO (Sodium hypochlorite processing)



Electrochlorination

Why THERMOPLASTIC in marine ?

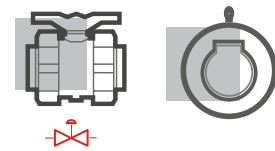
- o Excellent resistance to chemical products and salty environment
- o No external corrosion
- o Good resistance to abrasion
- o Light weight
- o Easy maintenance
- o Robust products
- o Attractive price compared to metal valves

References

SUNSEEKER, PRINCESS YACHT
RNLI, NAVY BOATS, HAMANN

Marine

GRPP PVDF PPH U-PVC C-PVC

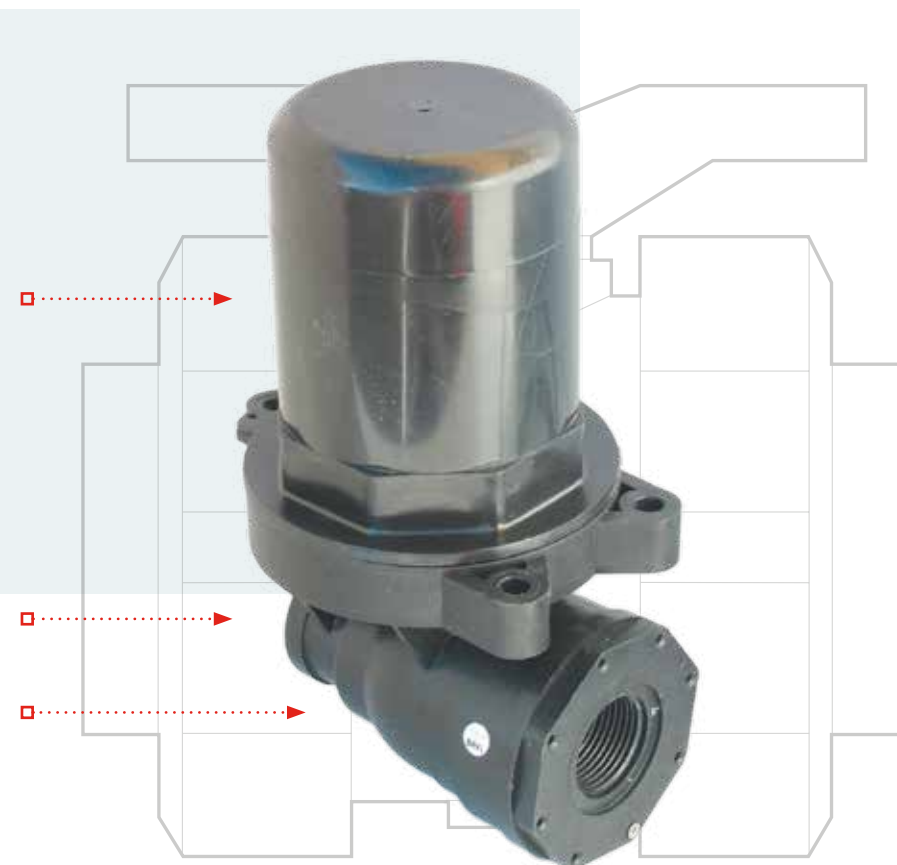


PRODUCT FOCUS

Actuated compact valve

Valve & actuator in same casing

1" compact ball valve in GRPP



Compact electrically actuated ball valve



Marine

Applications of SAFI products

Fresh water
Engine cooling system with sea water
Bilge water system
Black & grey water systems (waste water systems from showers, sinks)
Desalinization unit
Fuel system
Hydraulic oil system
Anti-freeze system
Air-conditioning unit



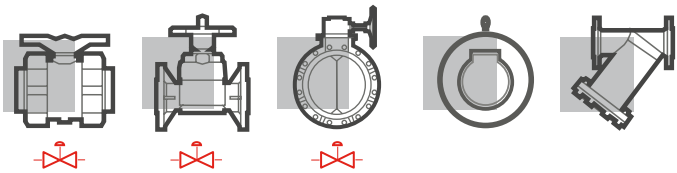
Bilge water system



Engine cooling system with sea water

Metal and lined metal valves replacement

GRPP PVDF PPH U-PVC C-PVC ATEX



Replacement of PTFE lined metal valves by thermoplastic valves

- o PTFE lined metal valves often get replaced by thermoplastic valves
- o PTFE cracks
- o PTFE is easily eroded through abrasion

Resistance to abrasion



TABER test :

Materials	Abrasive Disk	Weight Loss (mg/1000 rev.)
Solef ®PVDF homo-polymers	CS-10	5-10
	CS-17	7-10
PP (homopolymers)	CS-10	15-20
	CS-17	18-28
304 stainless steel	CS-10	50
PTFE	CS-10	500-1,000

Solvay document (SOLEF Design & processing guide ©, p23)



Replacement of rubber lined metal valves by thermoplastic valves

- o Rubber lined metal valves are replaced by plastic valves
- o Rubber gets eroded
- o No external corrosion protection



Metal and lined metal valves replacement



Metal & diaphragm valves replacement

GRPP PVDF PPH U-PVC C-PVC ATEX



>>> BUILT TO LAST ...

Replacement of diaphragm valves by ball valves

- o Diaphragm valves (regulation valves) are often used for on/off applications and are replaced by ball valves which close faster and last longer.
- o Diaphragm valves need regular maintenance
- o Diaphragms break (PTFE)



Replacement of metal valves by thermoplastic valves

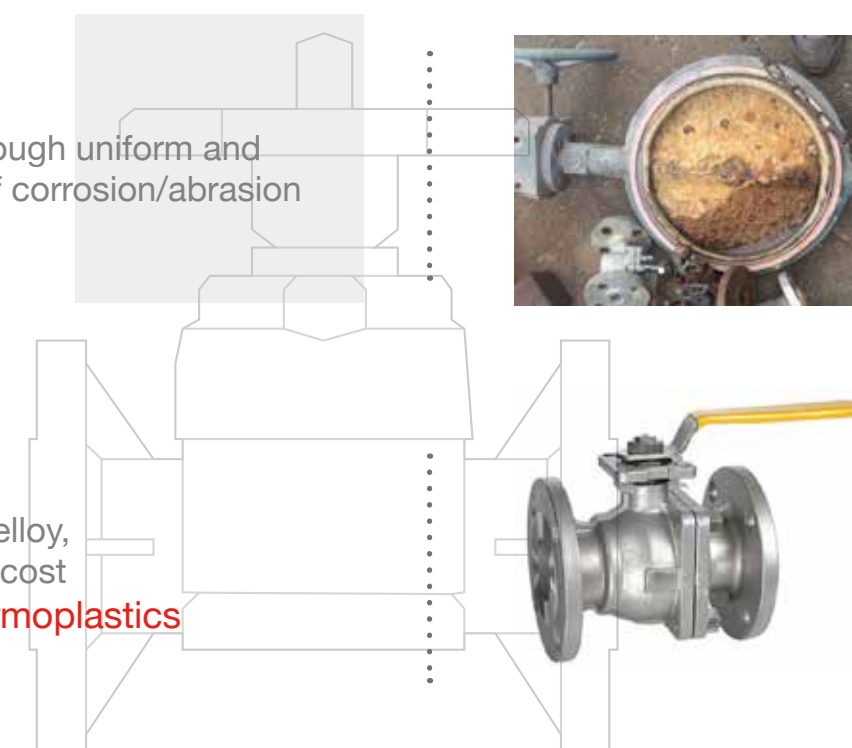
- o Metal valves **are replaced** by plastic valves when pressure and temperature are right



- o Corrosion of metal through uniform and attack and other forms of corrosion/abrasion



- o Some metals, like hastelloy, do not corrode easily but cost **10 times more than thermoplastics**





The advantages of THERMOPLASTIC valves :

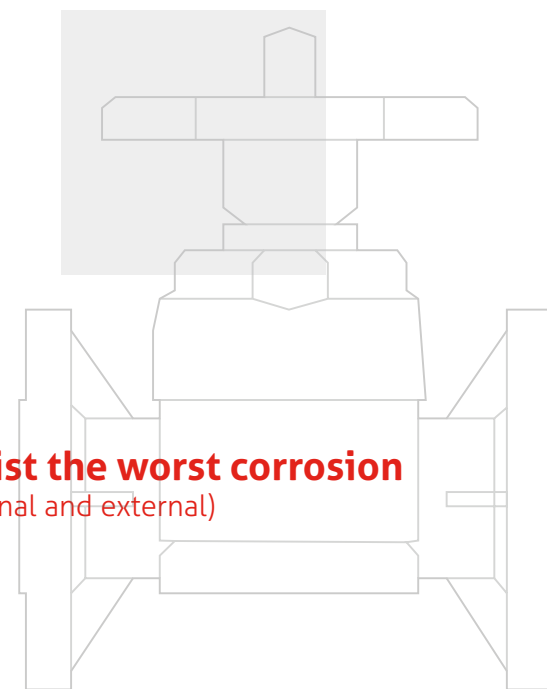


GRPP valve



PPH valve

Resist the worst corrosion
(internal and external)



RESULT : highly reliable & secure product

Material advantages

Metal

Thermoplastic

Client advantages

PTFE Lined metal valves X 100 times less resistant to abrasion than PVDF



Hastelloy valves X 10 times more expensive than PPH valves



Metal valves at least X 5 times heavier than thermoplastic valves for the same DN



Reduces operational costs

Makes your budget go further

Reduces support and logistic costs. Critical in some applications (boats)

o High chemical and abrasive resistance



(H₂SO₄, HCl...)

o Long lasting



(+ 40 years old valve)

o UV resistant



(30 years old valve)

o Extremely mechanically resistant



(360 kg)



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