

GAS AUTHORITY OF INDIA LTD.

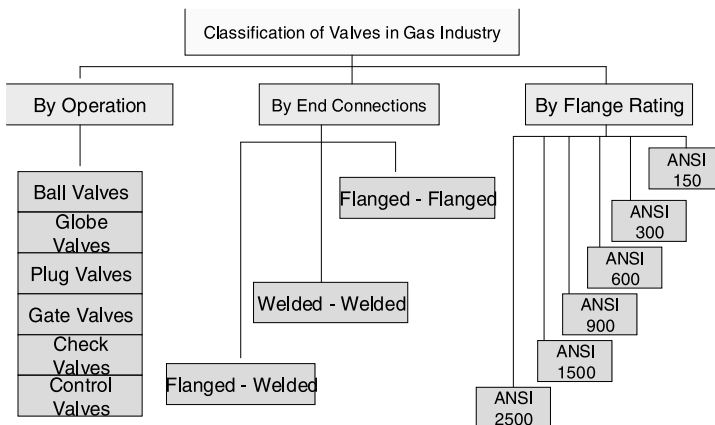
“Users Industry Perspective” IN GAS SECTOR

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AREAS OF VALVE USAGE IN GAS SECTOR

- **DESPATCH & RECEIVING TERMINALS**
 - SOURCE AND AT EACH CONSUMER PREMISES
- **SECTIONALISING VALVE STATIONS**
 - LOCATED 8 KM TO 32 KM AND ACROSS MAJOR RIVERS FOR ISOLATION IN EMERGENCY.
- **INTERMEDIATE PIGGING STATIONS**
 - LOCATED 80-120 KMS APART FOR PIGGING OPERATION.
- **COMPRESSOR STATIONS**
 - DEPENDING ON PIPELINE HYDRAULICS
- **PROCESS PLANTS**
 - LPG PLANTS
 - PETROCHEMICAL PLANTS

CLASSIFICATION OF VALVES



TYPES OF VALVES USED IN GAS SECTOR

Type	Standard Code	Area Of Usage
Ball Valves	API 6D	Transmission Lines
	ANSI B16.10	Bypass Lines
	ANSI B16.34	Terminals
Plug Valves	API 6D	Bypass Lines
	ANSI B16.10	Vent Lines
	ANSI B16.34	Pig Launching Pig Receiving Receiving Terminals
Globe Valves	API 600	Bypass Lines
	ANSI B16.10	Vent Lines
	ANSI B16.34	Pig Launching Pig Receiving Receiving Terminals
Check Valves	API 6D	Receiving Terminals
	API 600	Metering Stations
	ANSI B16.10	
Pressure Safety Valves	ASME VIII-I	Receiving Terminals
	API RP 520	Regulating Stations
	API 526	

TYPICAL USAGE OF VALVES IN A 30” CROSS COUNTRY PIPELINE PROJECT

- **LENGTH OF PIPELINE: 600 KM**
- **NO. OF SV STATIONS: 27**
- **NO. OF IP STATIONS: 6**
- **TOTAL NO. OF VALVES: 375**
- **NO. OF BALL VALVES 4 to 30” : 236**
- **NO. OF GLOBE VALVES 4 to 10” : 124**
- **NO. OF PLUG VALVES 8 to 18” : 11**

- **NO. OF CHECK VALVES 4 to 18" : 4**

GAIL'S EXPANSION PLAN

- CAPACITY AUGMENTATION OF DAHEJ-VIJAIPUR PIPELINE (DVPL) AND VIJAIPUR –DADRI PIPELINE (GREP)
- LAYING OF DADRI- BAWANA- NANGAL PIPELINE
- LAYING OF CHAINSA-GURGAON-JHAJJAR-HISSAR PIPELINE
- LAYING OF JAGDISHPUR- HALDIA PIPELINE
- LAYING OF KAKINADA –HALDIA PIPELINE
- LAYING OF KOCHI- KANJIRKKOD – MANGALORE PIPELINE
- LAYING OF DABHOL- BANGALORE PIPELINE
- LAYING OF KOCHI – KAYAMKULAM PIPELINE

PIPELINE NETWORK ADDITON: FROM 6800 TO 13500 KM

CAPACITY AUGMENTATION: 148 TO 300 MMSCMD

DETAILS OF PROPOSED PIPELINES

S.No	Pipeline	Approx.	Diameter
		Length (Kms.)	Trunk line
1.	Dahej – Vijapur Pipeline	610	48"
2	Chainsa - Jhajjar - Hissar	205	36" / 20"
3	Dadri - Bawana - Nangal	335	36" / 30"
4	Dabhol - Bangalore	730	30"
5	Jagdishpur - Haldia	800	36"
6	Kochi - Kanjirrkod - Mangalore - Bangalore	862	24"

Conclusions...

- DUE TO EXPANSION, GAIL ENVISAGES GREAT OPPURTUNITY TO VALVE MANUFACTURERS
- IMPROVE TECHNOLOGY TO MATCH WITH THE DESIRED SPECIFICATIONS OF GAIL

Tata Power, Mundra Divn. Kutch Dist. Gujarat

Users' Industry Perspectives & Expectations from the valve industry

Mr Raj Kumar Singh, Head Engineering

Various Critical Valves of the project

- Control Valves: Critical & Normal Services
- HP LP Bypass Valves
- Quick Closing Non Return Valves
- Butterfly Valves
- Group Heater By Pass Valves
- Motorised On Off Valves

A few options / alternatives considered for - Valves

Material – P 91 Material or better

Severity – Angle / Globe design alternatives to take care of cavitations

Controllability – In body spray or separate attemperator for Desuperheaters

Motive force - Pneumatic / Electric / Hydraulic / Media Operated

Positioners – SMART / HART

Fail Safe conditions – End positions / Stay put ; achieved by positioners / solenoid valves / springs

Accessories - Air volume tanks for fail safe conditions

Operations - Remote operation with hand wheel option & interlock considerations

Control Valves: Critical Services

Feed Water & Steam circuit

- Feed Water (Low Load & Full Load)
- BFP Re-circulation
- Aux Pressure Reducing from Main & Cold Re-heat Steam
- Aux Steam De-Super heaters Temperature Control

Control Valves: Critical Services (Boiler)

- Separator level
- BRP Recirculation
- Super heat temperature
- Re-heat temperature
- Soot blower pressure

Control Valves: Normal Services

- Deaerator level & pegging steam
- HP Heaters' (6-7-8) level & emergency drain
- LP Heaters' (2-3-4) level & emergency drain
- Flash Tank temperature
- TG Auxiliaries (Lube Oil, EHC Oil & H2 Temperature)

HP LP Bypass Valves

Application	Sizing
HP By pass	60% capacity 2 x 30% valves
LP By pass	100% capacity 4 x 25% valves

Quick Closing NRVs

Application	Option
Extraction Steam Line	Single or dual
NRVs for turbine protection against water induction	Forced close or natural swing Pneumatic / Hydraulic

Butterfly Valves

Application	Variants
Extraction Steam Line	2200 mm / 2800 mm
NRVs for turbine protection against water induction	Electrically / Hydraulically operated

H P C L MUMBAI REFINERY

Control Valves Maintenance Challenges

A.Rathish
Sr. Manager Inst.

1. VALVES IN SERVICE

- ▶ Number of valves : 2400
- ▶ Control/on-off : 1600/800
- ▶ Sizes from ½ to 20 inch
- ▶ Globe(70%),Ball(25%),Others(5%)
- ▶ Control valves : IL,MIL,Continental,Neles, Valtek, Fisher,Forbes Marshall,Dresser.
- ▶ On-off ball valves : Elomatic,Tyco,Virgo

2. VALVES & APPLICATIONS

- ▶ Level,flow,pressure,temperature controls
- ▶ Furnaces,boilers,compressor controls
- ▶ On-off valves for ESD systems, adsorption-regeneration sequences of PSA,DM,PDU,SRU plants
- ▶ Liquid service: HC,water,chemicals,...
- ▶ Gas service :HC,steam,air...
- ▶ High Pr(80 kg/cm²) and Temp(400 oC) applications

3. MAINTENANCE CHALLENGES

- ▶ First level maintenance
- ▶ Standardisation
- ▶ Spares management

- ▶ Outsourcing of repairs
- ▶ Technology obsolescence
- ▶ Integration/upgradation with state of the art technologies like fieldbus
- ▶ Decision to repair/replace

4. EXPECTATIONS

- ▶ Local full fledged service centers
- ▶ Annual contracts for maintenance
- ▶ Exstock availability of spares
- ▶ Shutdown maintenance services at refinery premises
- ▶ Training programmes

*We invite Technical
Articles from
Consultants,
Professionals &
Manufacturers for
publication in Valves
India.*

MAZAGON DOCK LIMITED

Requirement of Valves Shipbuilders' Perspective

Presentation by

S M Jayavant

General Manager (Commercial-Naval Project)

REQUIREMENT OF VALVES ON NAVAL SHIPS

Naval Vessel has following Fluid Systems:

* Valves with fire safe requirement

+ Valves to be shock tested to NSS Gr I or II

MATERIAL SPECIFICATIONS:

• NAB : As per NES 747 Part-2 Class I

ii) GM : As per BS 1400 LG 4C

TYPES OF VALVES USED ON A NAVAL SHIP

Sr. No.	System	Press Kg/Cm ²	Fluid	MOC of Body	MOC of Disc/Trim Spindle
1.	Sea Water Cooling	3	SW	NAB	NAB
2.	Fire Main	8	SW	NAB	NAB
3.	Salvage System	2	SW	GM	NAB
4.	Lub Oil Post Purification	5	LO	GM	NAB
5.	Lub Oil Pre-purification	5	LO	GM	NAB
6.	Fresh Water	5	Fresh Water		GM NAB
7.	FO Transfer Pre-Coalescer	5	Diesel	C St	SS 316*
8.	FO Transfer after Coalescer	5	Diesel	GM	NAB
9.	AVCAT (Aviation Fuel)	5	Aviation Fuel		GM NAB
10.	Air Escape	1	Vent Air	GM	NAB
11.	Bilge	3	Bilge	GM	NAB
12.	Hull Valves (SDSL / SDNR / Butterfly / Storm / Gate Valve) +	8	SW	NAB	NAB +
13.	Detergent for GT Wash	5	Detergent		GM NAB
14.	Vacuum Sanitation / Sewage Treatment	0.6	Grey water/ Sewage		SS SS

1. BALL VALVES
2. BUTTERFLY VALVES
3. PLUG VALVES
4. NON-RETURN PLUG VALVES
5. FLAP TYPE NON-RETURN CHECK VALVES
6. SDSL VALVES (SCREW DOWN SCREW LIFT)
7. SDNR VALVES (SCREW DOWN NON-RETURN)
8. HYDRANT VALVES
9. FOOT VALVES WITH STRAINERS
10. AUTO DRAIN VALVES

11. GATE VALVES

12. DIAPHRAGM VALVES

SPECIAL FEATURE

TYPICAL REQUIREMENT OF VALVES IN A NAVAL SHIP

(A) HULL VALVES (NAB)

Type	Qty. (Nos.)	Size Range (NB)
SDSL	40	100-200
SDNR	85	25-200
GATE	25	50-200
STORM	35	50-100
BUTTERFLY	28	80-350
BALL	17	20-50
TOTAL	230	

(B) LINE VALVES

Type	Matl	Qty. (Nos.)	Size Range (NB)
Butterfly Valve	GM	100	100-200
Ball Valve	NAB	80	100-200
	GM	450	10-100
	NAB	100	15-80
SDNR	GM	20	10-65
SDSL	GM	220	10-100
PLUG VALVES	GM	450	6-80
NR STOP / PLUG Valves	GM	215	10-150
N.R. Flap Valve	NAB	55	40-175
	GM	70	15-200
	NAB	10	50-150
Diaphragm Valve	GM	100	6-100
	NAB	30	25-80
Pressure Reducing Valve	GM	5	50
	NAB	10	50-125
Pressure Relief Valve	GM	5	50
	NAB	10	32-150
Fire Safe Ball Valve	CS	60	32-50
Fire Safe Butterfly Valves	CS	70	100-200
TOTAL – 2060 Nos.	GM	1635	
	NAB	295	
	CS	130	

TYPE TESTING REQUIREMENT OF VALVES

Sr. No.	Type of Valve	Life Cycle Test	Noise & Vibration	Cv 2 (Pr.Drop)	x Rated Pr. Test of
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Valve

1. Ball Valve	Ö	Ö	Ö	Ö
2. Butterfly Valve	Ö	Ö	Ö	Ö
3. Plug Valve	Ö	Ö	Ö	Ö
4. NR Plug Valve	Ö	Ö	Ö	Ö
5. Flap Type NR	Ö	Ö	Ö	Ö
6. SDSL	Ö	Ö	Ö	Ö
7. SDNR	Ö	Ö	Ö	Ö
8. Hydrant	Ö	Ö	Ö	Ö
9. Foot Valve with Strainer	Ö	Ö	Ö	Ö
10. Auto Drain Valve	Ö	Ö	Ö	Ö
11. Gate Valve	Ö	Ö	Ö	Ö
12. Diaphragm Valve	Ö	Ö	Ö	Ö

Life Cycle Test : For 10,000 Cycles

Vibration & Noise : As per MIL STD 740 2

Measurement Test

Shock Test : For Hull Valves & Actuated Valves as per NSS Gr I or II

Inspection Agency : IRS/ABSIV

VALVE REQUIREMENT IN MERCHANT SHIPS

Types of Valve : Ball
Plug
NR Flap Valve
Butterfly Valves (Wafer Type)
Globe Valves (SDSL / SDNR)

MDL : Hull : C. Iron / C. Steel

LINE: GM / CI

Working Pressure : PN 10 (10 BAR)

Hull : 50-300 NB

Line : 25-450 NB

Qty. / Vessel : @ 300-350 Total

Testing : Hydro Test. No special test requirement

Hull : Valves are to be approved by Classification Society

SPECIAL FEATURE

MDL'S PRESENT VALVES SUPPLIERS

Sr.	INDIGENOUS	OVERSEAS
No.		
1.	M/s. Leader Valves, Jalandhar	M/s. Econosto, Dubai
2.	M/s. Govardhan Das P.A., Kolkata	M/s. Brookes Bank Valves, U.K.
3.	M/s. Saxena Marine Tech, Ghaziabad	M/s. Broady Valves, U.K.

4. M/s. Malhar Valves, Mumbai
5. M/s. Forward Alloys, Mumbai
6. M/s. Propel Valves, Chennai
7. M/s. VKE Valves, Mumbai
8. M/s. L&T (Audco), Chennai
9. M/s. Technocrats, Delhi
10. M/s. Fouress Engg, Bangalore

Company Profile

Oswal Industries Ltd.

We take pleasure in introducing **Oswal Group** as a leading manufacturer of **Ball, Gate, Globe & Check Valves** from **India**. *We are specialized for offering fastest delivery & most competitive prices for Stainless Steel, Duplex, Super Duplex & Nickel Based Alloys (Exotic) Grade Castings & Valves.*

Oswal Valves, which has India's largest manufacturing base of over **120,000 square metres** for Valves along with additional & fully equipped facilities for **fittings, fasteners & castings, etc** & servicing the Oil & Gas, Petrochemicals & Refineries, Power and other sectors Globally for last 3 decades.

Apart from having obtained **ISO 9001-2000, CE (PED), AD 2000 WO, API 6D Certification, Fire Safe, TA-LUFT & Cryogenic Test Approvals**, **Oswal Valves** range of products conform to international Standards such as **API, ASTM, ANSI, DIN, BS, NACE & MSS**. The company has adopted a **Total Quality Management** approach to its various processes & has implemented **MICROSOFT ERP** system for faster & efficient management.

Our In house **Laboratory** is supported with **Spectrometer, UTM, Impact Testing, Pyrometer, Hardness Testing, Micro Structural Analyser, Ultrasonic, Magnetic Particle Inspection, Dye Penetration, Radiography and Pressure Testing facilities, PMI, etc.**

This is over and above supplies to **Fortune 500** Company like **Indian Oil Corporation**, and other Indian giants like **ONGC, HPCL, BPCL, RELIANCE GROUP, ESSAR, BORL, CPCL, KRL, MRPL, GAIL, GSPC-GSPL, NIKO Resources, CAIRN Energy, BHEL, THERMAX, GSEB, etc.**

One major advantage that Oswal Valves enjoys over other valve manufacturers is their dedicated Steel Foundry which manufactures a large range of Carbon steel, Stainless Steel, Alloy Steel, Duplex Stainless Steel and Precipitating Hardening Alloy Castings according to international quality standards. For example, all our castings conform to NACE MR 0175 by default. Castings are also supplied to other valve manufacturers globally.

Both our Valve and Foundry Units have obtained approvals from various leading internationally recognized inspection authorities

and EPC contractors namely:

- **Petroleum Development of Oman—Oman**
- **SABIC—Saudi Arabia**
- **TAKREER—U.A.E**
- **Karachaganak Petroleum Operating Company — Kazakhstan**
- **Ramunia Fabricators—Malaysia**
- **Saipem-Snamprogetti—Italy**
- **Bechtel—Global**
- **Fluor—Global**
- **Foster Wheeler**
- **Chiyoda**
- **Aker Kvaerner—Global**
- **Engineers India Ltd**
- **Jacobs H&G**
- **Toyo Engineering Company**
- **Samsung Engineering Company**
- **Technip**
 - **Punj Lloyd • UHDE • Linde**

Our Product ranges from **1/2" - 48"** and pressure rating **#150 to #2500**. Additionally, based on **Oswal's** Engineering strengths, we can also manufacture valves & fittings as per customer requirements and specifications.

We would therefore urge you to consider us as a potential vendor for:

Range of Valves:

Gate Valves, Globe Valves, Swing Check Valves, API 6D Trunnion Mounted Ball Valves, Pressure Seal Valves (900, 1500 & 2500#), Cryogenic Valves (upto -196°C), Valves for Fugitive Emission, Valves for Oxygen Service

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