

bala wa-100/541/55 INERT GAS FIRE SUPPRESSION SYSTEM

1. INTRODUCTION :

The importance of erection, testing and commissioning are overlooked in many projects while installing and fixing Inert Gas Fire Suppression System. It is a very common practice to fabricate the Inert Gas Fire Suppression System including the manifold at site.

It is very difficult to ensure the proper integration of entire cylinder bank assembly which involves very high pressure and critical instrumentation such as solenoid connection, pneumatic actuation to ensure proper functioning of the entire system .

bala-wa 100/541/55 Inert Gas Fire Suppression

High Pressure fixed installation clean agent inert gas cylinder banks are fully pre-assembled, integrated & tested for its proper operation at the factory itself. Customers and consultants may strongly recommend to use pre-assembled & tested **bala-wa 100/541/55** cylinder bank assembly.

2. ENVIRONMENTAL FACTS :

bala-wa 100/541/55 Inert Gas Fire Suppression System

has Zero Ozone Depletion Potential(ODP) and zero Global Warming Potential(GWP) .

bala-wa 100 Inert Gas Fire Suppression System uses IG 100(Nitrogen gas) which is a chemically inert gas . It Constitutes the major part of the atmospheric gases (Nitrogen constitutes 78% of the atmospheric gases)

bala-wa 541 Inert Gas Fire Suppression System uses three of the most commonly occurring natural gases of the atmosphere i.e., Nitrogen , Argon and Carbon Dioxide in the ratio 5:4:1 respectively .

bala-wa 55 Inert Gas Fire Suppression System uses a mixture of 50% Argon & 50% Nitrogen gas mixture for inerting.

IG 100,IG 541 and IG 55 are powerful and efficient fire suppressing agents and are often termed as Clean Agents due to its zero Global Warming Potential (GWP) and zero Ozone Depletion Potential (ODP) .

IG 100 , IG 541 and IG 55 cause no threats to the environment unlike other Fire Extinguishing agents like halon 1011 , halon 1211 , halon 1301, etc.,

3. SYSTEM DESCRIPTION :

bala-wa 100/541/55 Inert Gas Fire Suppression Systems

are usually designed based on the type, Size and surrounding of hazard to be protected (i.e .,open/semi-open). Fire Suppression Systems work by displacing the oxygen within the risk area to a point where it will not support the combustion, but still high enough to support life.

3.1 DESIGN BASIS :

Total flooding with Inert gas (IG 100 / IG 541/IG 55) is a method of fire extinguishing where entire enclosed protected area is flooded. The discharged gas released into the protected area will displace the oxygen content.

Total flooding extinguishing depends upon filling an enclosure with a predetermined concentration of IG 100 / IG 541/IG 55 and maintaining that concentration as long as possible. It is therefore important that leakage of IG 100 / IG 541/ IG 55 from the enclosure is kept to a minimum, however calculations can be made to compensate for IG 100 / IG 541/IG 55 losses through openings. However, a pressure relief vent must be provided for safety of the protected area from over pressure.

3.2 WHY BALA-WA INERT ?

We use pressure regulator with each inert valve, which reduce the maintenance risk of high pressure header, hose, NRV etc.,

Ensure constant gas flow at 60 bar pressure.

Others may use pressure reducer in manifold to reduce cost, but maintenance cost will be very high because of high pressure especially 200 & 300 bar system.

bala wa-100/541/55 INERT GAS FIRE SUPPRESSION SYSTEM

Factory Assembled
Vds Approved
System Design & Components



Sl.No.	PART NO.	DESCRIPTION
1	BIH048-80-NET	High pressure seamless cylinder
2	BIH004/2-NET-PR	Valve With Pressure Gauge & Pressure Regulator
3	BIH001/4-NET-PS-PR	Master Valve With Pressure Gauge and Switch & Pressure Regulator
4	BIH020-NET	Discharge Hose
5	BIH022-NET	Actuation Hose
6	IH019-NET	Non Return Valve
7	IH038-80-19 D	19 Cylinder Frame Assembly With Header

Part No.	:	IH 706 Series...
Model No.	:	A / B / C / D / E
Example:		
Part No	:	IH 706
Model No	:	80 / 03 / SR / 200
IH 706	:	balawa-541 Inert gas cylinder bank assembly using pilot and slave cylinder principle using 80ltr W/C Inert cylinder with 200 bar pressure
balawa-541 IG541	:	Brand Name
	:	Technical name –
		52% Nitrogen
		40% Argon
		8% Carbon Di-Oxide
A -		Water Capacity of Cylinder (50 / 67 / 80ltrs)
B -		Number of Cylinder (2, 3, ... XXX)
C -		SR for Single row and DR for Dual row
D -		Filling Pressure (150 / 200 / 300 bar)
E -		Number of Directional Valves (2DV, 3DV.. XX DV)

Part No.	:	IH 702 Series...
Model No.	:	A / B / C / D / E
Example:		
Part No	:	IH 702
Model No	:	80 / 03 / SR / 200
IH 702	:	balawa 100 Inert Gas Cylinder Bank Assembly using Pilot and Slave Cylinders principle using 80ltr W/C Inert cylinder with 200 bar pressure
balawa-100 IG100	:	Brand Name
	:	Technical name – 100% Nitrogen
A -		Water Capacity of Cylinder (50 / 67 / 80ltrs)
B -		Number of Cylinder (2, 3, ... XXX)
C -		SR for Single row and DR for Dual row
D -		Filling Pressure (150 / 200 / 300 bar)
E -		Number of Directional Valves (2DV, 3DV.. XX DV)

Part No.	:	IH 709 Series...
Model No.	:	A / B / C / D / E
Example:		
Part No	:	IH 709
Model No	:	80 / 03 / SR / 200
IH 709	:	balawa 55 Inert Gas Cylinder Bank Assembly using Pilot and Slave Cylinders principle using 80ltr W/C Inert cylinder with 200 bar pressure
balawa-55 IG55	:	Brand Name
	:	Technical name –
		50% Nitrogen
		50% Argon
A -		Water Capacity of Cylinder (50 / 67 / 80ltrs)
B -		Number of Cylinder (2, 3, ... XXX)
C -		SR for Single row and DR for Dual row
D -		Filling Pressure (150 / 200 / 300 bar)
E -		Number of Directional Valves (2DV, 3DV.. XX DV)

bala wa-100/541/55 INERT GAS FIRE SUPPRESSION SYSTEM

3-2. OPERATION PHILOSOPHY:

The system can be operated by any one of the following method:

Automatic Detection & Automatic Extinguishing.

Manual Detection and Manual Discharge with push buttons through control panel.

Mechanical Manual Discharge by operating Manual discharge lever.

The system operates in any one of the following methods :

Automatic Detection & Automatic Extinguishing: On the receipt of fire signal from the detectors, the controls panel energizes the solenoid coil or electromagnetic actuators, hooter, flasher, etc., as per the built in logics.

Manual Detection & Manual Discharge through the Emergency Push Buttons: When the push buttons are pressed, the fire signal is given to the control panel which performs the operations such as energizing the solenoid, hooter, flasher, etc., as per the built in logics.

Mechanical Manual Discharge by operating Manual discharge Lever in the valve: The Levers can be pushed down to directly discharge the gas without any external power source.

4. STANDARDS FOLLOWED:

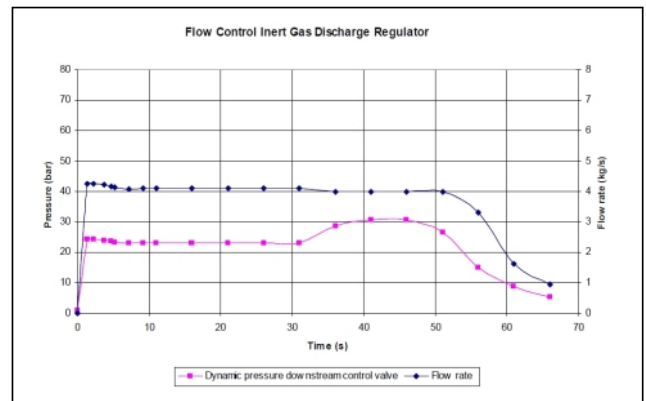
- ▶ National fire protection Associational (NFPA – 2001)
- ▶ Indian standard for IG 100 - IS 15525:2004
for IG 541 - IS 15501:2004 &
for IG 55 - IS 15506 : 2004

5. WHY INERT SYSTEM :

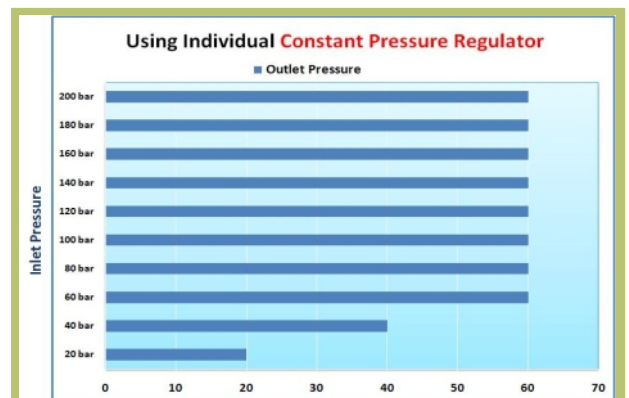
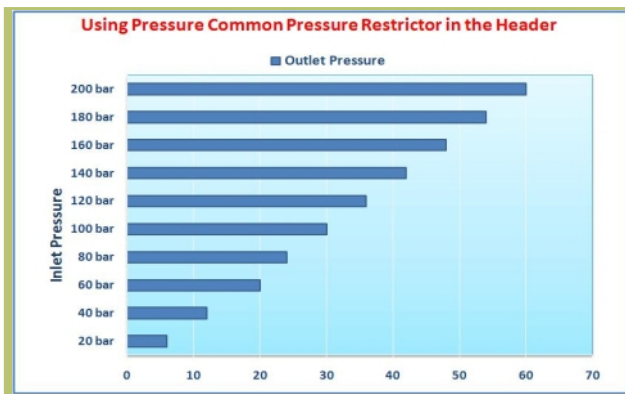
In continuous search of Halon alternative system, inert gas system finds more suitable place in replacing Halon system. Unlike other Halocarbon extinguishing system inert is not having any environmental effects.

Presently Inert gas system is available as 150Bar/200Bar/300Bar system. However our bala-wa series inert system uses special pressure regulator at the valve itself to discharge pressure only at 60 bar pressure.

FLOW RATE & PRESSURE OF CONSTANT PRESSURE REGULATOR



THE SYSTEM DESIGN IS VALIDATED USING VDS APPROVED SYSTEM DESIGN SOFTWARE



bala wa-100/541/55 INERT GAS FIRE SUPPRESSION SYSTEM

Ozone Depleting Potential	Global warming potential Vs.inert gas (100 yrs.)	Agent Breakdown to corrosive By-products
Co2	Zero	1
Halon 1301	X 16	3500
FM 200	zero	2900
Inert gas	zero	zero

Co2	Zero	1	none
Halon 1301	X 16	3500	HF
FM 200	zero	2900	HF X 7
Inert gas	zero	zero	none

6. RECOMMENDED FIRE RISK AREAS:

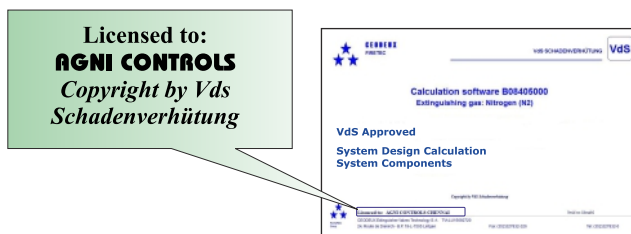
- Computer room, data processing equipment room
- Multi storey building, underground storage facilities, diesel power generator in under ground cellar, diesel engine driven fire pump room.
- Telecommunication center.
- Switch gear room, Control room.
- Gas turbines, Generators, Rotary equipment.
- Engine room, Engine test benches, Process liquid pumping area/ station, Indoor transformer.
- Archives and Museums.

7. HOW balawa-100/541/55 INERT GAS SYSTEM

DIFFERS FROM OTHERS:

- Fully fabricated, integrated and tested cylinder bank assembly at factory itself.
- **AGNI CONTROLS** directly procure cylinder and valve from manufacturer with all test certificates.

- **AGNI CONTROLS** use licensed Vds approved IG100/IG541/IG 55 calculation software.



- Unique feature of **bala-wa 100/541/55 Inert Gas Fire Suppression System** is that each valve is provided with specially designed constant pressure reducer. This feature enables the system to provide a constant discharge of 60 bar. This feature also ensures safe and efficient system with minimal maintenance.
- **AGNI CONTROLS**, as a manufacturer, all the parts of inert gas system are identified by PART number & CODE number which helps in quality assurance, spares supply & maintenance support.
- **AGNI CONTROLS** as a manufacturer, having and implementing well established installation procedures & commissioning procedures as per IS 15525: 2004, IS 15501:2004, IS15506:2004 standards and NFPA-2001.
- **AGNI CONTROLS** technical man-power strength, graduate engineers & diploma engineers exceeding 50 Nos. exclusively available for gas based fire suppression system.
- **AGNI CONTROLS** is ISO 9001:2015 certified company for manufacturing gas suppression system, and our QAP (Quality Assurance Plan) ensure proper quality of the system in all the stages.
- **AGNI CONTROLS** provide display of complete scheme, elaborately explaining the entire inert gas system operation.