

***Safety is the First & Most Important !  
Enjoy your work with PROSAVE Safety & Environment Protection Devices.***



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# Company Introduction

## ◆ Head Office & Factory I

- Land Area : 4,320 m<sup>2</sup>
- Factory Area : 2,934 m<sup>2</sup>
- Address : 115-22, Techno valley 1-ro,  
Jillye-myeon, Gimhae-si, Gyeongsangnam-do  
South Korea



# Company Introduction

## ◆ Factory II

- Land Area : 3,072 m<sup>2</sup>
- Factory Area : 900 m<sup>2</sup>
- Address : 1407, Daman-ri, Jillye-myeon, Gimhae-si, Gyeongsangnam-do South Korea



## ◆ Branch office

Department : Sales, R&D

Address : 20F-06 Centem SkyBiz  
Haundae-Gu, Busan, South Korea



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# History

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2024 : Obtained **NSF/ANSI/CAN 61 and 372 (Drinking Water System)** Certification for **CAV-D and KSBJ Valves**

IMI, IHI Corporation, vendor registration completed

Obtained **ISO 45001** Certificate

2023 : Awarded USD 5 Million export tower

2022 : Designated as an innovative product by the Ministry of SMEs and Startups – no leak air release Valve applicable under 100 kPa

Designated as an innovative product by the Ministry of Environment – High-speed response intelligent pr. reducing valve

2021 : Awarded Global small & Strong Enterprise by Ministry of SMEs and Startups

MMHE, ARAMCO ASIA Vendor registration completed

2020 : Awarded Star Enterprise from Gyeongsangnam-do

Awarded as “**Excellent Corporation R&D Center**” by Ministry of Science and ICT

Obtained **KC (for Water Supply)** Certification for **CAV-D and KSBJ and PRV Valves**

2019 : **SBM Offshore, KNPC, POSCO, PEMEX** vendor registration completed

2018 : Obtained Type Approval Certificates for Flameless Explosion Relief Valve for DF / Gas Engine(**DNV-GL, LR, KR**)

**KOC, SCHLUMBERGER, KAHRAMAA, HSHI, HMD** vendor registration completed

# History

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2017 : Moved to new site (Techno valley 1-ro, Jillye-myeon, Gimhae-si, Gyeongsangnam-do, Korea)  
TECHNIMONT, PTTEP vendor registration completed

2016 : DSME, TOYO ENGINEERING, HITACHI, DU(DISEL UNITED), PETRONAS vendor registration completed

2015 : TAKREER, MODEC Offshore, Technip FMC vendor registration completed  
Awarded USD 3 Million export tower

2014 : Obtained **ISO 14001** Certificate

2013 : Obtained **INNO-BIZ** Certificates and awarded USD One(1) Million Export tower

2012 : Obtained Type Approval Certificates for Smart High Velocity Pressure/Vacuum Relief Valve  
(**MED(CE), DNV, ABS, LR, BV, GL, RINA, KR, NK, CCS, RS**)

2011 : Obtained **ISO 9001** Certificate

Obtained Type Approval Certificates for Crankcase Explosion Relief Valves

(**MAN Diesel & Turbo, GL, DNV, BV, LR, ABS, RINA, KR, NK, CCS & RS**)

Obtained Patent of High Velocity Pressure/Vacuum Valves & Crankcase explosion relief valve

Established Institute of Technical Research & Development

HHI, DOOSAN, SHI, TORISHIMA PUMP, CTCI, STX, YMD, RMD, SAMSUNG C&T, DAELIM, BECHTEL, NIOEC, NIOC Vendor registration completed

2010 : **Established PROSAVE** to provide Safety valves for Diesel Engine, Power & Desalination and Off-shore Plants

# Products

## 1. Combination AIR RELEASE & VACUUM BREAKER VALVE



**Air Relief valve** is designed to release accumulated **Air Pockets** from the system in pressured pipelines of offshore, industrial Gas plants and fresh water plants.

**Air Pockets** cause increase of energy consumption because pumping operation will be at higher water heads to overcome pressured air.

**Air Relief valve** has function to protect high shock and **surge pressure, water hammer and liquid overflow** from fresh or sea water pipelines.

**Air Relief Valve** can assure low maintenance cost of pipelines and pump systems in advance.

### Major Advantages

- **Pressure & Vacuum relief function**
- **Anti-Surge & Anti-Shocks**
- **Surge and Water hammer Protection**
- **Liquid Overflow Protection**
- **Relief air pocket from pipeline**
- **Increasing pump efficiency**
- **Less system energy**
- **Maintenance free**



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# Reference



- \* ITEM : CAV-D-C-28
- \* PROJECT : GOSEONG HAI THERMAL POWER PLANT(UNIT 1&2) - 1040MW
- \* Contractor : SK ECO PLANT
- \* Customer : GOSEONG GREEN POWER  
(Korea South East Power Co., Ltd,  
SK ECO PLANT, SK Gas Consortium)



- \* ITEM : CAV-D-10&20
- \* PROJECT : BUK-PYEONG THERMOELECTRIC POWER PLANT
- \* Contractor : STX HEAVY INDUSTRY
- \* Customer: GS DEP

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# Reference



\* ITEM : CAV-D-8

\* PROJECT : MARAFIQ MED

\* Contractor : DOOSAN HAEVY INDUSTRY

\* Customer: MARAFIQ



\* ITEM : CAV-D-4

\* PROJECT : NEMBA STAGE 2 (SNX)

\* Contractor : DAEWOO SHIPBUILDING &  
MARINE ENGINEERING

\* Customer: CHEVRON

# Reference



- \* ITEM : ARL-4
- \* PROJECT : Shuaibah 3 IWP Project
- \* Contractor : DOOSAN HAEVY INDUSTRY
- \* Customer: Shuaibah Three Water Desalination



- \* ITEM : CAV-D-1
- \* PROJECT : Yanbu4 Project
- \* Contractor : DOOSAN HAEVY INDUSTRY
- \* Customer: Saudi local water desalination company

## 2. Vacuum Breaker Valve

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**Vacuum Breaker Valve** is designed and tested according to the **API 2000 code**

The latest technologies is applied to provide protection against positive or vacuum over pressure and it prevents air intake not to lose evaporation in **pipeline**.

### Major Advantages

- **Vacuum Protection**
- **Protection in Drainage Systems**
- **Keeping Other Liquids Flowing**

Vacuum Breaker Valve, spring loaded model, is designed to handle under pressure of minimum -150mmW.C and maximum -7000mmW.C

Body material are available of Aluminum, Carbon Steel, 304SS and 316SS with various trims to meet diverse customers requirement.

Sizes range from 25mm through to 600mm with ANSI 150 FF flanges as standard.  
(Different connections are available on request)

# Reference



- \* ITEM : VBAR-C-14
- \* PROJECT : GOSEONG HAI THERMAL  
POWER PLANT(UNIT 1&2) - 1040MW
- \* Contractor : SK ECO PLANT
- \* Customer : GOSEONG GREEN POWER  
(Korea South East Power Co., Ltd, SK ECO PLANT)



- \* ITEM : VBAR-6
- \* PROJECT : MAFUMEIRA SUL
- \* Contractor : DAEWOO SHIPBUILDING & MARINE ENGINEERING
- \* Customer: CHEVRON

# Reference



- \* ITEM : KSVB-4
- \* PROJECT : Shuaibah 3 IWP Project
- \* Contractor : DOOSAN HAEVY INDUSTRY
- \* Customer: Shuaibah Three Water Desalination



- \* ITEM : VA-AR-2 , VB-AR-6
- \* PROJECT : H588 WIND TURBIN INSTALLATION PLATFORM
- \* Contractor : MCQUAY MARINE
- \* Customer: YANTAI CIMC RAFFLES OFFSHORE

### 3. Surge Relief Valve (for Water works & Oil)



N2 Loaded Operating Type

The **SRV-N2-X** is installed in locations where rapid response performance is required to protect piping systems from sudden changes in flow and pressure, as well as surge caused by sudden pump shutdown.

It consists of a **main valve, solenoid valve, and N2 tank, all assembled and tested as a single unit, ready for field installation.**

Main Valve is closed tightly when normal operation is in state.

When excess pressure occurs in the piping system, the solenoid valve operates based on the surge **signal from the pressure transmitter**, and the main valve opens to protect against the surge.

**The total opening time is less than 100 milliseconds.**

#### Major Advantage

- **No Required Extra Electric, Pneumatic, Hydraulic Power**
- **Stand Alone & Gas Control Valve Type**
- **Adjustable Opening and Closing Time**
  - Open and close time are adjustable based on operation circumstance.
  - In particular, close to full opening time is less than 100 millisecond.
- **Accurate and Precise Pressure Control**
  - Pressure of main valve is controlled by precise pressure control through N2 supplying control.

### 3. Surge Relief Valve (for Water works)

SRV is installed in the bypass line to protect the piping system from the surge by sudden flow change and/or sudden pump stop.



Testing video



Solenoid Operating Type

**SRV-S-A/Y** consists of a main valve, solenoid valve and air set, which is assembled and tested as a unit and ready for field installation.

Main Valve is closed tightly when normal operation is in state.

When a exceeding pressure in piping system is come, surge command from pressure transmitter activates the solenoid valve and then main valve is opened to protect the surge.

In case of solenoid operating type, the full opening time is less than 200 millisecond.

\* Reference project: Buk-Pyeong thermoelectric power plant



Pilot Operating Type

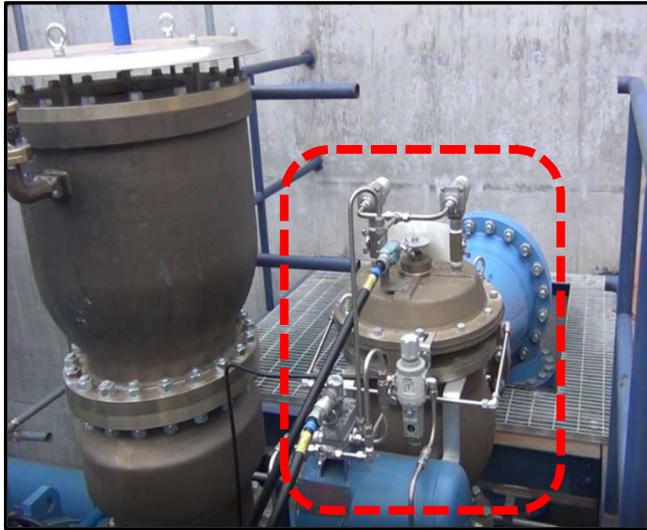
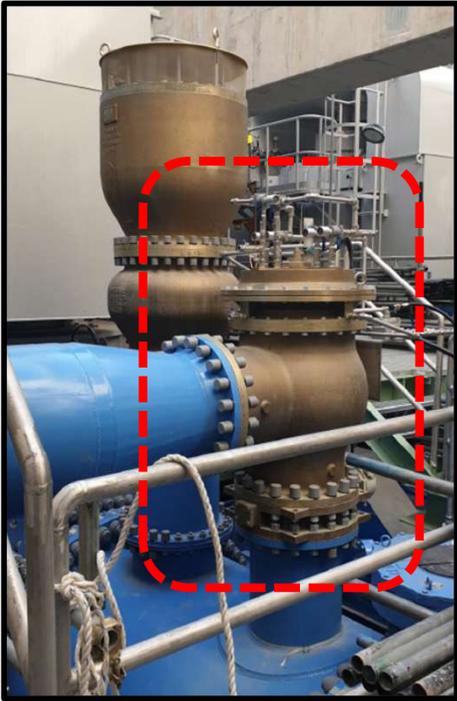
**SRV-P-A/Y** consists of a main valve, low and high pilot valve, and accessories, which is assembled and tested as a unit and ready for field installation.

Main Valve is closed tightly when normal operation is in state.

Main Valve is opened when low pilot valve detects the negative pressure in piping system to prevent the pipe pressure rise, and when the pilot valve of high pressure part detects the exceeding pressure in piping system in order to discharge pressure.

\* Reference project: Korea Rural community corporation(KRC)

# Reference



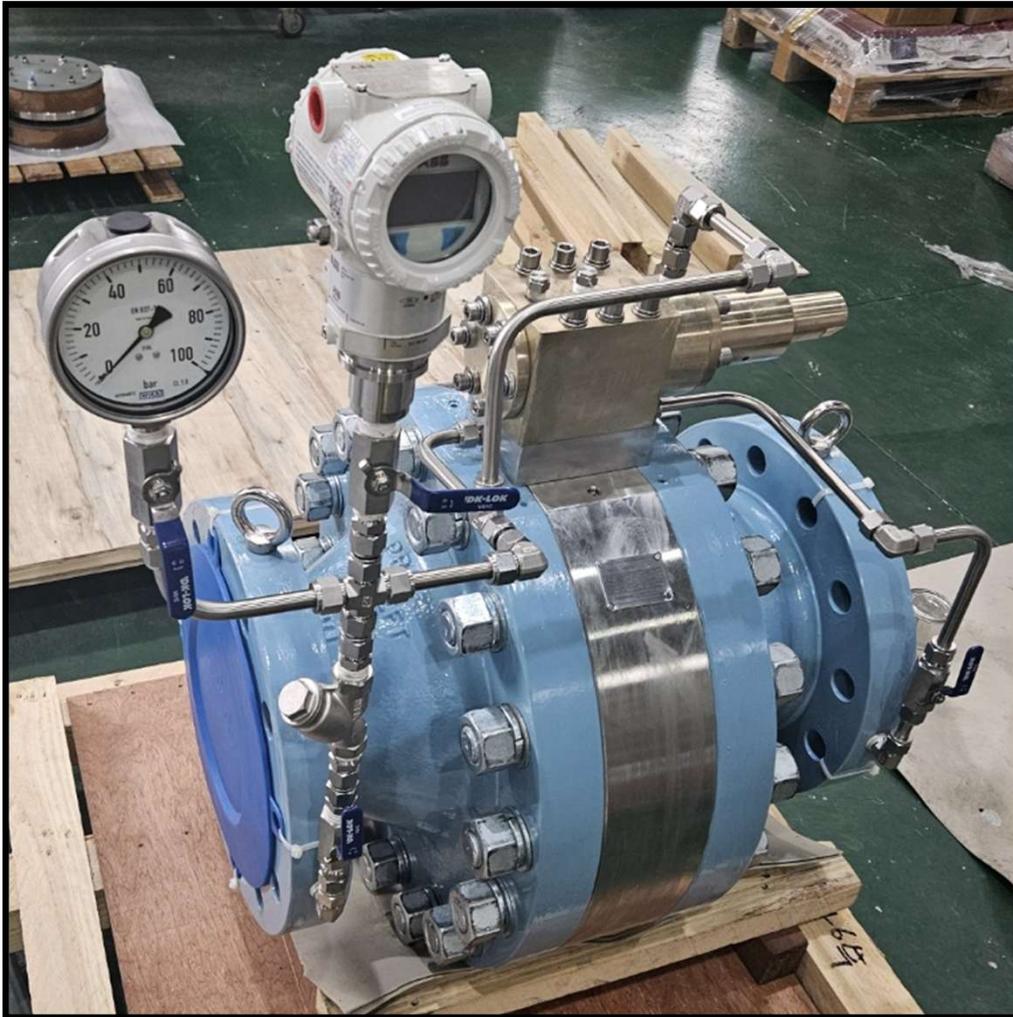
- \* ITEM : SRV-A-12 (Solenoid Operating Type)
- \* PROJECT : BUK-PYEONG THERMOELECTRIC POWER PLANT
- \* Contractor: STX HEAVY INDUSTRIES
- \* Customer : GS DEP



- \* ITEM : SRV-I-4 (Pilot Operating Type)
- \* PROJECT : DUKHAN PRODUCTION FACILITIES UPGRADE PHASE 1A
- \* Contractor : ROOTS ENERGY & ENGINEERING SERVICES WLL
- \* Customer : QATAR PETROLEUM

- \* ITEM : SRV-A-24 (Solenoid Operating Type)
- \* PROJECT : GOSEONG HAI THERMAL POWER PLANT(UNIT 1&2) - 1040MW
- \* Contractor : SK ECO PLANT
- \* Customer : GOSEONG GREEN POWER  
(Korea South East Power Co., Ltd, SK ECO PLANT)

# Reference



- ITEM : SRV-X-8 (AXIAL with Pilot TYPE)
- PROJECT  
PEKERJAAN EMERGENCY TAHAP-2 REVITALISASI  
JALUR PENERIMAAN ERDAMPAK KEBAKARAN  
DI INTEGRATED TERMINAL JAKARTA FT PLUMPANG
- Contractor : PT. KRANINDO PRIMA
- Customer : PERTAMINA PATRA NIAGA

## 4. Deluge Valve

DVGS is installed in deluge fire protection system. When the system is activated by a heat or smoke detection system, DVGS will release the water to all the sprinkler heads.

### Major Advantage

- **No Required Extra Electric, Pneumatic, Hydraulic Power - Hydraulically Operated Diaphragm Valve**
- **Quick Release**
- **No Flow Obstruction**
- **Invulnerability to Water Hammer**



\* ITEM : DVGS -A06&10

\* PROJECT : PEGAGA DEVELOPMENT PROJECT

\* Contractor : SAPURA ENERGY

\* Customer : MUBADALA PETROLEUM

# 5. Deflagration Flame Arrester



- EC-Type Examination Certificate
- Meet the latest international rule requirement of ISO 16852:2016 and API 2000 (7<sup>TH</sup>, 2014)
- Protection against explosion and deflagration flame
- High flow capacity and minimum pressure loss
- Available bi-directional flow and flame passage
- Available vertical and horizontal installation
- High performance chemical resistance material

Approved by **ATEX & IMO**

Deflagration type In-Line Flame Arrester for

Gas group IIA ( Petroleum ), IIB3 ( Chemical ), **IIC ( Hydrogen )**

## 6. Detonation Flame Arrester



- EC-Type Examination Certificate
- Meet the latest international rule requirement of ISO 16852:2016 and API 2000 (7<sup>TH</sup>, 2014)
- Protection against explosion and detonation flame
- High flow capacity and minimum pressure loss
- Available bi-directional flow and flame passage
- Available vertical and horizontal installation
- High performance chemical resistance material

Approved by **ATEX & IMO**

Detonation type In-Line Flame Arrester for

Gas group IIA ( Petroleum ), IIB3 ( Chemical ), **IIC ( Hydrogen )**

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# Reference



- \* ITEM : FA-8
- \* PROJECT : BADAMYAR LCP AND WH 4
- \* Contractor : HYUNDAI HEAVY INDUSTRY
- \* Customer: TOTAL



- \* ITEM : FE-2
- \* PROJECT : SABIYA II OCGT POWER PLANT
- \* Contractor : ALGHANIM
- \* Customer : Ministry of Electricity and Water  
KUWAIT



- \* ITEM : DFA-24
- \* PROJECT : FPSO GUANABARA MV31
- \* Contractor : MODEC
- \* Customer : PETROBRAS

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# Reference



- ITEM : DFA-24
- PROJECT : FPSO RAIA OA42
- Contractor : MODEC
- Customer : ENI (Italy)

# 7. Breather Valve



- Designed according to the API 2000 (7<sup>TH</sup>, 2014) standard
- Reliable operation reduces vapor losses
- Suitable and compact design ensures long-term maintenance free life cycle
- Full lifting and high flow capacity
- Meet API leak test requirement
- **No need inside maintenance**
- **Available outside inspection, cleaning and maintenance without disassembling**

BV type is weight-loaded type with minimum setting  $\pm 22$  mm W.C and maximum setting  $\pm 700$  mm W.C

BS type is spring-loaded type with minimum setting  $\pm 22$  mm W.C and maximum setting  $\pm 700$  mm W.C

## Major Advantages

- **Storage Tank Protection**
- **Evaporation Losses And Environmental protection**
- **Explosion And Vandalism Protection**
- **Stable Storage Of Fluids**

## 7. Breather Valve (Installed on By Pass Line)



• **By-Pass Line Breather Valve Type.**

- The in-line pressure/vacuum relief valve is an automatic pressure/vacuum valve, which operates through the vapor header.
- It relieves pressure and vacuum during loading, discharge, voyage and ballasting.
- The In-line pressure vacuum relief valve is a combined pressure/vacuum relief system, and it is designed for marine tankers and chemical tankers.
- The In-line pressure vacuum relief valve is designed and constructed to comply with IMO MSC/cirs 677.
- Usually the materials are available in Carbon Steel, Stainless Steel grade 304, 316 and 316L to suit individual requirements.

### Major Advantages

- **Reliable operations reduces vapor losses**
- **Suitable and compact design ensures long-term maintenance free life cycle**
- **ISO 15364:2021 leak test requirement**
- **Available outside inspection, cleaning and maintenance without disassembling**

## 7. Breather Valve (Installed on FPSO)



- **Cago Tank Breather Valve Type.**  
Installed on FPSO.

- The in-line pressure/vacuum relief valve is an automatic pressure/vacuum valve, which operates through the vapor header.
- It relieves pressure and vacuum during loading, discharge, voyage and ballasting.
- The In-line pressure vacuum relief valve is a combined pressure/vacuum relief system, and it is designed for marine tankers and chemical tankers.
- The In-line pressure vacuum relief valve is designed and constructed to comply with IMO MSC/cirs 677.
- Usually the materials are available in Carbon Steel, Stainless Steel grade 304, 316 and 316L to suit individual requirements.

### Major Advantages

- **Reliable operations reduces vapor losses**
- **Suitable and compact design ensures long-term maintenance free life cycle**
- **ISO 15364:2021 leak test requirement**
- **Available outside inspection, cleaning and maintenance without disassembling**

# Reference



\* ITEM : BVA-18

\* PROJECT : FSO Cidade de Macaé MV15(H149)

\* Contractor : MODEC

\* Customer : Petróleo Brasileiro S.A. (Petrobras)

\* ITEM : BVA-10 , BVA-14 , BVA-20

\* PROJECT : UARU FPSO Project

\* Contractor : MODEC

\* Customer : MODEC

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# Reference



\* ITEM : BVFA-12

\* PROJECT : SABIYA CCGT3 #54

\* Contractor : ALGHANIM INTERNATIONAL

\* Customer : MEW



\* ITEM : BV-3

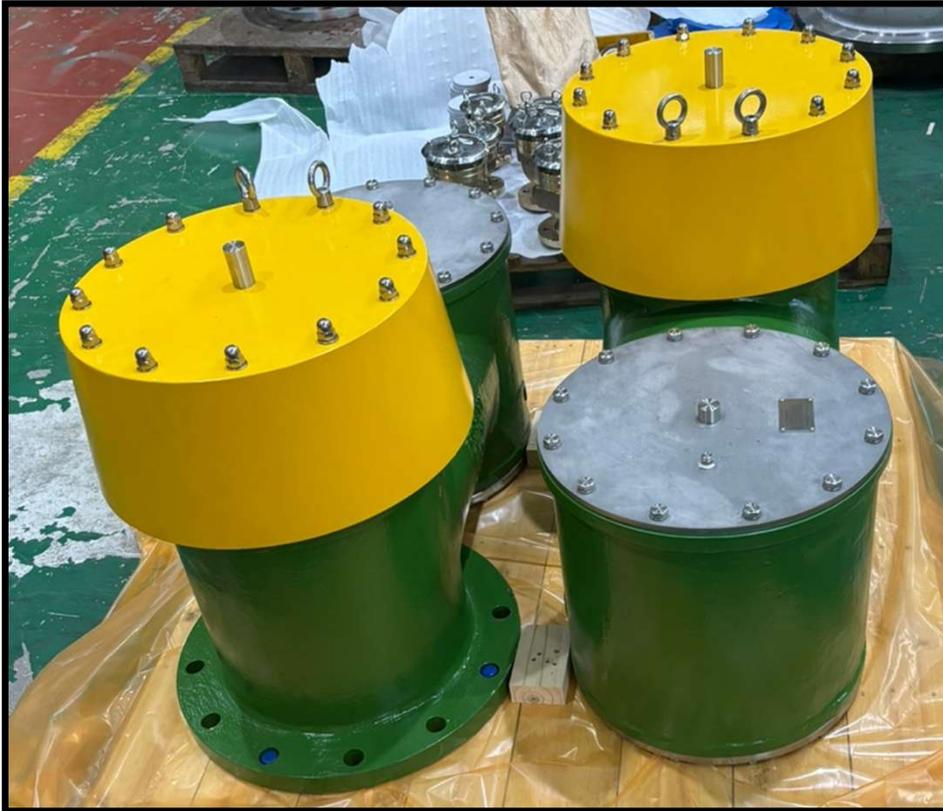
\* PROJECT : SOUTH PARS PHASE 12

\* Contractor : PETRO PARS

\* Customer : POGC

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# Reference



\* ITEM : BV-14

\* PROJECT : JAFURAH COGENERATION PLANT

\* Contractor : DOOSAN ENERBILITY

\* Customer : JAFUTAH GAS FILED



\* ITEM : BP-6 , BP-8

\* PROJECT : IGD EXPANSION PHASE II PROJECT

\* Contractor : SAP&KAPS PETROLEUM

\* Customer : ADNOC

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## 8. Breather Valve with Flame Arrester



- **Flame arrester Combined with Model BVF** pressure vacuum relief valve  
Manufactured and tested according to API 2000 / ISO 16852:2016 standard
- The **BVF** model is employed to alleviate **overpressurized vacuums**.
- In the event of external ignition, the flame arrester prevents flame transmission from entering the piping systems and tanks.
- The **BVF** type is weight-loaded type with minimum setting  $\pm 22$  mm W.C and maximum setting  $\pm 700$  mm W.C.
- Usually the materials are available in **Aluminum, Carbon Steel, Stainless Steel grade 304,316 and 316L** to suit individual requirements.

### Major Advantages

- **Designed according to the API 2000 standard.**
- **Suitable and compact design ensures long-term maintenance free life cycle**
- **Meet API leak test requirement**
- **Available outside inspection, cleaning and maintenance without disassembling**
- **ISO 16852:2016 7.3.2.1 End-of-line flame arrester test compliance Protects against atmospheric deflagration**

# Reference



- \* ITEM : BVF-12
- \* PROJECT : FORMOSA PETROCHEMICAL CORPORATION PJT
- \* Contractor : FORMOSA PETROCHEMICAL
- \* Customer : FORMOSA PETROCHEMICAL



- \* ITEM : BVF-3
- \* Contractor : PT. KARYA NIREKO WARGA NUSA

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## 9. Pilot Operated Pressure/Vacuum Relief Valve



**Pressure and/or Vacuum Relief valves** are used for **dangerous oil, gas or petrochemical storage tanks and other process vessels or systems** to prevent structural damage due to excess pressure or vacuum incoming.

**Pilot-operated Pressure/Vacuum Relief Valve** is most suitable for **pipe line** where high or fluctuating backpressure.

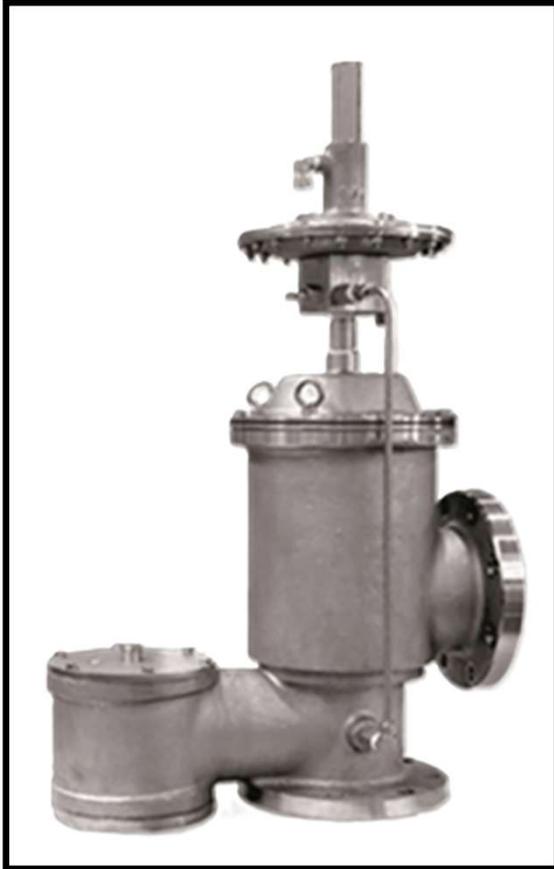
Pilot operation is also recommended for equipment to be used when low accumulation rates are required or when set pressure level of valve needs to be closed to the operating pressure level of storage tanks.

- As pressure increase, the pilot maintains its seal tightly, allowing reliable operation closer to the set point, without product leakage.
- Pilot-operated Pressure/Vacuum Relief Valves can work at an operating pressure of up to **98% of set pressure**.

**Although initial purchasing costs is high, there is benefits of no leakage, no evaporation loss and less maintenance costs.**

# Reference

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- \* ITEM : POV-6
- \* PROJECT : -
- \* Contractor : KELANDAN MAJU SBN BHD



- \* ITEM : POV-18X24, 8X10
- \* PROJECT : PVRV for PROPANE & BUTANE TANK
- \* Contractor : PETRO EQUIP

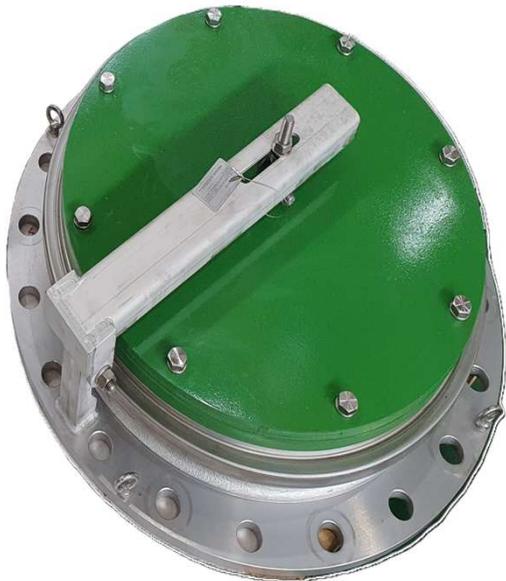
## 10. Emergency Vent Cover

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The series **EV** is designed to provide emergency pressure relief for **storage tank** when it is exposed to overpressure that is not handled by standard tank vents.

These vents provide the capacity to meet **API standard 2000 for emergency venting** due to fire exposure if properly sized.

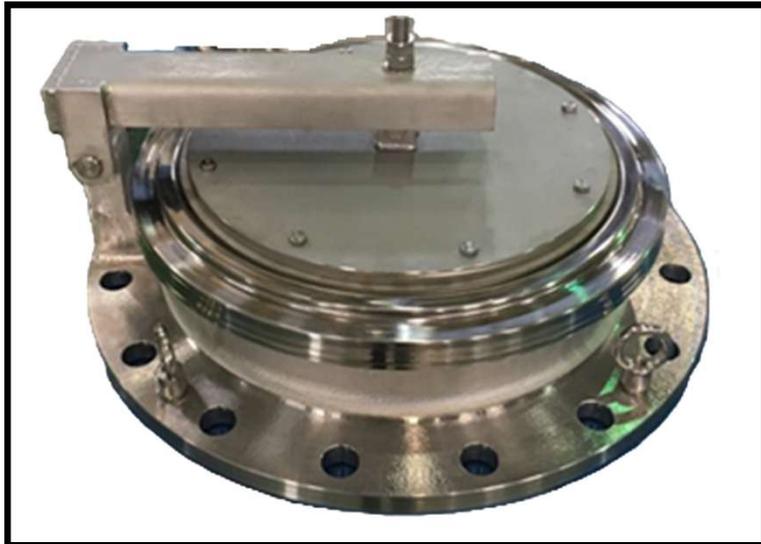


**These covers also provide quick & easy access for tank inspection and maintenance**

# Reference



- \* ITEM : EV-16 , EV-20
- \* PROJECT : IGD EXPANSION PHASE II PROJECT
- \* Contractor : SAP&KAPS PETROLEUM
- \* Customer : ADNOC



- \* ITEM : EH-16
- \* PROJECT : SOUTH PARS PHASE 20&21
- \* Contractor : OIEC
- \* Customer : POGC

# 11. Gauge Hatch Cover

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**Gauge Hatch Cover** is designed manufactured and tested according to the **API 650 standard**

It is used to **provide tank access for manual gauging, sampling and temperature gauging in a tank**

Usually the materials are available of **Aluminum, Carbon Steel, Stainless steel grade 304, 316 and 316L to meet tailor made solution**



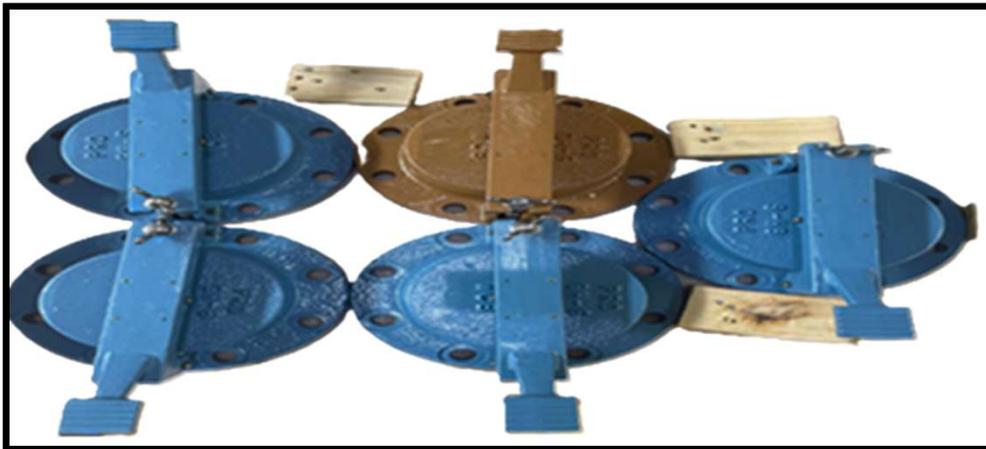
## Major Advantages

- **Airtight**
- **Easy And Quick Accessibility**
- **Chemical-Resistant Materials**
- **Pressure Adjustability**

# Reference

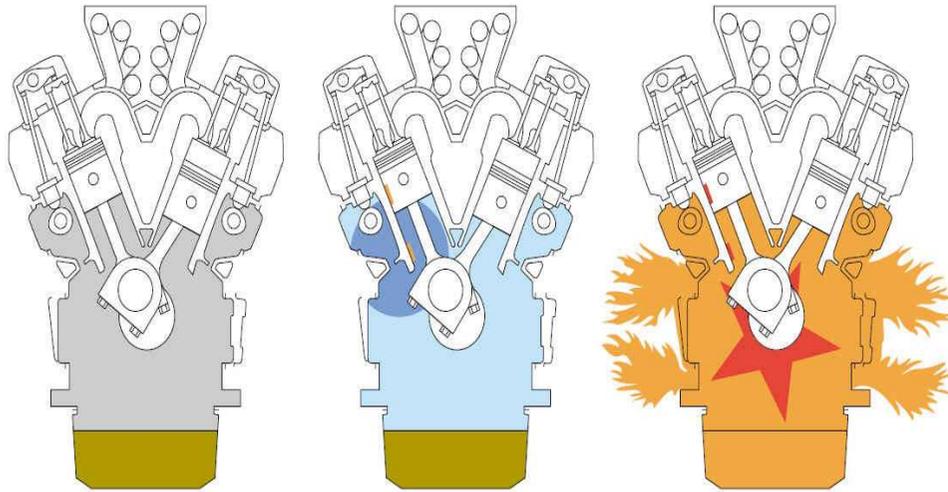


- \* ITEM : GH-6
- \* PROJECT : IGD EXPANSION PHASE II
- \* Contractor : SAP&KAPS PETROLEUM
- \* Customer : ADNOC



- \* ITEM : GH-6
- \* PROJECT : SAMCHEOK THERMAL POWER
- \* Contractor : DOOSAN HEAVY INDUSTRIES
- \* Customer : KOREA SOUTHERN POWER CO.,LTD

## 12. Crankcase Explosion Relief Valve

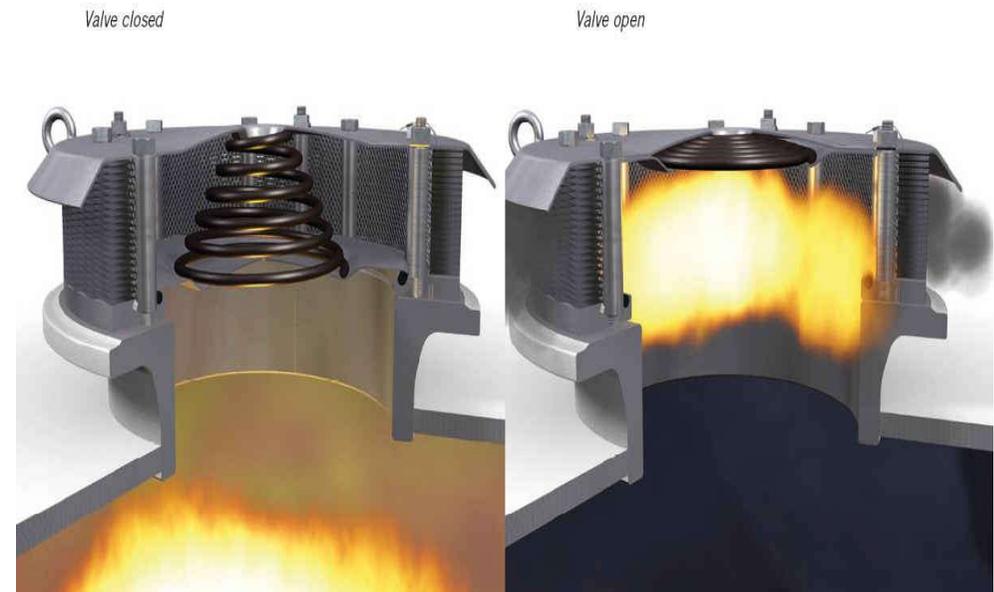


- If a piston of diesel engine is abraded, a diesel engine can be exploded by leakage oil mist into crankcase
- According to rule of IACS M9, M66, Crankcase Explosion Relief Valve is to be installed as mandatory

If an explosion is occurred in the crankcase at overpressure and flammable gas relieves through flame arrester, the flame is arrested by flame arrester.

Immediately, disk is closed by spring and prevent secondary explosion.

Because flame is not transferred to outside, explosion at the outside is prevented.



# Reference



- \* ITEM : ERV-224
- \* ENGINE MODEL : SHI2220 (DF ENGINE)
- \* Customer : WARTSILA HYUNDAI



- \* ITEM : ERV-735
- \* ENGINE MODEL : 11S90ME-C10.5
- \* Customer : MITSUI ENGINEERING & SHIPBUILDING CO., LTD.

# 13. Explosion Relief Valve for DF or Gas Engine

## Applied to new IACS UR M78



<EVDM SERIES FOR INLET/EXHAUST MANIFOLD  
OF DF OR GAS ENGINES>

EVDM Series is mounted on the inlet manifold of the DF ENGINE or GAS ENGINE.

If the explosion occurs during the movement of the gaseous fuel from the inlet manifold to the inside of the cylinder, explosion pressure can be discharged, and flame can be blocked and automatically distinguished by flame arrester element for prevention of the man and important facilities.

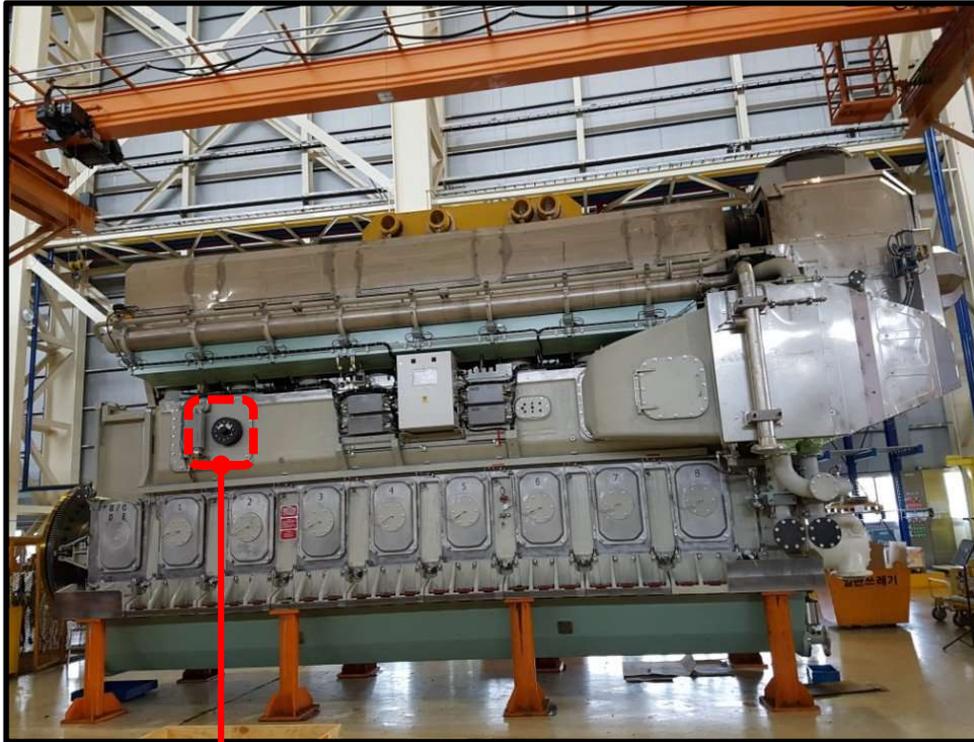


<EVDD SERIES FOR EXHAUST DUCT  
OF DF OR GAS ENGINES>

EVDD Series is mounted on the exhaust duct of DF ENGINE or GAS ENGINE.

When an explosion occurs by unburned gas fuel in the exhaust lines, explosion pressure can be discharged by EVDD, and flame can be blocked and automatically distinguished by flame arrester element for prevention of the man and important facilities.

# 13. Explosion Relief Valve for DF or Gas Engine



- Automatic re-closing structures against rupture disc (non re-closing devices)
- No need engine shut-down.
- Very high seat tightness
- Available continuous engine operation
- Prevention of secondary explosion
- Protection of people and key components due to explosion
- Discharging protection of unfired and/or burned mist, gas, ashes and dust, into engine
- Protection devices for Health, Safety and Environment
- Available IoT options

# Reference (MAJOR CUSTOMER)

FOR INLET/EXHAUST MANIFOLD OF DF OR GAS ENGINES	EXHAUST DUCT OF DF OR GAS ENGINES
EVDM	EVDM / EVDE
HANWHA ENGINE	CSSC ENGINE
HYUNDAI HEVY INDUSTRY.CO.,LTD	CSSC-MES DIESEL CO., LTD(CMD)
STX ENGINE	HANWHA OCEAN
NARWAL INTERNATIONAL	SAMSUNG HEAVY INDUSTRY CO., LTD
YUNGPU HEAVY MACHINERY CO., LTD	HYUNDAI HEAVY INDUSTRY CO., LTD
	HYUNDAI SAMHO HEAVY INDUSTRIES CO., LTD
	HANTONG SHIPYARD
	JINLING SHIPYARD
	KEPPEL NANTONG SHIPYARD
	DAIHATSU DIESEL MFG. CO., LTD
	WEIHAI SHIPYARD
	WUHU SHIPYARD

 Hanwha Engine

 Hanwha Ocean

 **HYUNDAI**  
HEAVY INDUSTRIES CO.,LTD.

 **HYUNDAI**  
SAMHO HEAVY INDUSTRIES

 SAMSUNG

**SAMSUNG HEAVY INDUSTRIES**

 **stx** 엔진



上海中船三井造船柴油机有限公司  
CSSC-MES Diesel Co., Ltd.

 **DAIHATSU**  
DAIHATSU DIESEL MFG.CO.,LTD.

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# 14. High Velocity Pressure/Vacuum Relief Valve



**Reliable operations reduces vapor losses**

**Suitable and compact design ensures long-term maintenance free life cycle**

**Meet new IMO & MED requirements for cargo vapor flammability – MESG 0.9 & 0.65 mm**

**Non-oscillating performance**

**Full lifting and high flow capacity**

**Flexible application for diverse installation vent pipe length and flow capacity range**

**No peak pressure over opening pressure**

**No need inside maintenance**

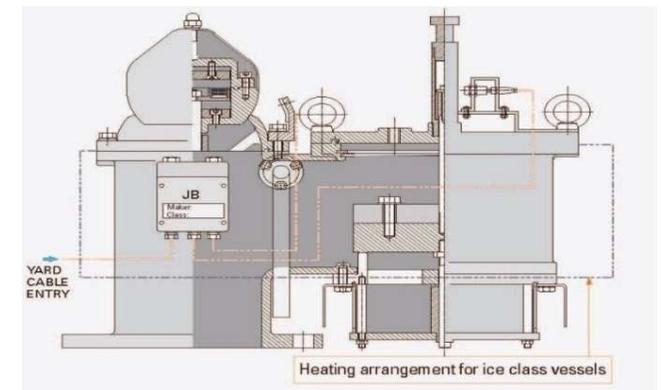
**Available outside inspection, cleaning and maintenance without disassembling**

**Adjustable outside opening and closing pressure without exhausting vapor gas**

**New IMO Regulation for Product & Chemical carriers, MSC./1Circ, 1324**

**New Regulation for ISO 15364:2021, ISO 16852:2021**

**New MED Regulation for Directive 2014/90/EU of 23 July 2014 on marine equipment & Commission Implementing Regulation (EU) 2021/1158 of 22 June 2021**



# 14. High Velocity Pressure/Vacuum Relief Valve (Applications)

---

## 1. Oil Tanker

Installed in tanks that transport crude oil, petroleum products, and other liquid cargoes.  
Essential for regulating gas pressure within the tank and preventing fire hazards.

## 2. Chemical Tanker

Used to protect tanks that transport hazardous or corrosive chemical products.  
Operates in conjunction with specially coated tanks for chemical handling.

## 3. LNG/LPG Carrier

Vessels transporting liquefied natural gas (LNG) and liquefied petroleum gas (LPG).  
Ensures the safe release of gases in cryogenic conditions while protecting the tanks.

## 4. Bulk Carrier

Can be installed in cases where specific liquid cargo is transported.  
Additionally used for regulating tank pressure.

## 5. FPSO/FSO (Floating Production, Storage, and Offloading Unit)

Facilities for storing or offloading crude oil at sea.  
Used for managing pressure and vacuum in storage tanks.

## 6. Offshore Supply Vessel (OSV)

Vessels supplying chemicals, fuel, and other materials to offshore platforms.  
Installed in fuel and chemical storage tanks.

## 7. Industrial Cargo Ship

Ships transporting specialized cargo where tank pressure protection is required.

# Reference



\* ITEM : SMART-12

\* PROJECT : FSO BENCHAMAS 2

\* Customer : MMHE



\* ITEM : SMART-4

\* PROJECT : MOHO NORD FPU PJT

\* Customer : TOTAL

***PROSAVE – Your choice for Safety***

# 15. Vapor Emission Control System



- Remote controlled opening/closing from CCR (Cargo Control Room)
- Setting value
  - Opening pressure & Closing pressure : 1,700mmW.G ~ 1,500mmW.G (adjustable)
  - Opening vacuum & Closing vacuum : -200mmW.G ~ -100mmW.G (adjustable)
- Adjustable of open/close pressure from CCR (Cargo Control Room)
  - Opening setting and closing pressure are programmable
- Manual venting function
- Full open/close remote by manual operation
- Operable from CCR (Cargo Control Room)
- The emission of VOC can be automatically controlled during the voyage
- Emitted VOC flow rate can be recorded and printed
- Explosion proof approved electric actuator (EX d IIB T4)
- Electric power source : AC 220V, 1Ph, 60Hz
- PLC unit adjustable for opening / closing pressure
- Signal : 4~20mA DC input
- Hydraulic or electric actuator on request
- Local Hydraulic Power Unit (LPU)

**Applied to SOLAS 74 Chapter II-2 Reg. 59/ IMO MSC/Circ. 731  
IMO MSC/Circ. 680/ USCG CFR 46 Part 39/ ISO 15364:2007**

# 16. ERH(Emergency Relief Hatch)

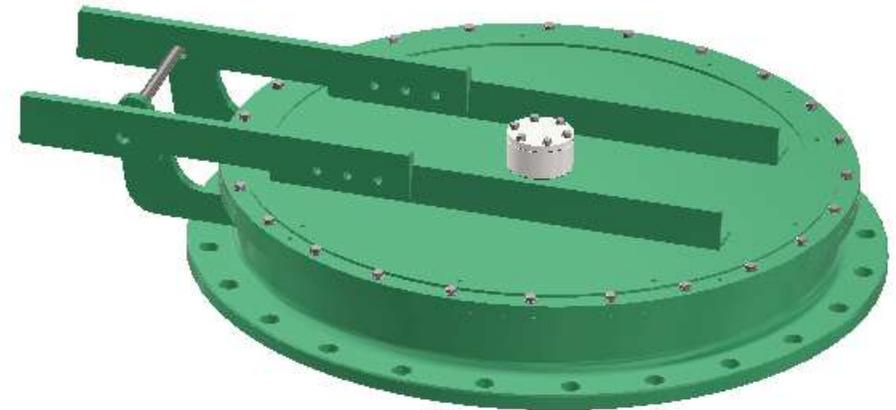
- **ERH** is a valve that releases pressure in an emergency and has an emergency discharge capacity greater than that provided by the tank's normal operating **Pressure Relief Valve**.

- **Specificaton**

- **SIZE : 900 A(36inch)**
- **PRESSURE SETTING : 0.25 bar**
- **Material : Carbon Steel, Stainless Steel**
- **Certified : DNV, BV, LR, ABS, NK**

- **Feature**

- Opens at the correct SETTING PRESSURE with **Rupture Pin Type**
- When installed on a tank, it does not close after being fully opened, causing continuous pressure to be released. However, our **ERH can be easily installed after being opened.**

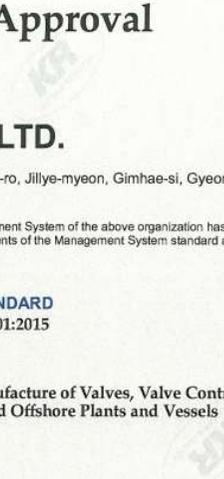


# Certificate of Approval & Registration

## QUALITY MANAGEMENT SYSTEM - ISO 9001:2015 / 14001:2015 / 45001:2018

KOREAN REGISTER

### Certificate of Approval

Certificate No. : A 1144

### PROSAVE CO.,LTD.

Head Office : 115-22, Tekeunobaelli 1-ro, Jillye-myeon, Gimhae-si, Gyeongsangnam-do, Korea

KR hereby certifies that the Quality Management System of the above organization has been audited and found to be in compliance with the requirements of the Management System standard and scope of certification detailed below.

**MANAGEMENT SYSTEM STANDARD**  
KS Q ISO 9001:2015    ISO 9001:2015

**SCOPE OF CERTIFICATION**  
Design, Development and Manufacture of Valves, Valve Control Systems and Flame Arresters for Onshore and Offshore Plants and Vessels

Locations : Head Office  
Auditor : KIM Yangsun, KIM Mujung, NA Jongshin  
Date of Issue : 2024.01.31

This certificate valid from 2024.01.31 to 2027.02.19 and remains valid subject to satisfactory surveillance audits.



  
  
**KOREAN REGISTER**  
MEMBER OF INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES

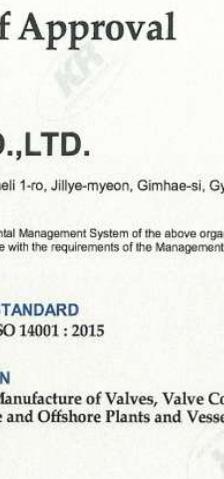


KOREAN REGISTER

The above Accreditation Mark proved that this certification body has been accredited by Korea Accreditation Board(KAB-QC-08)  
KR Certification Center : 36, Myeongji-ro, Gangseo-gu, Busan, Korea 46762 / tel. 070-8799-4508, fax. 070-8799-8913, <https://ko.krc.com.kr>

KOREAN REGISTER

### Certificate of Approval

Certificate No. : B 1144

### PROSAVE CO.,LTD.

Head Office : 115-22, Tekeunobaelli 1-ro, Jillye-myeon, Gimhae-si, Gyeongsangnam-do, Korea

KR hereby certifies that the Environmental Management System of the above organization has been assessed and found to be in compliance with the requirements of the Management System standard and scope of certification detailed below.

**MANAGEMENT SYSTEM STANDARD**  
KS I ISO 14001 : 2015    ISO 14001 : 2015

**SCOPE OF CERTIFICATION**  
Design, Development and Manufacture of Valves, Valve Control Systems and Flame Arresters for Onshore and Offshore Plants and Vessels

Locations : Head Office  
Auditor : KIM Yangsun, KIM Mujung, NA Jongshin  
Date of Issue : 2024.01.31

This certificate valid from 2024.01.31 to 2027.02.19 and remains valid subject to satisfactory surveillance audits.



  
  
**KOREAN REGISTER**  
MEMBER OF INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES

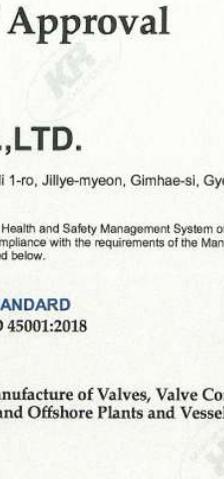


KOREAN REGISTER

The above Accreditation Mark proved that this certification body was accredited by Korea Accreditation Board(KAB-EC-19)  
KR Certification Center : 36, Myeongji-ro, Gangseo-gu, Busan, Korea 46762 / tel. 070-8799-4508, fax. 070-8799-8913, <https://ko.krc.com.kr>

KOREAN REGISTER

### Certificate of Approval

Certificate No. : C 1144

### PROSAVE CO.,LTD.

Head Office : 115-22, Tekeunobaelli 1-ro, Jillye-myeon, Gimhae-si, Gyeongsangnam-do, Korea

KR hereby certifies that the Occupational Health and Safety Management System of the above organization has been assessed and found to be in compliance with the requirements of the Management System standard and scope of certification detailed below.

**MANAGEMENT SYSTEM STANDARD**  
KS Q ISO 45001:2018    ISO 45001:2018

**SCOPE OF CERTIFICATION**  
Design, Development and Manufacture of Valves, Valve Control Systems and Flame Arresters for Onshore and Offshore Plants and Vessels

Locations : Head Office  
Auditor : KIM Yangsun, KIM Mujung, NA Jongshin  
Date of Issue : 2024.01.31

This certificate valid from 2024.01.31 to 2027.01.30 and remains valid subject to satisfactory surveillance audits.



  
  
**KOREAN REGISTER**  
MEMBER OF INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES



KOREAN REGISTER

The above Accreditation Mark proved that this certification body was accredited by Korea Accreditation Board(KAB-OC-05)  
KR Certification Center : 36, Myeongji-ro, Gangseo-gu, Busan, Korea 46762 / tel. 070-8799-4508, fax. 070-8799-8913, <https://ko.krc.com.kr>

# Certificate of Approval & Registration

## CERTIFICATE OF APPROVAL

- AMERICAN BUREAU OF SHIPPING (ABS)
- LLOYD'S REGISTER OF SHIPPING (LR)
- DET NORSKE VERITAS (DNV)
- NIPPON KAIJI KYOKAI (NK)
- KOREA REGISTER (KR)
- BUREAU VERITAS (BV)
- REGISTRO ITALIANO NAVALE (RINA)
- CHINA CLASSIFICATION SOCIETY (CCS)
- RUSSIAN MARITIME REGISTER OF SHIPPING (RS)
- NSF/ANSI/CAN 61 and 372 (Drinking Water System)
- KC (For Water Supply)



# Certificate of Approval

## AIR RELEASE & VACUUM BREAKER VALVE

KC (For Water Supply)

NSF/ANSI/CAN 61 and 372(Drinking Water System)

**위생안전기준 인증서**

1. 인증 번호 : KCW-2020-0227

2. 제조 업체명 : 프로세이브

3. 대표 자 : 김영만

4. 본 사 주 소 : 경상남도 김해시 진례면 테크노밸리1로 115-22 프로세이브

5. 공장 소재지 : 경상남도 김해시 진례면 테크노밸리1로 115-22 프로세이브

6. 제 품 명 : 릴리프 밸브

7. 종류, 등급 또는 호칭 : 별지 참조

8. 용 도 : 일반수도용장치

「수도법」 제14조제1항 및 「수도용 자재와 제품의 위생안전기준 인증 등에 관한 규칙」 제8조제1항에 따라 인증서를 발급한 제품입니다.

2020년 10월 30일




**NSF International**

789 N. Dixboro Road, Ann Arbor, MI 48105 USA

RECOGNIZES

Prosave Co., Ltd.

Korea, Republic of

AS COMPLYING WITH NSF/ANSI/CAN 61, 372 AND ALL APPLICABLE REQUIREMENTS.

PRODUCTS APPEARING IN THE NSF OFFICIAL LISTING ARE AUTHORIZED TO BEAR THE NSF MARK.



This certificate is the property of NSF International and must be returned upon request. This certificate remains valid as long as this client has products in NSF's Official Listings for the referenced standards. For the most current and complete listing information, please access NSF's website (www.nsf.org).

*Theresa Bellish*

December 6, 2024  
Certificate# C0817254 - 01

Theresa Bellish  
Senior Director Municipal Water Systems and NA Region

# Certificate of Approval

## HIGH VELOCITY PRESSURE/VACUUM RELIEF VALVE



**This is to certify:**

That the High Velocity Pressure Relief Valve

with type designation(s)  
**SMART-HV-3S, -4S, -5S, -6S, -8S, -10S, -12S; SMART-HV-3L, -4L, -5L, -6L, -8L, -10L, -12L**

Issued to  
**Prosave Co., Ltd.**  
**Gimhae-si, Gyeongsangnam-do, Republic of Korea**

is found to comply with  
**DNV GL rules for classification – Ships Pt.5 Ch.5 Oil tankers**  
**DNV GL rules for classification – Ships Pt.5 Ch.6 Chemical tankers**

**Application :**

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.

**Design:** High Velocity vents and vacuum relief valve with integrated gas freeing cover  
**Sizes:** DN80, 100, 125, 150, 200, 250, 300

Issued at Høvik on 2020-09-02

This Certificate is valid until 2025-09-01.

DNV GL local station: Gimhae Station

Approval Engineer: Maheshraja Venkatesan

for DNV GL  
 Digitally Signed By: Zeinab Sharifi  
 Location: DNV GL Høvik, Norway  
**Zeinab Sharifi**  
 Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

**LEGAL DISCLAIMER:** Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Form code: TA 251      Revision: 2020-02      www.dnvgl.com      Page 1 of 4  
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Page 1 / 4

Marine & Offshore  
 Certificate number: 31468C0 BV  
 File number: ACM 145/2563/01  
 Product code: 22381  
 This certificate is not valid when presented without the full attached schedule composed of 7 sections  
 www.veristar.com

**TYPE APPROVAL CERTIFICATE**

This certificate is issued to  
**PROSAVE CO., LTD**  
 Gimhae (Gyeongnam) - KOREA (REPUBLIC OF)  
 for the type of product  
**PRESSURE / VACUUM RELIEF VALVES**  
 SMART-HV-Series with Gas Free Cover

- Requirements:**
- BUREAU VERITAS Rules for the Classification of Steel Ships
  - BUREAU VERITAS Rules for the Classification of Offshore Units
  - IMO MSC/Circ.677 as amended by MSC/Circ.1009 and MSC.1/Circ.1324
  - ISO 15364:2021
  - ISO 16852:2021

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 07 Aug 2028

For Bureau Veritas Marine & Offshore,  
 AI BV PUSAN, on 07 Aug 2023,  
 Won-jun JANG

This certificate was created electronically and is valid without signature



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) listed to be re-approved prior to fitting being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristarpm.com/veristarpm/js/viewPublicPdfType.jsp?d=2eimgsg7gh>  
 BV Mod. Ad.E 530 June 2017      This certificate consists of 4 page(s)



**Confirmation of Product Type Approval**

**Company Name:** PROSAVE CO., LTD.  
**Address:** 115-22, TEKEUNOBAELLI 1-ROJILLYE-MYEON Korea, Republic of  
**Product:** Valve, High Velocity Pressure-Vacuum Relief  
**Model(s):** SMART-HV-3S, SMART-HV-3L, SMART-HV-4S, SMART-HV-4L, SMART-HV-5S, SMART-HV-5L, SMART-HV-6S, SMART-HV-6L, SMART-HV-8S, SMART-HV-8L, SMART-HV-10S, SMART-HV-10L, SMART-HV-12S, SMART-HV-12L  
**Endorsements:**

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	22-2319596-PDA	28-OCT-2022	27-OCT-2027
Manufacturing Assessment (MA)	22-5206451	04-APR-2022	11-APR-2027
Product Quality Assurance (PQA)	NA	NA	NA

**Tier**  
 3 - Type Approved, unit certification not required

**Intended Service**  
 Device to relieve over-pressure in cargo tanks of oil tanker, product tanker, combination carrier and chemical tanker and to prevent the passage of flame into the cargo tank. This product may be installed with gas free cover.

- Description**
1. Disc cap / Disc cover / Cap nut, S/W / Pressure stem / Bolt / Bolt S/W / Lift bush / Bolt, Nut / Gas free screen / Stop ring / Eye bolt, S/W / Pressure disc / Wrench bolt / Bush / Check lift / Lift handle / Vacuum stem / Vacuum disc / Guide / Post / Flame screen : SUS316
  2. Open adjuster / Vacuum weight / Vacuum cover / Close adjuster / Screen plate : SS400
  3. O-Ring : Viton
  4. Set pressure adjuster : SUS316/magent
  5. Pressure seat : SC480/SUS316
  6. Vacuum seat : SC480/SCS14A

**Ratings**  
 High Velocity Pressure/Vacuum Valves; Type(Pressure setting, Max. pipe length, Min. pipe size, Pressure Min. MESH Value / Vacuum setting, Vacuum Min. MESH Value):  
 SMART-HV-3S(1400~2100mmAq, 30m, DN80, 0.65mm / -350~700mmAq, 0.65mm); 80A

# Certificate of Approval

## FLAME ARRESTER



Physical-Technical Testing Institute  
Ostrava - Radvanice



(1) **Supplementary EU - Type Examination Certificate No.2**

(2) **Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres (Directive 2014/34/EU)**

(3) EU - Type Examination Examination Certificate number:

**FTZÚ 14 ATEX 0132X**

(4) Product: **Design series of deflagration in-line flame arrester for short time burning types: FA-02; FA-03; FA-04; FA-05; FA-06; FA-08; FA-10; FA-12**

(5) Manufacturer: **PROSAVE CO, LTD**

(6) Address: **115-22, Tekeunobaelli 1-ro, Gimhae-si, Gyeongsangnam-do, Republic of Korea**

(7) This supplementary certificate extends EC - Type Examination Certificate No. FTZÚ 14 ATEX 0132X to apply to products designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

(8) The Physical-Technical Testing Institute, Notified Body number 1026, in accordance with Articles 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26.02.2014, certifies that this product, as modified by this supplementary certificate, has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

(9) In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20.04.2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20.04.2016.

(10) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN ISO 16852:2016**

(11) The marking of the product shall include the following:



(12) The certificate is valid till: **23.10.2024**

Responsible person:  
*Lukáš Martinák*  
Dipl. Ing. Lukáš Martinák  
Head of Certification Body



Date of issue: 23.10.2019

Page: 1/2

This certificate is granted subject to the general conditions of the FTZU, s.p.  
This certificate may only be reproduced in its entirety and without any change, schedule included.  
Physical-Technical Testing Institute, s.p., Pkártská 1337/7, 716 07 Ostrava - Radvanice, The Czech Republic,  
tel +420 595 223 111, fax +420 596 232 672, ftzu@ftzu.cz, www.ftzu.cz



Marine & Offshore

Certificate number: 64393/A0 BV  
File number: .  
Product code: 2342I

*This certificate is not valid when presented without the full attached schedule composed of 2 sections*

www.veristar.com

### TYPE APPROVAL CERTIFICATE

This certificate is issued to:  
**PROSAVE CO., LTD**  
Gimhae (Gyeongsangnam) - KOREA (REPUBLIC OF)

for the type of product:  
**IN-LINE FLAME ARRESTERS**  
In-line Flame Arrester Type FA-U1

**Requirements:**  
Bureau Veritas Rules for the Classification of Steel Ships  
Bureau Veritas Rules for the Classification of Offshore Units  
IMO MSC/Circ.677 as amended by MSC.1/Circ. 1324  
ISO 16852:2016

*This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 21 May 2026**

**For Bureau Veritas Marine & Offshore,**  
At BV PUSAN, on 21 May 2021,  
Chang-Uk HONG



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) shall be re-approved prior to other being placed on board vessels to which the approved regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of error or omission which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristar.com/veristatamb/sp/viewPublicPdfType.jsp?id=ng0a7ewk3>  
BV Mod. Ad.E.530 June 2017 This certificate consists of 3 page(s)

# Certificate of Approval

## CRANKCASE EXPLOSION RELIEF VALVE



Marine & Offshore

Certificate number: 21522/D0 BV  
File number: ACM 168/1606/01  
Product code: 02201

This certificate is not valid when presented without the full attached schedule composed of 7 sections

www.veristar.com

### TYPE APPROVAL CERTIFICATE

This certificate is issued to  
**PROSAVE CO., LTD**  
Gimhae (Gyeongnam) - KOREA (REPUBLIC OF)  
for the type of product  
**CRANKCASE EXPLOSION RELIEF VALVES**  
N-ERV-valve series

- Requirements:
- BUREAU VERITAS Rules for the Classification of Steel Ships
  - BUREAU VERITAS Rules for the Classification of Offshore Units
  - BUREAU VERITAS Rules for the Classification of High Speed Crafts

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 02 Oct 2029

For Bureau Veritas Marine & Offshore,  
At BV PLUSAN, on 02 Oct 2024,  
Dong-hyok SHIN

This certificate was created electronically and is valid without signature



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: [http://www.veristarpm.com/veristarmb/jsp/viewPublicPdfType.jsp?fid=2k2j\[85d\]](http://www.veristarpm.com/veristarmb/jsp/viewPublicPdfType.jsp?fid=2k2j[85d])  
BV Mod. Ad.E 530 June 2017  
This certificate consists of 4 page(s)



### Confirmation of Product Type Approval

Company Name: PROSAVE CO., LTD.  
Address: 115-22, TEKEUNOBAELLI 1-ROJILLYE-MYEON GIMHAE-SI Korea, Republic of  
Product: Crankcase Relief Valves  
Model(s): N-ERV-98/122/162/173/204/224/266/320/345/420/480/565/645/735  
Endorsements:

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	24-2513819-PDA	14-FEB-2024	13-FEB-2029
Manufacturing Assessment (MA)	22-5206451	04-APR-2022	11-APR-2027
Product Quality Assurance (PQA)	NA	NA	NA

Tier  
3 - Type Approved, unit certification not required

Intended Service  
Relief for crankcase explosion of internal combustion engine.

Description  
Material contents are shown below:

1. Base Flange / Cover / Disc / Stud Bolt, P / Washer(MB) / Nut / S, P/Washer(MB) / Plug Screw, P/Washer: SS400
2. Element: SPCC/SWRM5
3. Spring: SWC
4. Pipe: SUS304
5. O-Ring: NBR

- Ratings
1. Maximum Working Pressure (bar): 0.1
  2. Maximum Working Temperature (Degree C): 80
  3. Opening Pressure (bar): 0.05~0.1, 0.05+20%, 0.05-20%
  4. Relief Area (cm2): 59.4, 95, 177, 201, 284, 346, 499, 732, 829, 1260, 1665, 2300, 2990, 3905
  5. Fluid: Air, Gas

3/2/14/2024 12:40:14 AM

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Page 1 of 3



### TYPE APPROVAL CERTIFICATE

Certificate no.: TAM0000075  
Revision No.: 1

This is to certify:  
that the Crankcase Explosion Relief Valve

with type designation(s)  
N-ERV-98, N-ERV-122, N-ERV-162, N-ERV-173, N-ERV-204, N-ERV-224, N-ERV-266, N-ERV-320, N-ERV-345, N-ERV-420, N-ERV-480, N-ERV-565, N-ERV-645, N-ERV-735

issued to  
**Prosave Co.,Ltd.**  
Gimhae-si, Gyeongsangnam-do, Korea, Republic of

is found to comply with  
DNV rules for classification – Ships Pl.4 Ch.3 Sec.1 Reciprocating internal combustion engines

Application:  
Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Issued at Hamburg on 2023-11-17

This Certificate is valid until 2028-09-02.  
DNV local unit: Gimhae Station

Approval Engineer: Sven Neddenien



This Certificate is subject to terms and conditions overlaid. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2023-09

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# Certificate of Approval

## FLAMELESS EXPLOSION RELIEF VALVE for DF or GAS ENGINE

Page 1 / 3



Marine & Offshore

Certificate number: 53408/A0 BV

File number: .

Product code: 02221

This certificate is not valid when presented without the full attached schedule composed of 7 sections

www.veristar.com

### TYPE APPROVAL CERTIFICATE

This certificate is issued to  
**PROSAVE CO., LTD**

Gimhae (Gyeongnam) - KOREA (REPUBLIC OF)

for the type of product

### EXPLOSION RELIEF VALVE FOR INLET AND EXHAUST LINES OF DUAL-FUEL AND GAS ENGINES

Explosion Relief Valves series EVDD with flame arrester

#### Requirements:

Bureau Veritas Rules for the Classification of Steel Ships  
NR 529

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: **29 Jan 2026**

For Bureau Veritas Marine & Offshore,

At BV PUSAN, on 29 Jan 2021.

Chang-Uk HONG



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) shall be re-approved prior to (they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristarm.com/veristarm/jsp/viewPublicPdfType.jsp?id=rvij7x52mv>  
BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)



### Confirmation of Product Type Approval

Company Name: PROSAVE CO., LTD.

Address: 115-22, TEKEUNOBAELLI 1-ROJILLYE-MYEON Korea, Republic of

Product: Explosion Relief Valve with Flame Arrester

Model(s): Explosion Venting Devices for in Charging Air Chamber (EVDM-98/122/173/224/226)

Explosion Venting Devices for in the Exh. Duct (EVDD-173/320/420/565/735)

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	20-2015223-PDA	30-JUL-2020	29-JUL-2025
Manufacturing Assessment (MA)	17-BK3313999	12-APR-2017	11-APR-2022
Product Quality Assurance (PQA)	NA	NA	NA

Tier

3

#### Intended Service

To be installed in charging air chamber & exhaust pipe downstream dual fuel and gas engines used for propulsion and auxiliary services.

#### Description

PROSAVE explosion relief valves are to be used for the protection of charge air chamber/exhaust duct of dual fuel and gas engines.

EVDM/EVDD valves are able to prevent the flame passage when the explosion occurs in the charging air chamber/exhaust duct. The valve disc is immediately closed by the spring after the first explosion in order to prevent the secondary explosion that occurs by mixing inflow air from outside and unburned gas in the charging air chamber/exhaust duct exhaust duct.

#### Ratings

EVDM-98: Relief Area (58 cm<sup>2</sup>) & Open Pressure (3.7 ~ 6.3 bar)

EVDM-122: Relief Area (95 cm<sup>2</sup>) & Open Pressure (3.7 ~ 6 bar)

EVDM-173: Relief Area (201 cm<sup>2</sup>) & Open Pressure (3.7 ~ 6.3 bar)

EVDM-224: Relief Area (346 cm<sup>2</sup>) & Open Pressure (3.7 ~ 6.3 bar)

EVDM-266: Relief Area (499 cm<sup>2</sup>) & Open Pressure (3.7 ~ 6.3 bar)

EVDD-173: Relief Area (201 cm<sup>2</sup>) & Open Pressure (0.18 ~ 0.22 bar)

EVDD-320: Relief Area (732 cm<sup>2</sup>) & Open Pressure (0.18 ~ 0.22 bar)

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### TYPE APPROVAL CERTIFICATE

Certificate no.:  
TAM00002U  
Revision No.:  
3

This is to certify:

that the Explosion relief valve for engine intake manifold and exhaust line

with type designation(s)  
EVDM-98, EVDM-122, EVDM-173, EVDM-224, EVDM-266  
EVDD-173, EVDD-320, EVDD-420, EVDD-565, EVDD-735

issued to

**Prosave Co.,Ltd.**

Gimhae-si, Gyeongsangnam-do, Korea, Republic of

is found to comply with

**DNV GL rules for classification – Ships**

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at Hamburg on 2023-11-03

This Certificate is valid until 2028-11-02.

DNV local unit: **Gimhae Station**

Approval Engineer: **Sven Neddenien**



This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees (DNV) arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2023-09

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**PROSAVE – Your choice for Safety**

# Certificate of Approval(Domestic)

제 226087 호

## 표창장

(주)프로세이브  
대표이사 김영만

귀하는 중소기업기술혁신을 통하여 국가 산업 발전에 이바지한 공로가 크므로 이에 표창합니다.

2020년 12월 10일

대통령 문재인

이증을 대통령표창부에 기재합니다.  
행정안전부장관 진





제2020-015호

### 경상남도 스타기업 지정서

업체명 : (주)프로세이브  
지정기간 : 2020. 4. 23. ~ 2022. 12. 31.

귀사는 혁신성과 성장잠재력을 갖춘 경상남도 스타기업으로 선정되었기에 동 지정서를 수여합니다.

2020년 4월 23일

경상남도지사 김경수



제 2021-101호

### 글로벌 강소기업 지정서

업체명 : (주)프로세이브  
지정기간 : 2021. 4. 30 ~ 2024. 12. 31

귀사는 혁신성과 성장잠재력을 갖춘 글로벌 강소기업으로 선정되었기에 동 지정서를 수여합니다.

2021년 4월 30일

중소벤처기업부장관 권철중



제 6092호

### 표창장

제24회 경남중소기업대상 (기술혁신부문)  
(주)프로세이브 대표이사 김영만

귀하는 끊임없는 기술개발과 경영 혁신을 통하여 지역경제 및 중소기업 발전에 기여한 공로가 크므로 이에 표창합니다.

2020년 10월 21일

중소벤처기업부장관 박영




제 20-17 호

### 우수벤처기업 선정증

신청분야 : 지속성장 분야, 연구개발 분야  
기업명 : (주)프로세이브  
대표자 : 김영만  
유효기간 : 2020. 6. 11 ~ 2021. 6. 10

상기 기업은 우수한 제품 및 서비스 경쟁력을 바탕으로 탁월한 경영성적을 달성하여 벤처기업협회 주관의 '2020 우수벤처기업'으로 선정되었기에 이 증서를 드립니다.

2020년 6월 11일

사단법인 벤처기업협회장



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GS DEP	SHELL	BW OFFSHORE, SBM OFFSHORE	SWCC
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CB&I	ARAMCO	MITSUBUSHI HEAVY INDUSTRIES	
TECNICAS REUNIDAS	CPECC	JAPAN ENGINE	
MHPS	ADCO, ADNOC GROUP	SHAANXI DIESEL & MARINE	
SEPCO III	KOC, KNPC	DIESEL UNITED	
Qatar Energy	PDO	CSE(DMD, QMD, YMD), CMP	

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## Worldwide sales & service network



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***Safety is the First & Most Important !  
Enjoy your work with PROSAVE Safety & Environment Protection Devices.***

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