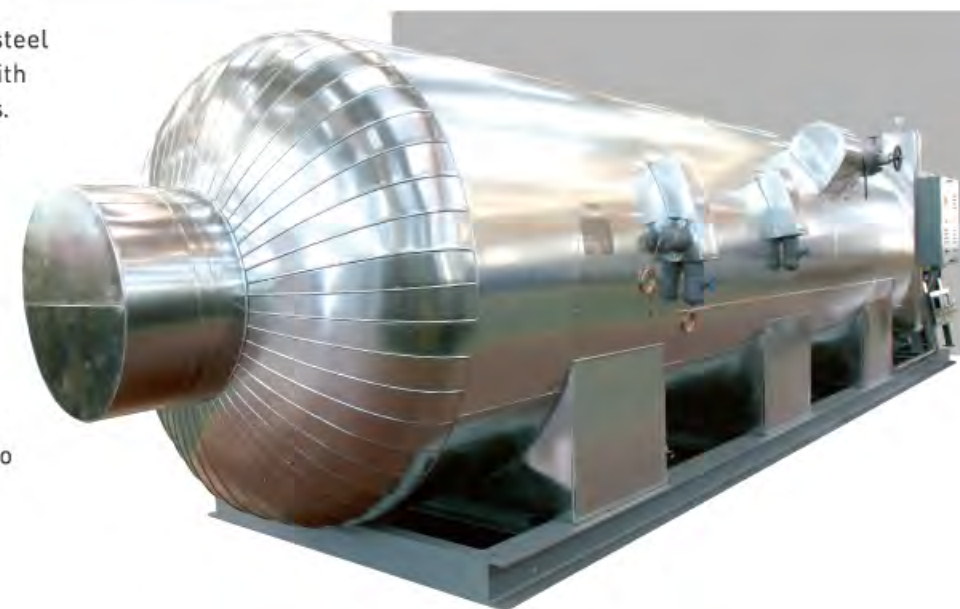


DESCRIPTION	TECHNICAL SPECIFICATION
TYPE	PRESSURE VESSEL
DESIGN PRESSURE	24 bar
DESIGN TEMPERATURE	-22°C
HYDRO TEST	36 bar
SHEET	ELLIPSOIDAL SURFACE
MATERIAL	SLA365 TMCP KS D 3541-03 JIS G 3216-2000

Low Pressure tank is built as a steel pressure vessel in compliance with the classification society requirements. CO<sub>2</sub> storage capacity of 15 to 60 tons is available. Internal temperature of the Low Pressure tank reduces to -22°C with the vaporization pressure dropping to approx. 20 bar. Low Pressure tank is fully insulated with 150 mm heavy inflammable polyurethane, and is covered with additional galvanized steel plate to prevent atmospheric exposure.

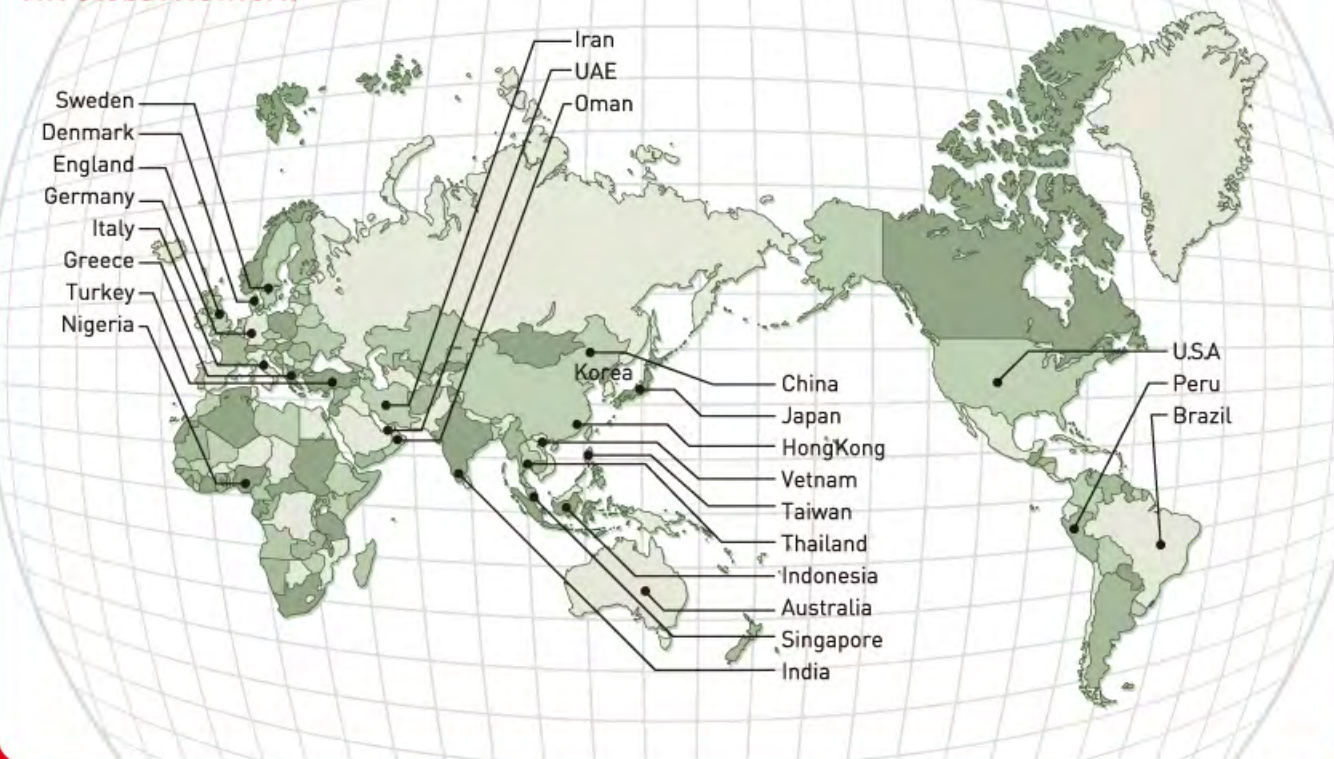


#### Refrigeration Unit

A refrigeration unit supplies low pressure refrigerant to the evaporator coils inside the pressure tank. The refrigeration unit extracts heat from the CO<sub>2</sub> vapour that surrounds the coils. The refrigeration compressor cycle is controlled by a pressure switch, which monitors the pressure of the CO<sub>2</sub> within the pressure vessel.



#### NK Global Network



#### Contact Point

[www.nkcf.com](http://www.nkcf.com)

**NK CO.,LTD.**  
☎ +82.51.204.2211  
☎ +82.51.204.2215  
✉ [sales@nkcf.com](mailto:sales@nkcf.com)

**Domestic Sales Dep.**  
☎ +82.51.200.0130  
✉ [mtjang@nkcf.com](mailto:mtjang@nkcf.com)

**International Sales Dep.**  
☎ +82.51.200.0110  
✉ [njchun@nkcf.com](mailto:njchun@nkcf.com)

#### EUROPE

**Turkey**  
NK Guneri  
✉ [tolga@nk-guneri.com](mailto:tolga@nk-guneri.com)

**Belgium**  
Cosalt N.V.  
✉ [Trevor.noble@cosalt.com](mailto:Trevor.noble@cosalt.com)

#### MIDDLE EAST

**U.A.E.**  
Solus Marine Service L.L.C  
✉ [gnanesh@solasmarine.com](mailto:gnanesh@solasmarine.com)



#### ASIA

**Singapore**  
Crystal Offshore System & Controls Ltd.  
✉ [sajeesh@crystaloffshore.com](mailto:sajeesh@crystaloffshore.com)

**China**  
Dalian Engine Safety Equipment Service  
✉ [engine@mansafe.cn](mailto:engine@mansafe.cn)

**Malaysia**  
Global Marine Safety & Service (M) Sdn Bhd  
✉ [pang.bs@gmail.com](mailto:pang.bs@gmail.com)

**India**  
Solus Marine Service Pvt. Ltd.  
✉ [majumdar@solasmarine.com](mailto:majumdar@solasmarine.com)

**Japan**  
Nansei  
✉ [hirai@nansei.co.jp](mailto:hirai@nansei.co.jp)

**Taiwan**  
Ming Tzong Harn Trading Co., Ltd.  
✉ [business@mingtzonghang.com](mailto:business@mingtzonghang.com)

#### OCEANIA

**Australia**  
Trinkorpty LTD.  
✉ [trinkor@trinkor.com](mailto:trinkor@trinkor.com)

#### NORTH AMERICA

**USA**  
Fire Protection Service Inc.  
✉ [rcurry@FPS-USA.com](mailto:rcurry@FPS-USA.com)

WORLD BEST

## HIGH & LOW PRESSURE CO<sub>2</sub> Fire Extinguishing System

[www.nkcf.com](http://www.nkcf.com)

#### System Description

### Low Pressure CO<sub>2</sub>

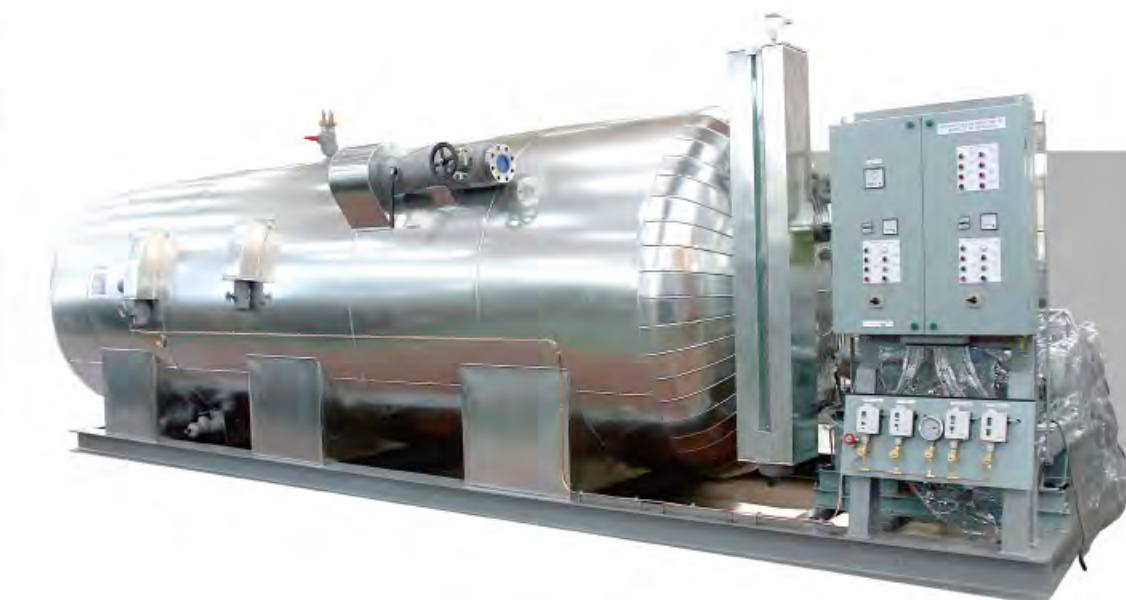
The NK Low Pressure tank is fixed with insulated support on a rectangle-framed bottom skid. Tank skid unit is assembled with main control panel, pressure gauge and refrigeration unit. All components are installed into one skid unit for easy installation. CO<sub>2</sub> agent flows through the piping network and discharges from the differently-sized nozzles, as according to flow calculation.

#### Advantage

- Multiple shot capability
- Economical
- Versatile Adaptability

#### Application

- Engine Room
- Cargo Hold
- Boiler Room
- Purifier Room
- Paint Store
- ECR



#### Features

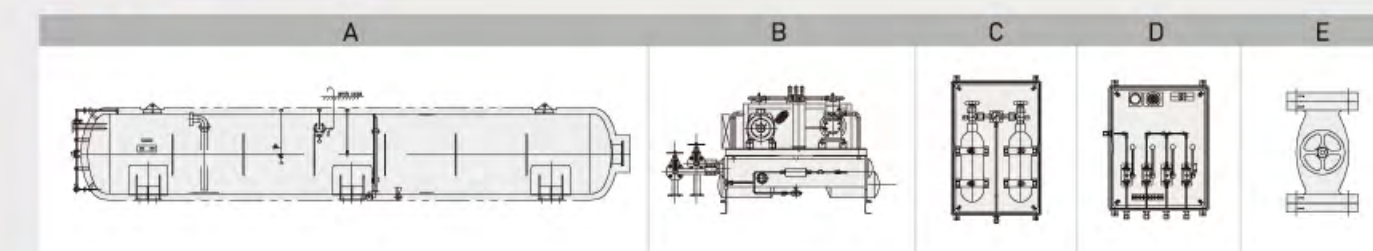
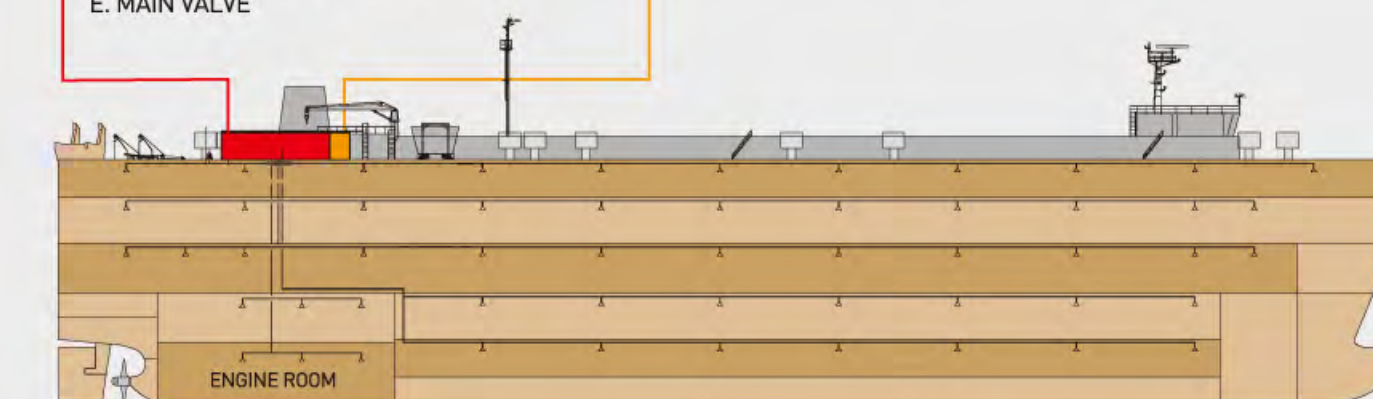
- Compliance with SOLAS requirements and approved by major class societies.

#### CO<sub>2</sub> ROOM

- A. CO<sub>2</sub> STORAGE TANK SKID
- B. REFRIGERATOR UNIT
- C. CYLINDER CONTROL CABINET
- D. RELEASE CONTROL CABINET
- E. MAIN VALVE

#### FIRE CONTROL STATION

- C. CYLINDER CONTROL CABINET
- D. RELEASE CONTROL CABINET



System Description

# High Pressure CO<sub>2</sub>

NK High Pressure CO<sub>2</sub> system is a highly adaptive, cost-beneficial extinguishing system designed with reliable expertise. The HP CO<sub>2</sub> system includes a large number of pressure cylinders charged with CO<sub>2</sub> gas as the extinguishing agent. Cylinders are connected through a common manifold. From the main manifold, the extinguishing agent is led through distribution valves to the protected spaces.

## Advantages

- Fast
- Economical
- Versatile Adaptability

## Application

- Engine Room
- Cargo Hold
- Boiler Room
- Purifier Room
- Paint Store
- Pump Room
- ECR

## Features

- Compliance with SOLAS requirements and approved by major class societies.

# High Pressure CO<sub>2</sub> System Main Component



### Cylinder

NK manufactured seamless high pressure cylinders are provided in accordance with various specifications for different standards of rules and regulations. A quantity of CO<sub>2</sub> sufficient to extinguish the type of fire anticipated in the protected hazard area is stored in 68L (45kg) or 82.5L (55kg) cylinders. Cylinders are packed into a single rack unit and form the piping network together. With the actuation signal (pneumatic/electric), CO<sub>2</sub> gas is released from cylinders into the piping distribution system.

### Cylinder Valve

Cylinder valves are installed in each of the CO<sub>2</sub> cylinders. Each one is designed to actuate upon the CO<sub>2</sub> gas pressure from the actuating pilot cylinder in the control cabinet. Depending on the actuation valve type, the cylinders can be operated manually, pneumatically, or electrically.



### Release Control Cabinet

Release Control Cabinet is assembled with pilot cylinders and control ball valves. Each RCC (Release Control Cabinet) is equipped with two pilot cylinders and two ball valves. There are two separate valves, each controlling the main valve and cylinder actuator.

### Main Valve

The main valve is designed to discharge CO<sub>2</sub> gas immediately in the hazard area where total flooding suppression is applied. The main valves are operated by gas pressure led from the actuating unit with pilot cylinders.



### Time Delay Unit

Audible and/or visual alarms actuate for the safety evacuation period before discharging CO<sub>2</sub>. Delay unit waits approximately 20-30 seconds before the release of CO<sub>2</sub> from the system to allow safe evacuation.



Repeat Panel



Main Control Panel

### Smoke Detection System

The smoke detection system allows air circulation from protected spaces through the smoke detection panel. Circulating air is monitored by sensor in the panel for smoke. Fan motor unit continues the suction of sampling air from protected space. If any gas or smoke is detected, it gives a warning signal, indicating the area of the smoke source has been detected.



Fan Motor Unit

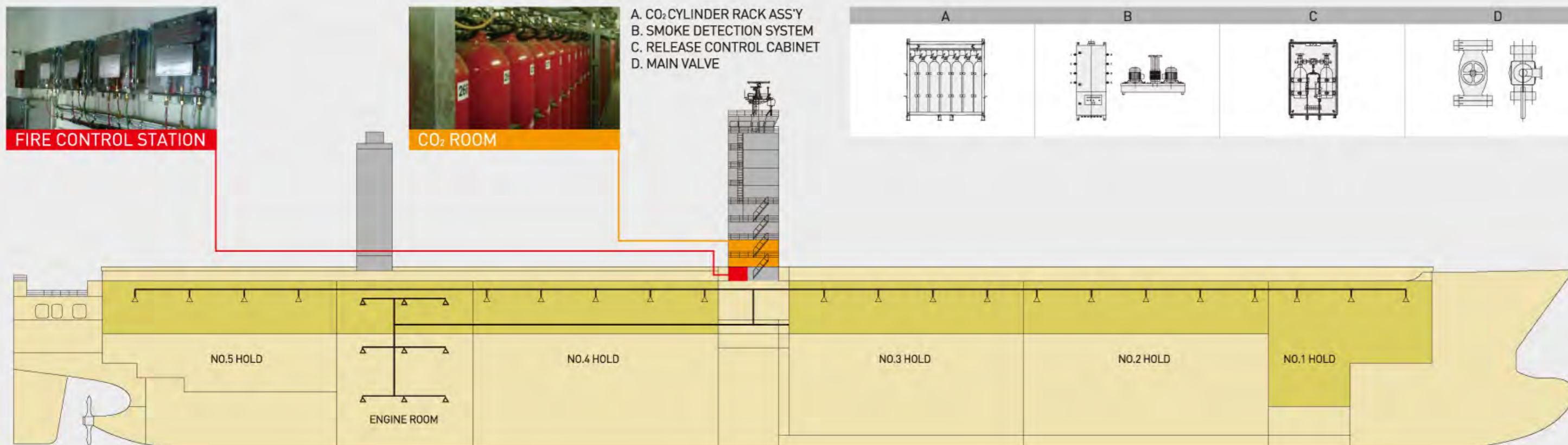


3-Way Valve



Smoke Accumulator

Smoke Detection System



ENVIRONMENT (AMBIENT TEMPERATURE)	-18 ~ 55 (°C)	
DESIGN WORKING PRESSURE	51 ~ 58 bar (5.8 MPa) at 20 (°C)	
TEST PRESSURE	BODY AT HYDRO PRESSURE	150 bar (15 MPa)
ACTUATION PRESSURE AT UNPRESSURIZED VALVE	7 bar (0.7 MPa)	
ACTUATION PRESSURE AT PRESSURIZED VALVE	30 bar (3 MPa)	



### CO<sub>2</sub> Discharge Nozzle

CO<sub>2</sub> discharge nozzles are provided in a number of different calculated designs by considering CO<sub>2</sub> agent flow through piping network and pressure.

### Alarm

