

EARTHQUAKE DETECTION, PROTECTION, RECOVERY.



JAPAN



DEVASTATION



DETECTION

- **DEVISTATION**
- **EARTHQUAKE SENSOR AND SHUT OFF**

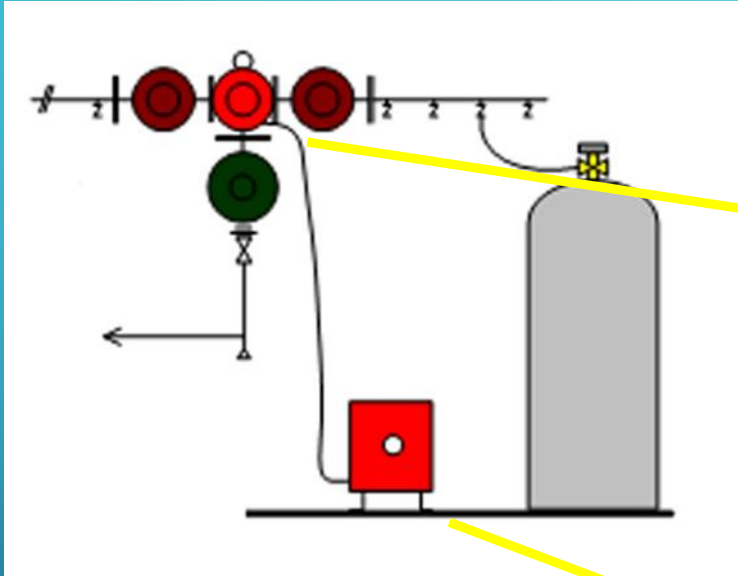
PROTECTION

- SAFETY
- TENSILE TRIGGER HOSE

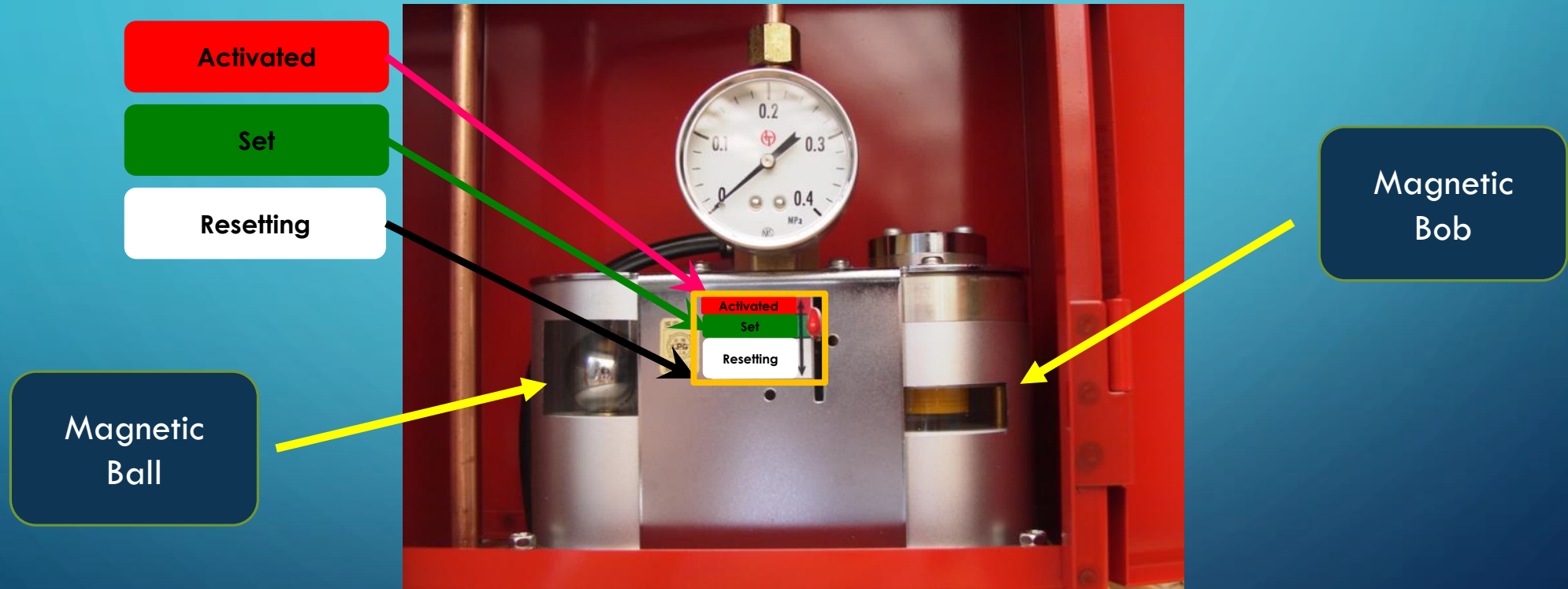
RECOVERY

- LIFELINE
- PA SYSTEM

EARTHQUAKE SENSOR AND CUT-OFF SYSTEM



SENSOR - ELEMENTS



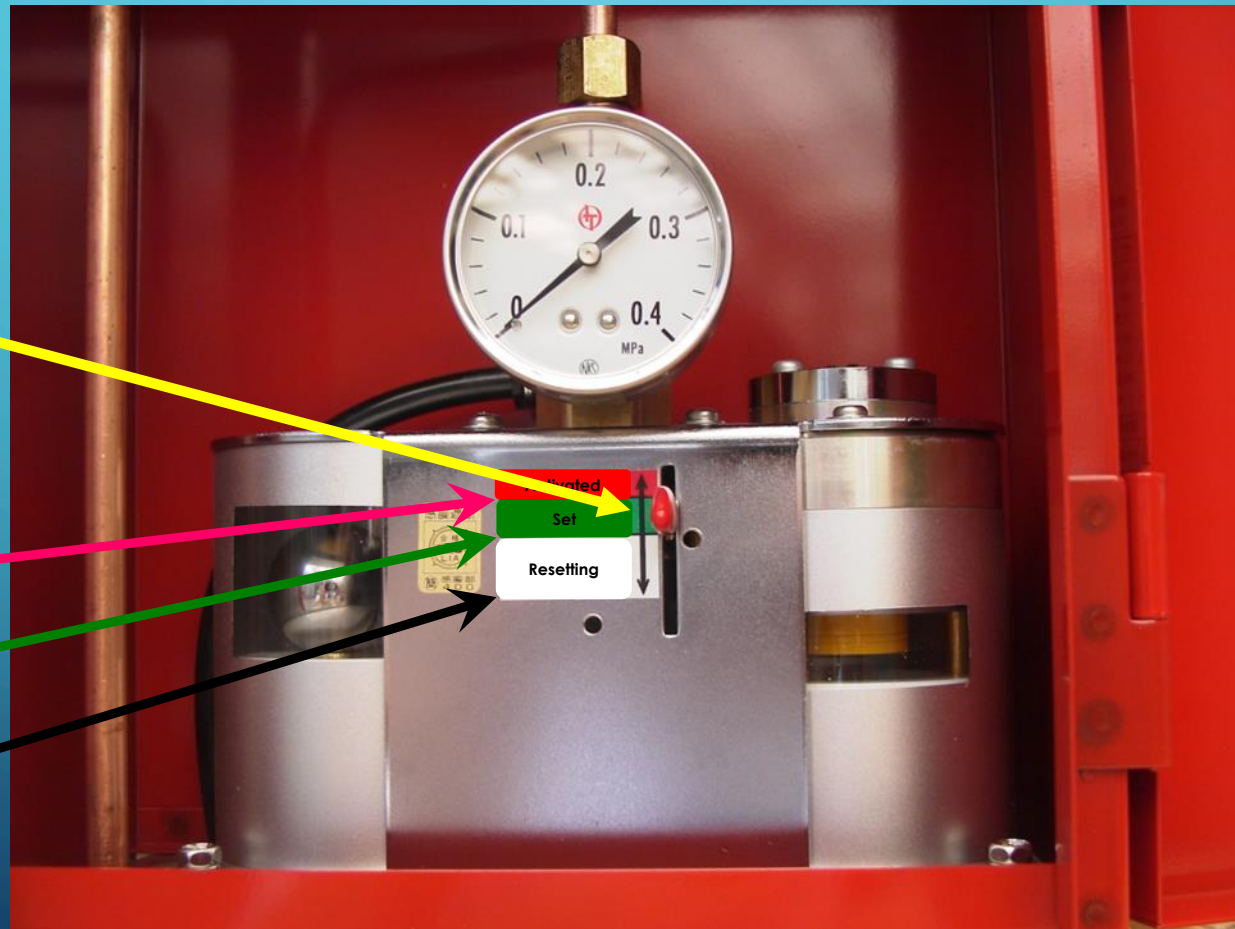
SENSOR - RESET

Reset Lever

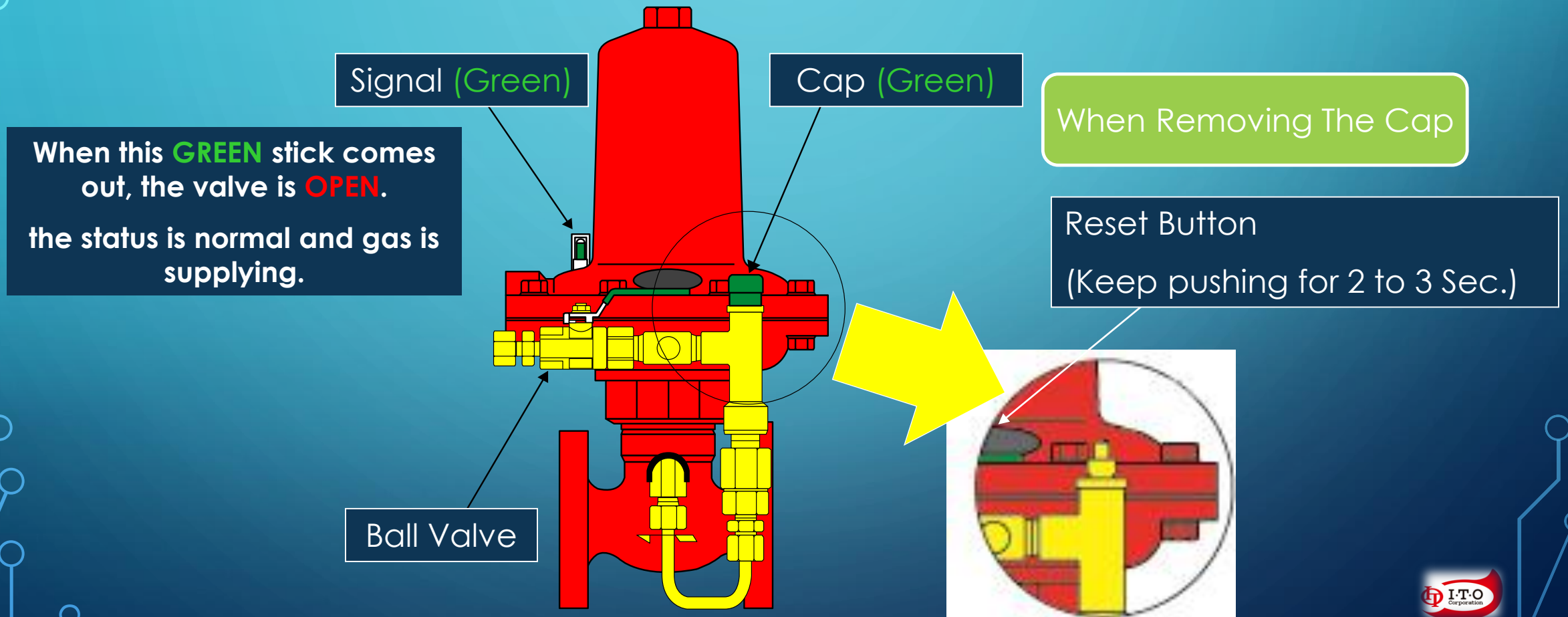
Activated

Set

Resetting

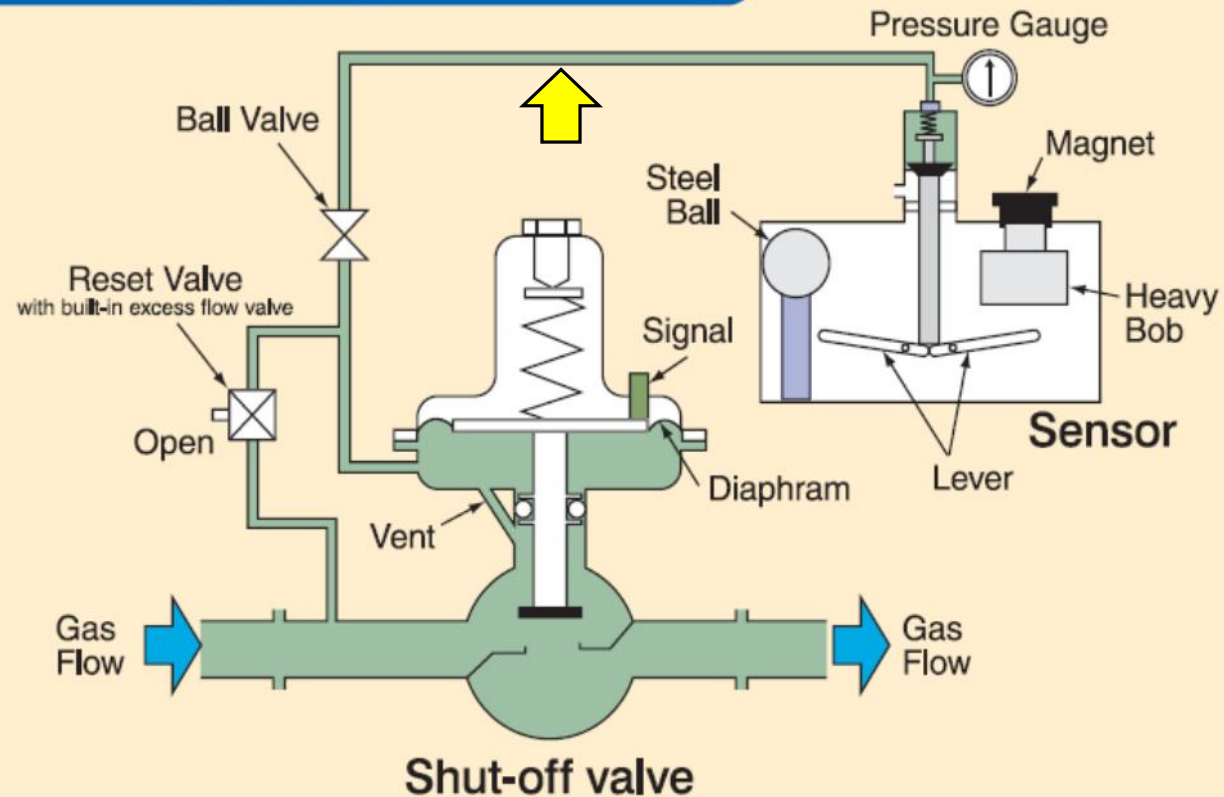


SIGNAL IN THE SHUT OFF VALVE



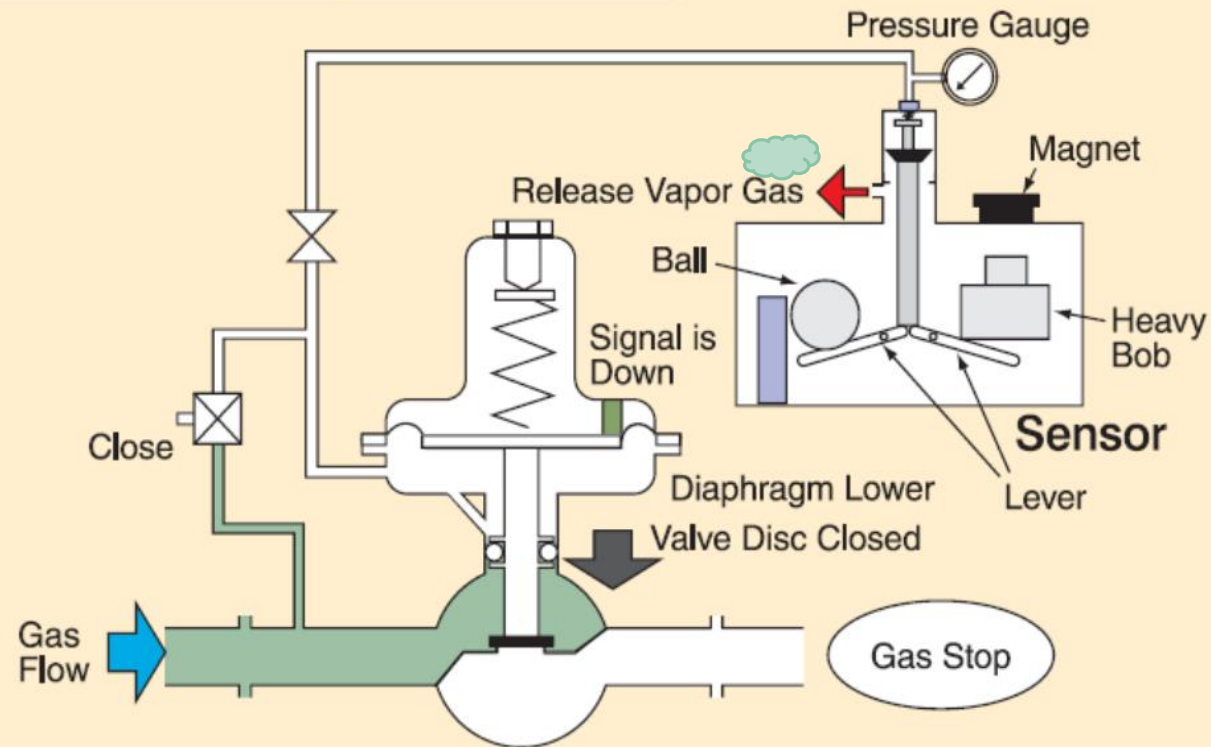
SHUT-OFF MECHANISM STANDBY

When Supplying Gas Normally

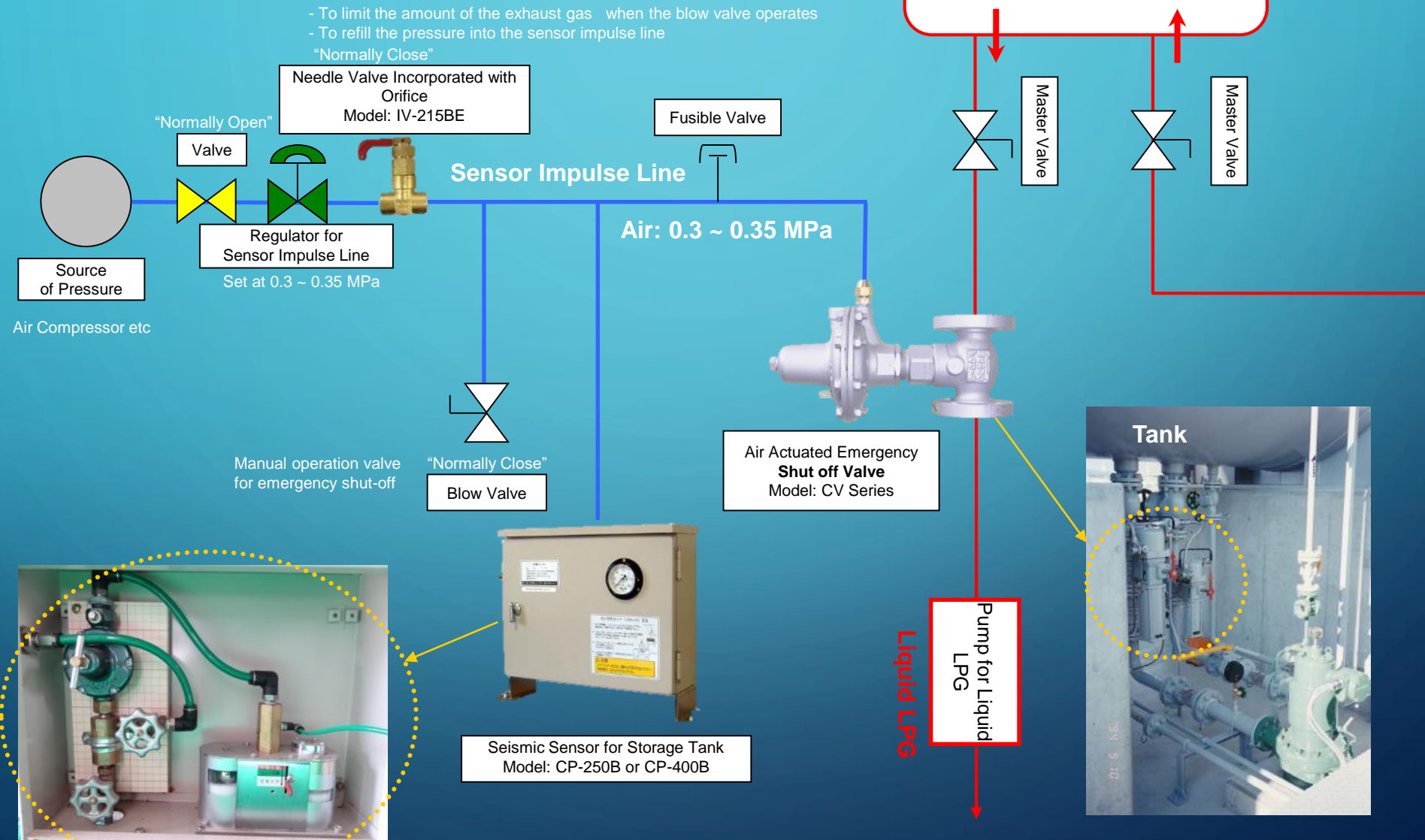


SHUT-OFF MECHANISM ACTIVATED

When an Earthquake Occurs



Earthquake-actuated Shut-off System for Liquefied LPG or Tank Supply



DETECTION

- DEVISTATION
- EARTHQUAKE SENSOR AND SHUT OFF

PROTECTION

- **SAFETY**
- **TENSILE TRIGGER HOSE**

RECOVERY

- LIFELINE
- PA SYSTEM

High Pressure Rubber Hose with Tension-triggered Valve Model: TIH-6-6H



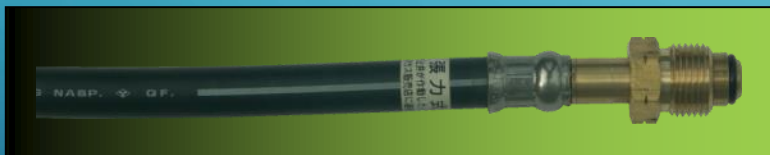
Prevent secondary disasters due to LP gas leaks

High Pressure Rubber Hose with Tension-triggered Valve Model: TIH-6-6H



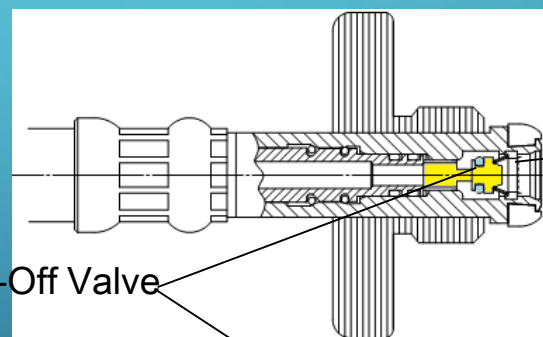
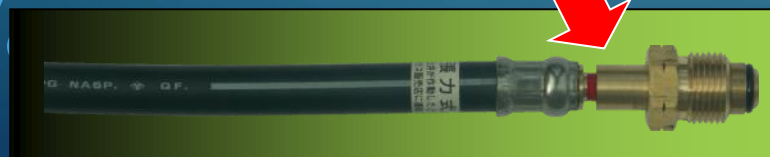
Shut-off triggered by tension

Normal Situation



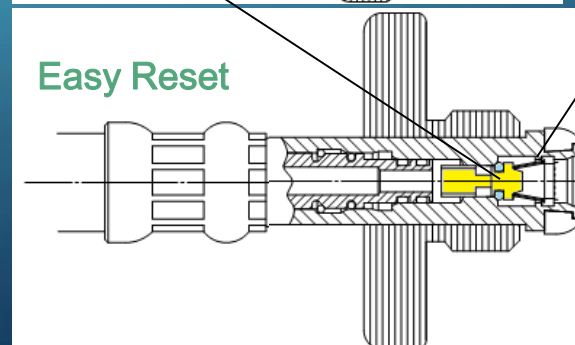
Red Line appears

Shut-off Situation



Spring

Shut-Off Valve



Easy Reset

Shut-Off!

DETECTION

- DEVISTATION
- EARTHQUAKE SENSOR AND SHUT OFF

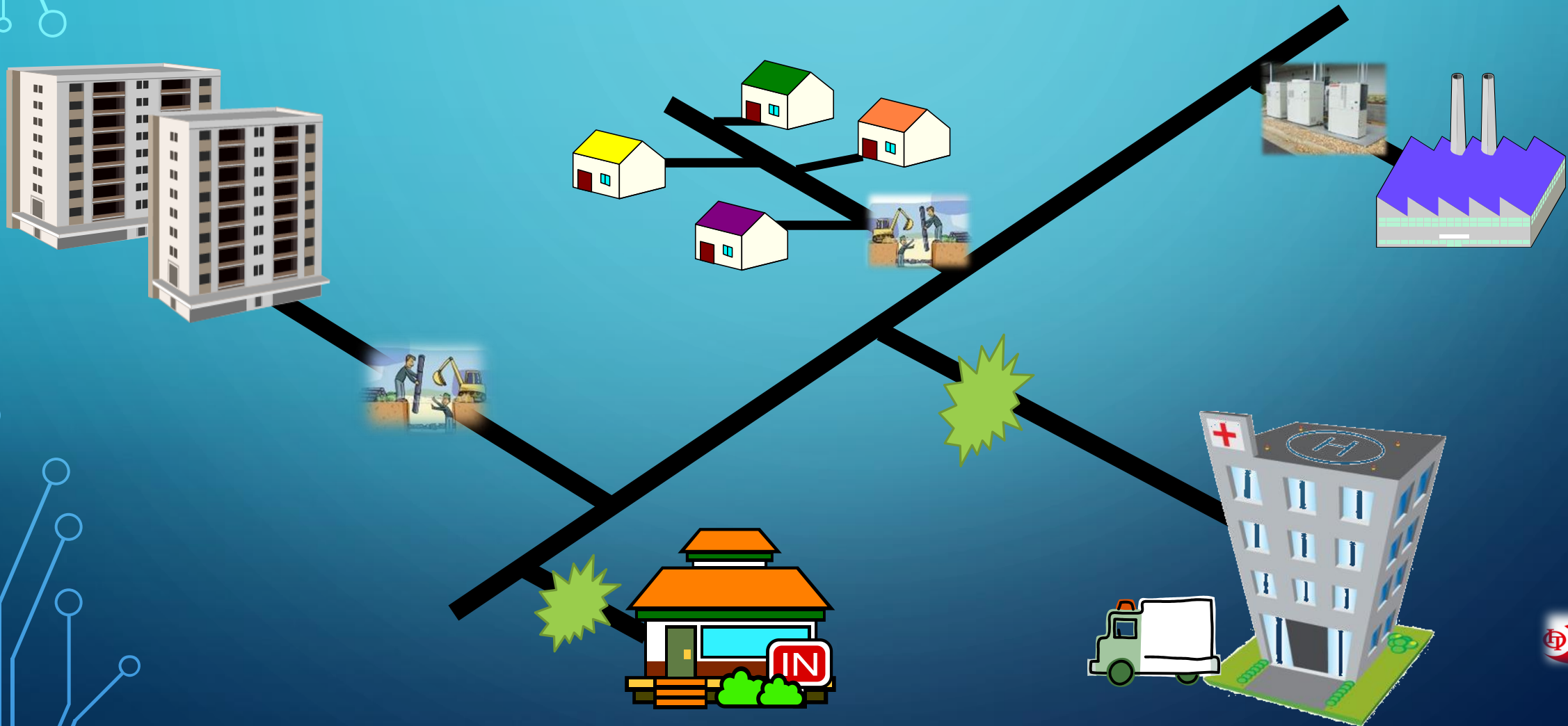
PROTECTION

- SAFETY
- TENSILE TRIGGER HOSE

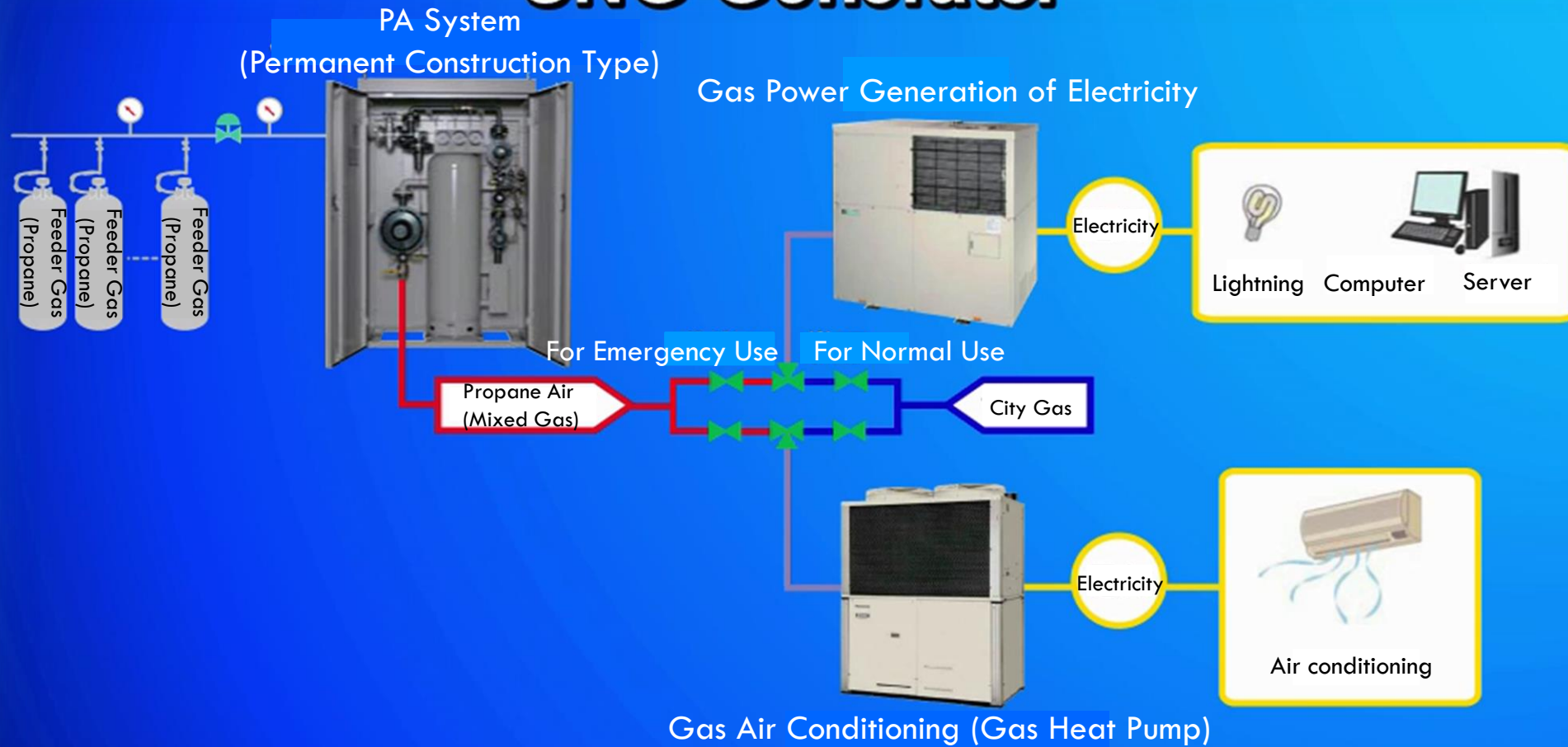
RECOVERY

- **LIFELINE**
- **PA SYSTEM**

WHY DO WE NEED THE PA SYSTEM?



SNG Generator



Enables also power supply

WHAT IS THE PA SYSTEM?

Propane gas

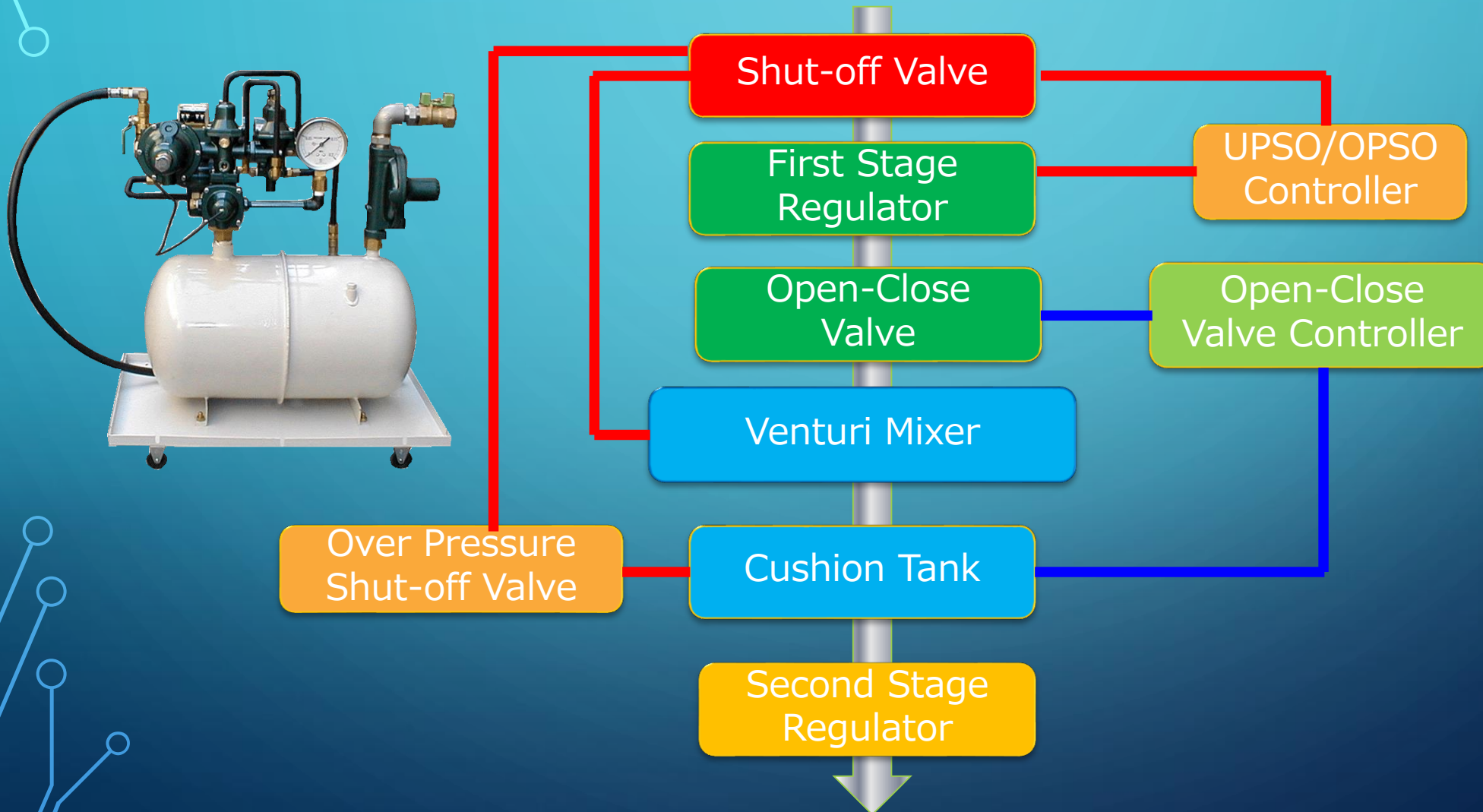
Air

Mixing

Gas with combustion characteristics
similar to Natural Gas

How does it function?

Feeder Gas (LPG) 



Introduction of PA series

- 8m³/h type

Used in buildings, such as two-family houses or restaurants, where more gas is consumed than average households.



Cylinder cover is optional.

Introduction of PA series

- 30m³/h type

Used in institutions, such as hospitals or nursing homes.



Installation Example

1. Providing hot meals in evacuation center

Tokyo, Japan : Large Cooker

- Introduced our PA to their food service facilities at 44 elementary and junior high school
- Built an environment to provide hot meals for affected people.



Quick fitting is able to be disconnected without tools.



Installation Example

2. Backup of Electricity in a Restaurant

Kanagawa, Japan :
Combined Use of Cogeneration System

The restaurant usually uses electricity and hot water supplied by cogeneration system. It concludes an agreement with the city and will be an evacuation center in disasters. So it needs a backup of electricity.



Installation Example

3. Backup of Gas Air Conditioner in an office

Osaka, JAPAN:
Combined Use of Gas heat pump(GHP)

Even if city natural gas is not available in emergencies, they can use gas air conditioning.

This installation example also installed in nursing home and disaster prevention base.



Achievements of PA in disasters

Applications in the Great East Japan Earthquake



Shiogama

- City Housing: 1
- Hospital: 2
- Medical Center: 1
- Workers Camp: 1
- Hotel: 1



Ishimaki

- Prefectural Housing: 5
- City Housing: 3
- Area Supply: 3

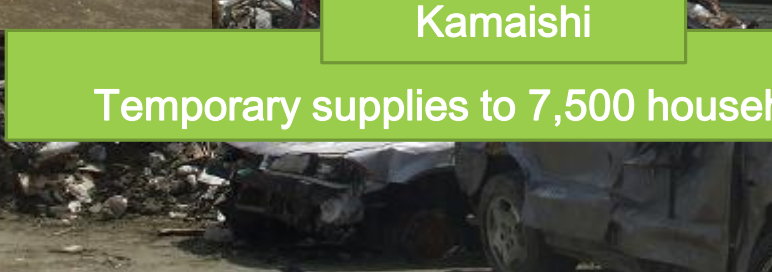
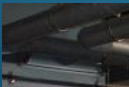


Sendai

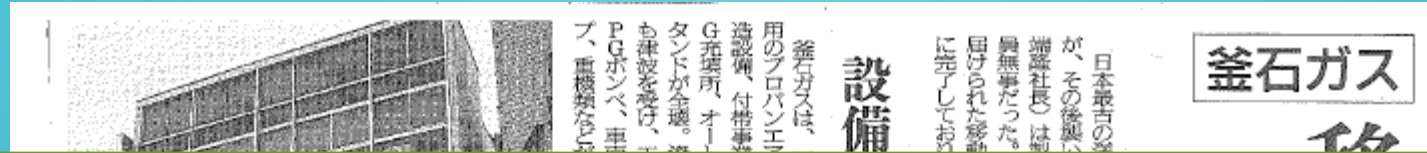
- Nursing Home: 11
- Hospital: 3
- Disability Aid Center: 3
- Senior High School: 1

Kamaishi

Temporary supplies to 7,500 households: 35

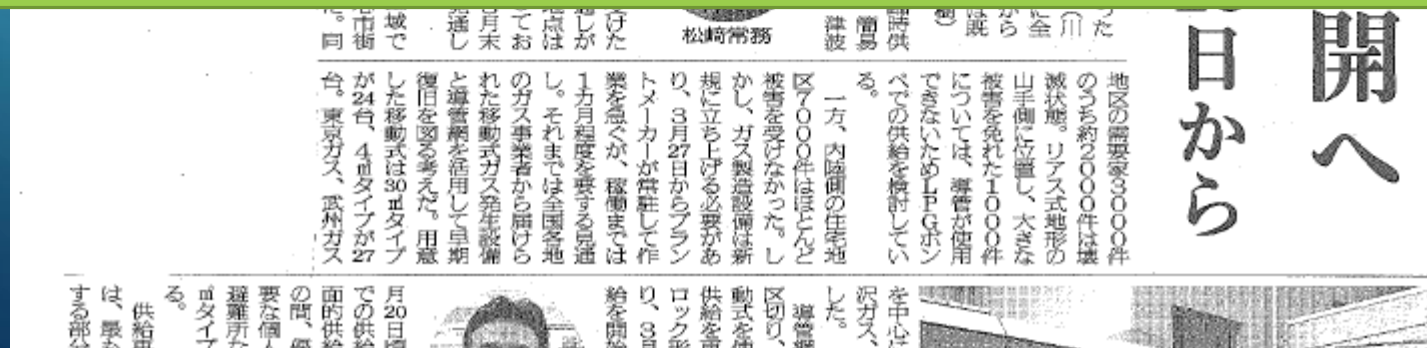


KAMAICHI CITY



In Kamaishi city, we utilize our past experience of calorific value changing and temporary supply was made by PA. Only 17 days after the disaster of 3.11, 7,000 households returned back to normal.

Supplying gas by using PA with the existing supply piping was the first successful trial ever. This was broadcasted by NHK news.



KUMAMOTO – APRIL 2016



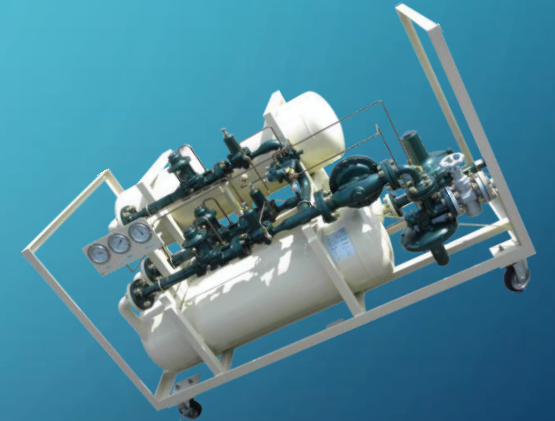
EMERGENCY CENTRE



HEALTH CARE FACILITY



EMERGENCY CENTRE



Thank you for your attention.