RIKEN KEIKI

M210-16035

Applications in Steel Market and Introduction to Gas Detectors and Alarms for Safety and Security

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Document contents

- About Riken Keiki
- Why do we need gas detectors?
  Risks associated with toxic gases
- Applications in steel market
- Major examples of accidents
- Product information
- International agents

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About Riken Keiki

About Riken Keiki

RIKEN KEIKI

RIKEN

1939

Riken Keiki

Headquarters
To be completed in September 2018 (conceptual drawing)

Riken Keiki was originally established to commercialize and sell detectors for preventing explosions in coal mines and on oil tankers.

About Riken Keiki

Methane gas measurements in coal mine

Optical Gas Indicator Model 3 (1939)

Certification
National heritage of analytical and scientific instruments
2014

Company profile

Company name	Riken Keiki Co., Ltd.	
Established	March 15, 1939	
Location	Headquarters: Development Center:	2-7-6 Azusawa Itabashi-Ku, Tokyo 2-3 Minamisakae-cho, Kasukabe-shi, Saitama
Factories	Hakodate-shi, Hokkaido; Sakurai-shi, Nara (affiliated company)	

Headquarters

To be completed in September 2018
(conceptual drawing)

Development Center

About Riken Keiki

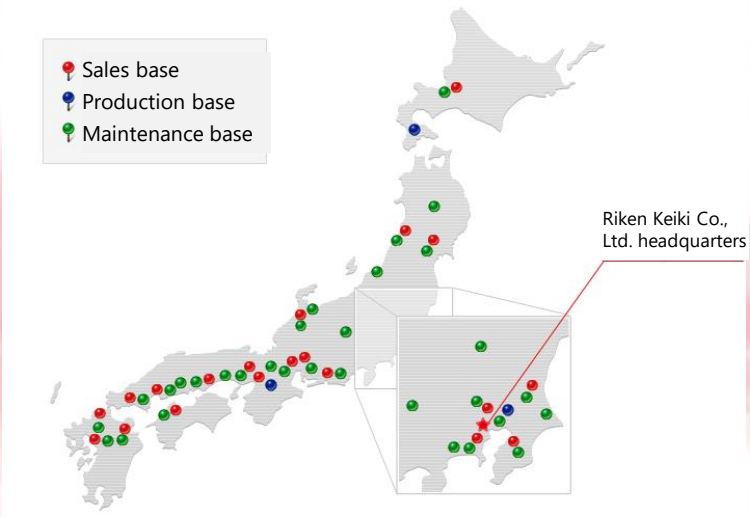
Headquarters
(Itabashi-Ku, Tokyo)

Development Center
(Kasukabe-shi, Saitama)

To be completed in September 2018
(conceptual drawing)

Locations of sales offices

◆Domestic◆



◆Global◆

Company profile

Various bases	Domestic sales and branch offices: 20 locations Service stations: 32 locations Global bases: 7 locations
Major sales items	Combustible gas detectors and alarms Gas detectors and alarms designed to prevent oxygen deficiency accidents Toxic gas detectors and alarms Combined gas detectors and alarms Various measuring instruments for environmental measurements and other instruments
Capital	2,565.5 million yen
Number of employees	965 (non-consolidated), 1,127 (consolidated) * As of September 30, 2017

Hakodate Factory
(Hakodate-shi, Hokkaido)

Nara Factory
(Sakurai-shi, Nara)

Company history

1939	Riken Keiki Co., Ltd. established to produce and sell optical gas detectors, photo-elasticity apparatuses, and other precision instruments invented and developed by RIKEN
1959	Start production and sale of combustible gas alarms and detectors (catalytic combustion type).
1967	Start production and sale of oxygen measuring instruments (OX-1).
1970	Start production and sale of monitoring tape type measuring instruments (FP-200).
1972	Start production and sale of non-dispersive infrared measuring instruments (RI-550).
1975	Start production and sale of electrochemical type measuring instruments (EC-231).
1986	Start production and sale of photoemission yield spectrometers (AC-1).
2009	70th anniversary of founding
2014	Start production and sale of portable X-ray diffractometers equipped with XRF (DF-01).
2015	Start production and sale of portable multi gas detectors (GX-6000), first product of its kind in Japan capable of housing photoionization detectors (PID).

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Why do we need gas detectors? Risks associated with toxic gases

Need for gas detectors (combustible gases)

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Criteria set by United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

According to the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS), a combustible gas (or flammable gas) is defined as follows:

A combustible or flammable gas is a gas having an explosive (flammable) range when mixed with air under atmospheric conditions of 20°C and standard pressure of 101.3 kPa.

Gases falling under this definition are further subdivided into the following two categories based on the severity of the associated risk:

Category 1 (Danger: Extremely flammable gas)

Gases capable of igniting at 20°C and standard pressure of 101.3 kPa when occurring in a mixture of 13% or less by volume with air or having an explosive (flammable) range of at least 12% when mixed with air regardless of the lower explosion (flammable) limit

Category 2 (Warning: Flammable gas)

Gases, other than those in Category 1, which are gaseous at 20°C and a standard pressure of 101.3 kPa and have an explosive (flammable) range when mixed with air

We need gas detectors because flammable gas leaks can lead to explosions.

Need for gas detectors (definition of permissible concentration)

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Definition of permissible concentration

Even when workers are exposed to hazardous substances at work sites, no adverse health effects should emerge as long as the airborne concentration of the **hazardous** substance remains below the permissible concentration.

Recommended permissible concentrations have been set by the American Conference of Governmental Industrial Hygienists (ACGIH) and the Japan Society for Occupational Health. We use the **ACGIH** permissible concentrations.

Types of permissible concentrations

- **TWA (Time Weighted Average)**
  Time Weighted Average refers to time-weighted average concentrations over an 8-hour workday and 40-hour workweek of routine work to which workers may be repeatedly exposed without adverse health effects.

- **STEL (Short Term Exposure Limit)**
  Short Term Exposure Limit refers to exposure that does not lead to adverse health effects if each exposure does not exceed 15 minutes, the number of daily exposures does not exceed four, and the exposures are separated by at least one hour.

- **C (Ceiling value)**
  Ceiling Value refers to the upper limit that can never be exceeded.

We need gas detectors because leaks exceeding permissible concentrations can lead to accidents.

How human body reacts to oxygen-deficiency

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O2 Concentration 21%

Symptoms

Natural air

O2 Concentration 18%

Symptoms

Limit level for not causing serious health problems. Continuous ventilation is required

O2 Concentration 16%-12%

Symptoms

Rapid breathing, Increase in pulse rate, Loss of concentration, Headache, Nausea, Ear ringing

O2 Concentration 14%-9%

Symptoms

Stupor, Headache, Nausea, Cyanosis, Faintness on the entire body

O2 Concentration 10%-6%

Symptoms

Comatose, Loss of consciousness, Muscle spasm on the entire body

O2 Concentration 6% or less

Symptoms

Unconsciousness, Comatose, Cessation of breathing, Cardiac arrest, Die in 6 minutes

Effects of hydrogen sulfide (H_2S) on human body

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Concentration (ppm)	Effects and Toxicity
0.025	Smell vaguely. (It varies according to the individual.)
0.3	Smell clearly.
3 - 5	Smell moderate degree of objectionable odor.
10	Lower-level to irritate eyes' mucus membranes.
20 - 40	A strong odor. Lower-level to irritate lungs' mucous membranes.
100	Sense of smell is impaired in 2 - 15 minutes. Eyes and respiratory tract are irritated in 1 hour. 8 - 48 hours continuous exposure can lead to death.
170 - 300	1 hour exposure is the limit for not causing serious health problems.
400 - 700	Life-threatening exposure in 0.5 - 1 hour.
800 - 900	Bring on loss of consciousness, cessation of breathing and death.
1000	Bring on immediate loss of consciousness and death.

Effects of carbon monoxide (CO) on human body

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Concentration (ppm)	Effects and Toxicity
100	No noticeable effects even after breathing for a few hours.
200	A mild headache in around 1.5 hours.
400 - 500	Headache, nausea and ear ringing in around 1 hour.
600 - 1000	Loss of consciousness in around 1 - 1.5 hours.
1500 - 2000	Headache, vertigo and disabling nausea in around 0.5 - 1 hour, and losing consciousness.
3000 - 6000	Headache, vertigo, disabling nausea...etc. in a few minutes. 10 - 30 minutes exposure can lead to death.
10000	Bring on immediate loss of consciousness and death.

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Applications in Steel Market

Applications in steel market

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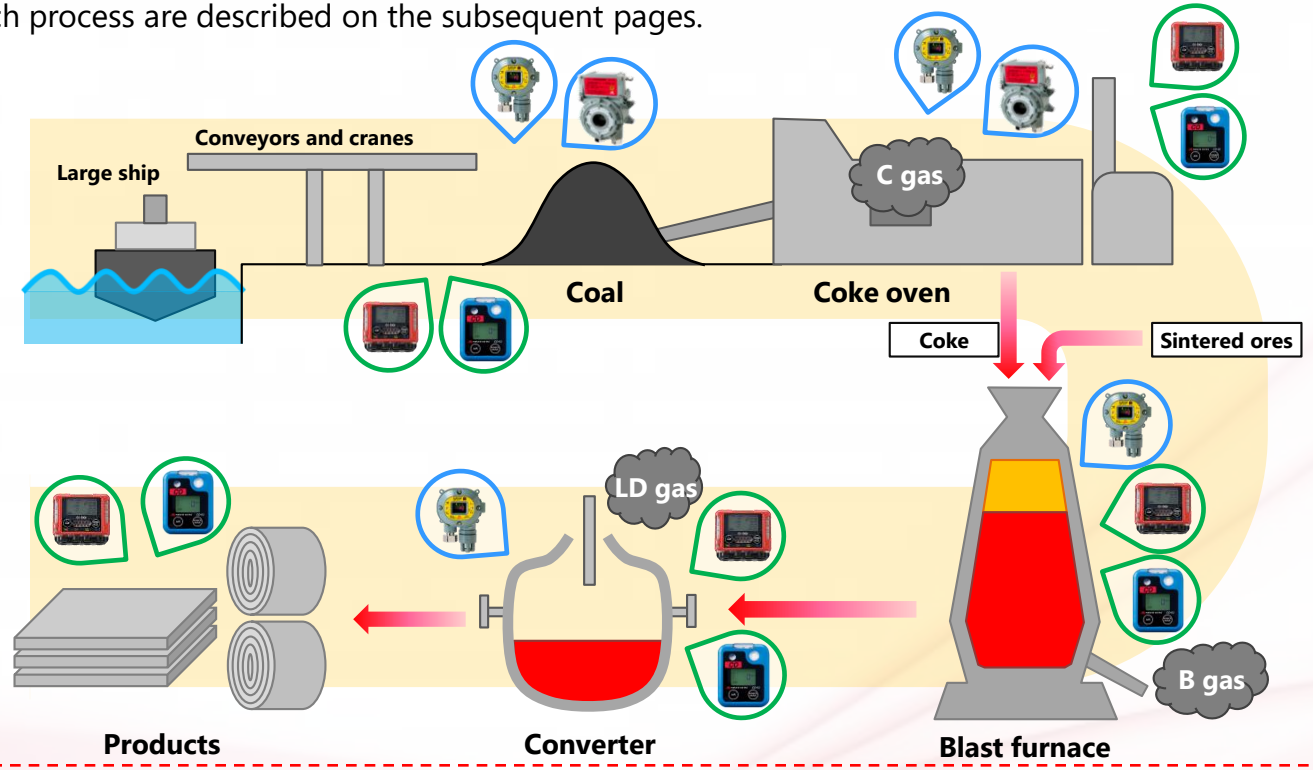
1. **Entire flow of processes in steel market**
2. **Details of each process (from carrying-in of raw materials to steelmaking)**
   - 2-1. Bringing in raw materials and processing
   - 2-2. Pig iron making
   - 2-3. Steelmaking
3. By-product gases in steelworks
4. Steel rolling process

1. Entire flow of processes in steel market

The figure below shows the risks posed by B gas, C gas, and LD gas leaks in steelmaking processes and gives examples of disaster prevention and security equipment installations.
The details of each process are described on the subsequent pages.



Smart Transmitter/ Gas Detector
Model: SD-1 eries

Flame-proof Suction Type Gas Detector
Model: SD-D58

Personal Single Gas Monitor
Model: 03 series

Four Gas Personal Monitor
Model: GX-2009

B gas — **Blast furnace gas (BFG)**
H_2 CO CO_2 N_2

C gas — **Coke oven gas (COG)**
H_2 CH_4 C_mH_n CO CO_2 N_2

LD gas — **Linz-Donawitz converter gas (LDG)**
H_2 CO CO_2 N_2

2. Details of each process (from carrying-in of raw materials to steelmaking)

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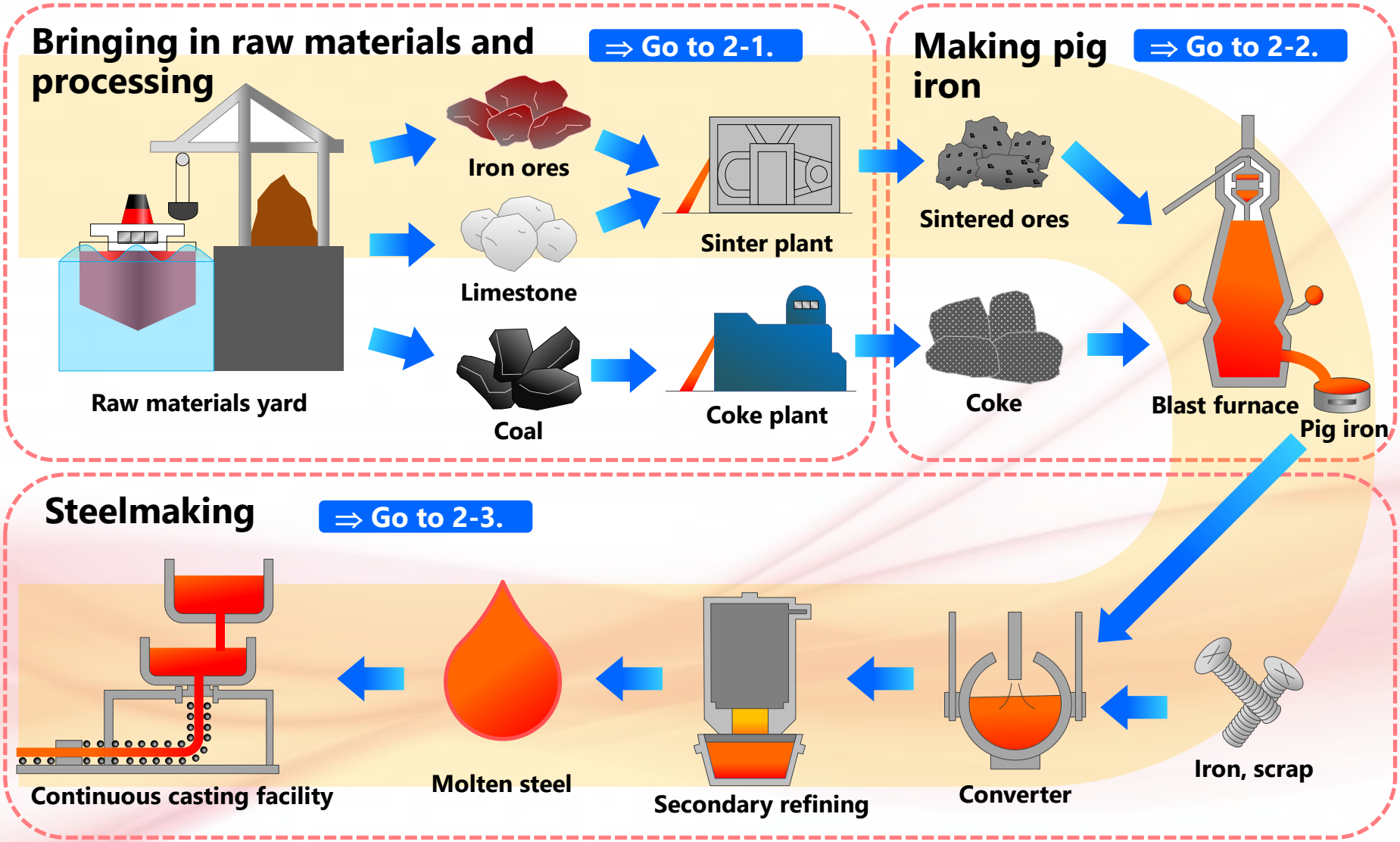
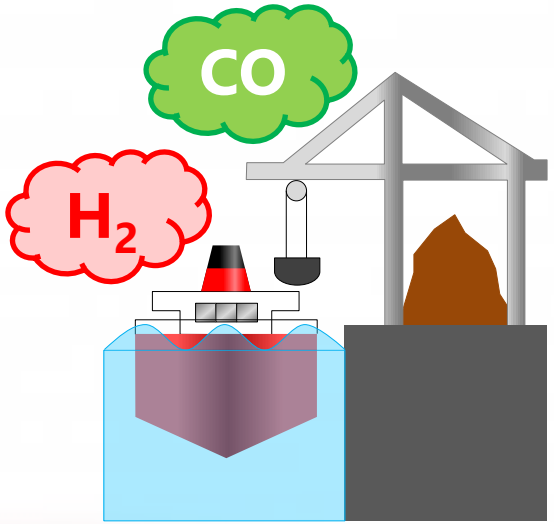
This page shows the details of each process from the time raw materials are brought in through steelmaking. The subsequent pages show applications relevant to each process.



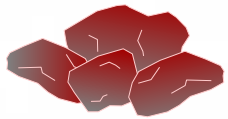
2-1. Bringing in raw materials and processing

Description: Iron ores and coal (coke), the main raw materials of iron, are transported and delivered on large ships. As pretreatment for making pig iron, iron ores must be sintered with limestone to make sintered ores, or coal must be dry-distilled at high temperatures to make coke.

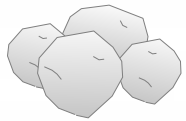
Hazardous risks: **Significant volumes of hydrogen (H2) and carbon monoxide (CO) generated in raw materials yards and coke plants can cause explosions or poisoning.** ⇒ **Detecting flammable gases, detecting CO to prevent poisoning, and early flame detection**



Raw materials yard

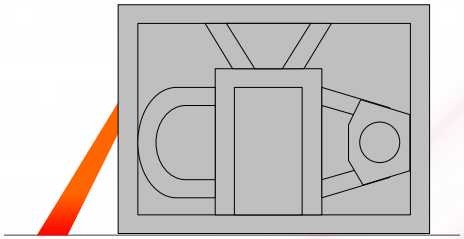


Iron ores



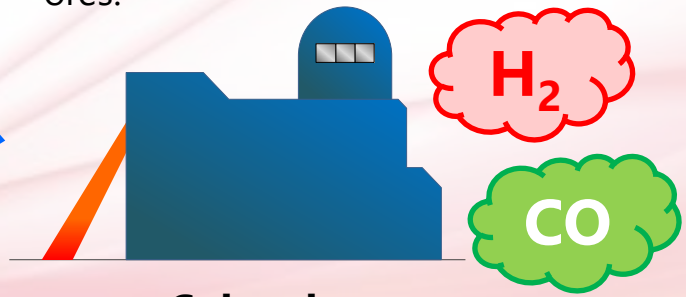
Limestone

Coal



Sinter plant

Iron ores and limestone are sintered together to make sintered ores.



Coke plant

Coal is dry-distilled to make coke.

Smart Transmitter/ Gas Detector **Model: SD-1 eries**

Flame-proof Suction Type Gas Detector **Model: SD-D58**

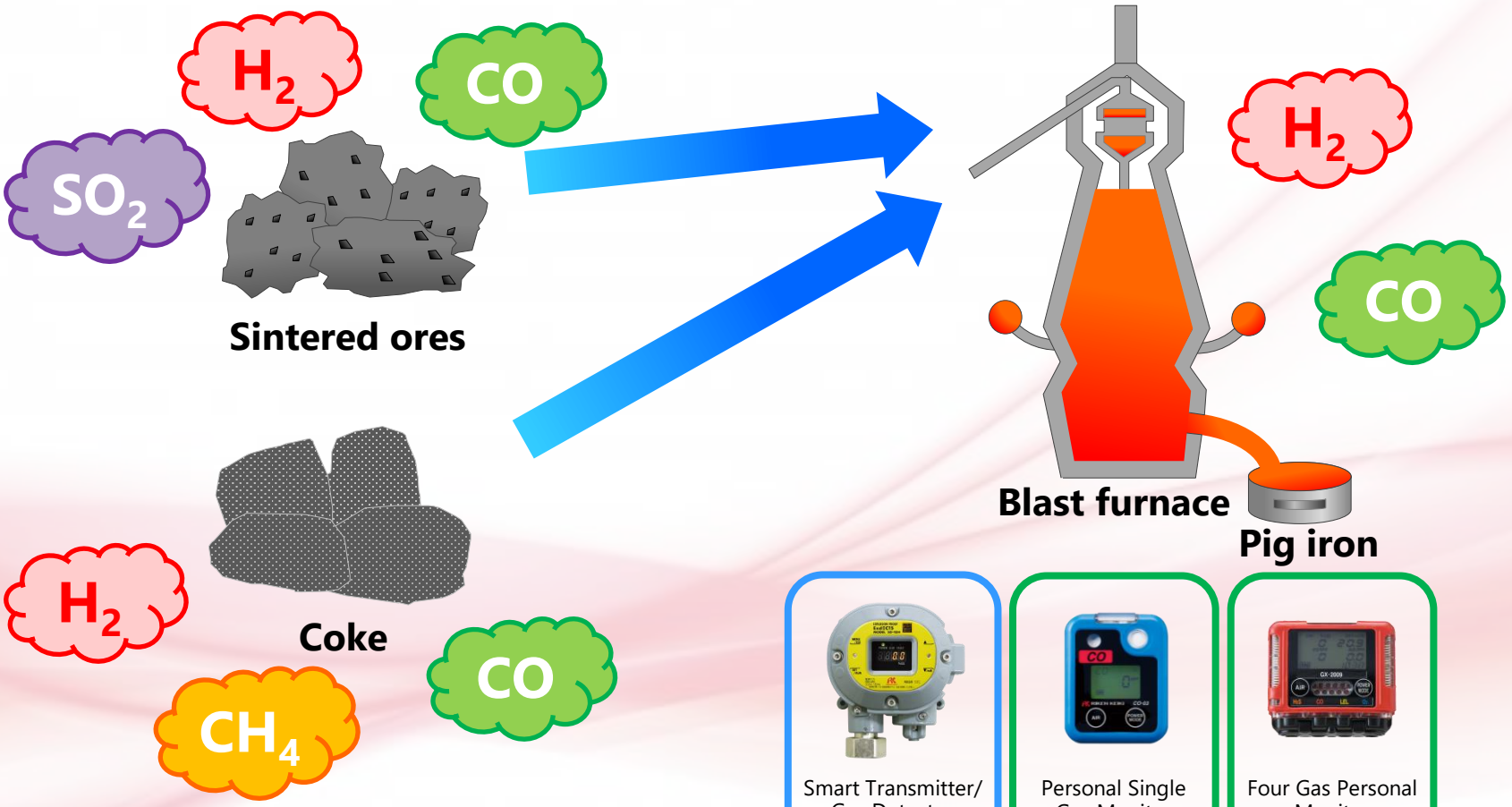
Personal Single Gas Monitor **Model: 03 series**

Four Gas Personal Monitor **Model: GX-2009**

2-2. Pig iron making

Description: In a blast furnace, iron ores, limestone, and coke (made from coal) are alternately supplied from the top. Heated air is injected through a nozzle called the tuyere in the lower area. The furnace interior reaches temperatures of approximately 2,200°C. The molten iron becomes pig iron.

Hazardous risks: **Hydrogen (H_2), methane (CH_4), carbon monoxide (CO), sulfur dioxide (SO_2), and other gases generated from the sintered ores, coke, and blast furnace can cause explosions or poisoning.** ⇒ **Detecting combustible gases and CO and SO_2 to prevent poisoning**



Smart Transmitter/ Gas Detector **Model: SD-1 series**

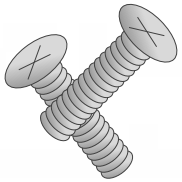
Personal Single Gas Monitor **Model: 03 series**

Four Gas Personal Monitor **Model: GX-2009**

2-3. Steelmaking

Description: Impurities like sulfur and phosphor are removed from the pig iron, which is then transferred to the converter. The iron content approaches 99% once oxygen is injected into the converter to remove carbon. In secondary refining, impurities are further removed to produce steel. Steel is characterized by its toughness and ease of processing.

Hazardous risks: **Carbon monoxide (CO) leaking from the converter can cause poisoning.** ⇒ **Detecting CO to prevent poisoning**



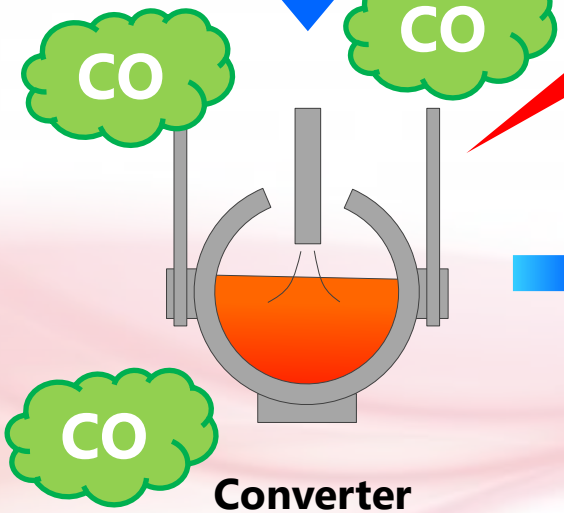
Iron, scrap

Large volumes of CO generated

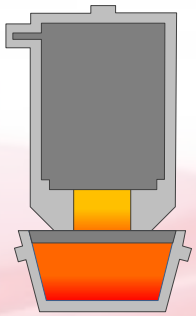
Smart Transmitter/ Gas Detector
Model: SD-1 eries

Personal Single Gas Monitor
Model: 03 series

Four Gas Personal Monitor
Model: GX-2009

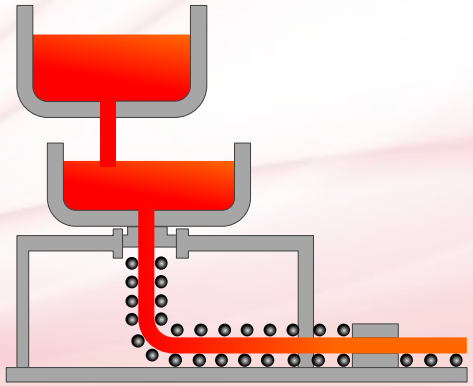


Converter



Secondary refining

Molten steel



Continuous casting facility

The steelmaking gas is used as fuel for the burner.

3. By-product gases in steelworks

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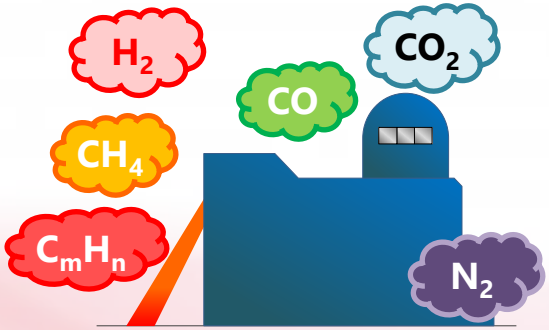
Description: Three major types of by-product gases are generated in steelworks. The examples below give the composition of the by-product gases. (By-product gases are reused as fuel on the premises.)

Hazardous risks: **By-product gases generated in steelworks may cause explosions or poisoning.** ⇒ **Detecting combustible gases and toxic gases to prevent poisoning**

⊖ COG (Coke oven gas)

H_2 : 56vol%
CH_4 : 30vol%
C_mH_n : 3vol%
CO : 6vol%
CO_2 : 2.5vol%
N_2 : 2.5vol%

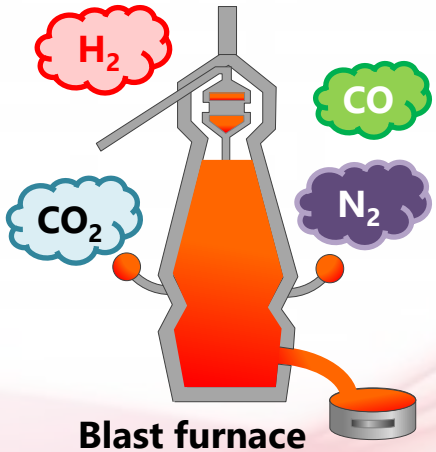


Coke plant

COG

⊜ BFG (Blast furnace gas)

H_2 : 4vol%
CO : 22.5vol%
CO_2 : 22.5vol%
N_2 : 51vol%



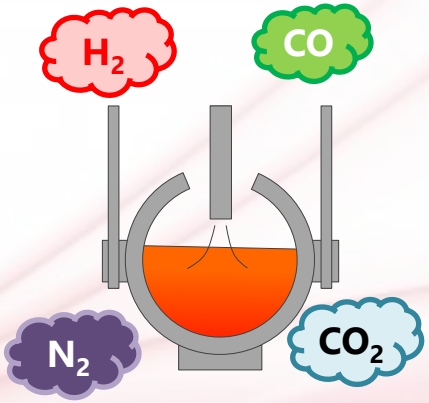
Blast furnace

Pig iron

BFG

⊛ LDG (Linz-Donawitz converter gas)

H_2 : 1vol%
CO : 68vol%
CO_2 : 16vol%
N_2 : 15vol%



Converter

LDG

By-product gases

Smart Transmitter/Gas Detector
Model: SD-1 series

Flame-proof Suction Type Gas Detector
Model: SD-D58

Four Gas Personal Monitor
Model: GX-2009

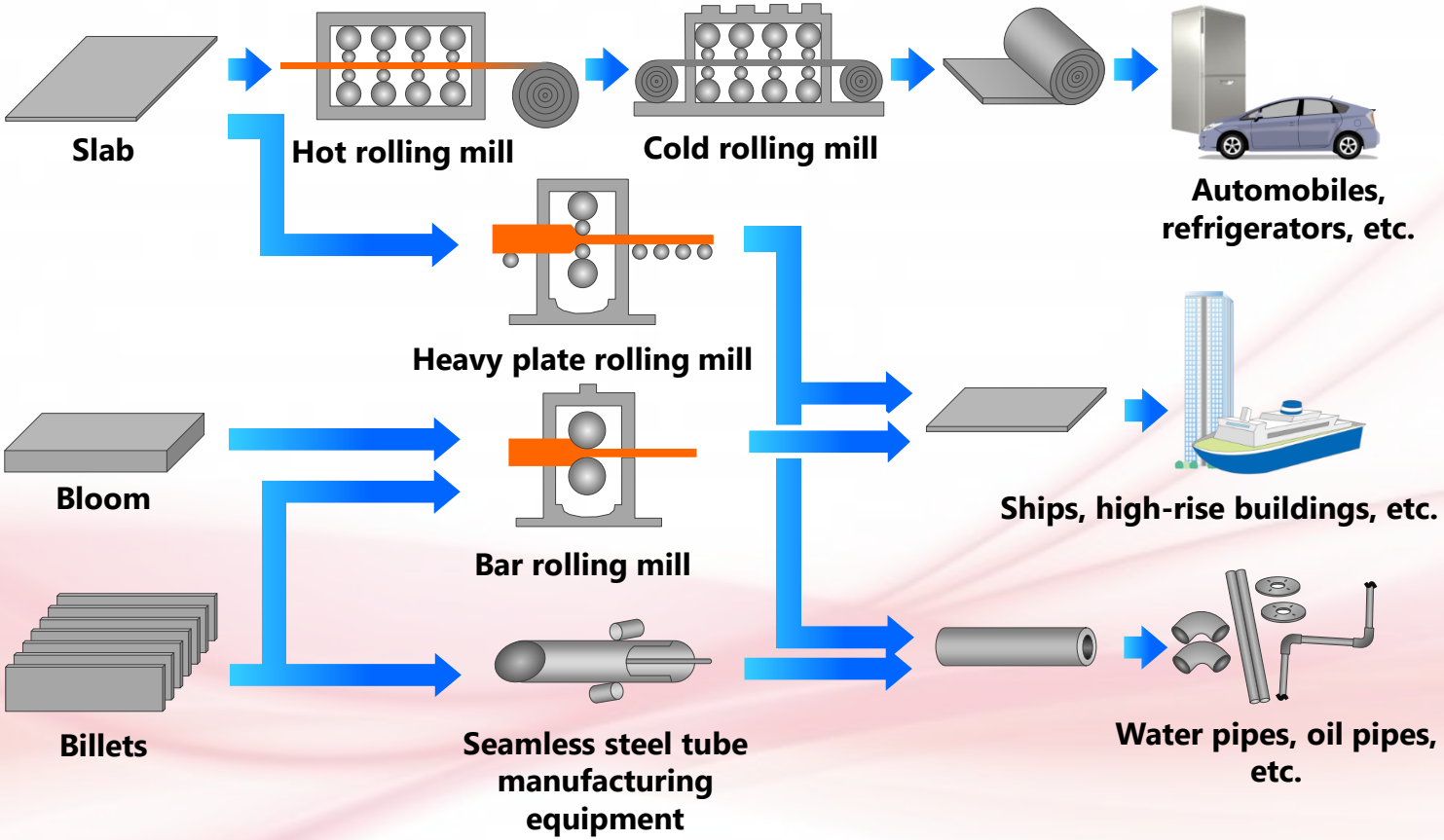
Energy conversion

- Boiler
- Power generation facility
- Oxygen plant

4. Steel rolling process

Description: Steel is processed into plates varying from thin plates of 1 mm or less to thick plates of up to 40 cm. In addition to processing into plates, the strength, properties, and ease of processing may be adjusted. The steelmaking gas is used as fuel gas. Oxygen shortages may occur in the underground pits and other locations.

Hazardous risks: **Leaks of steelmaking gas used as the fuel gas may cause explosions or poisoning.** ⇒ **Detecting combustible gases and carbon monoxide (CO) to prevent poisoning**



Personal Single Gas Monitor
Model: 03 series

Four Gas Personal Monitor
Model: GX-2009

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Major examples of accidents

Prepared by extracting and processing materials from the Safety at Work Site (Ministry of Health, Labour and Welfare: http://anzeninfo.mhlw.go.jp/index.html)

A CO gas leak occurred during testing of measuring instruments in a steelworks blast furnace, resulting in the poisoning of many of those present.

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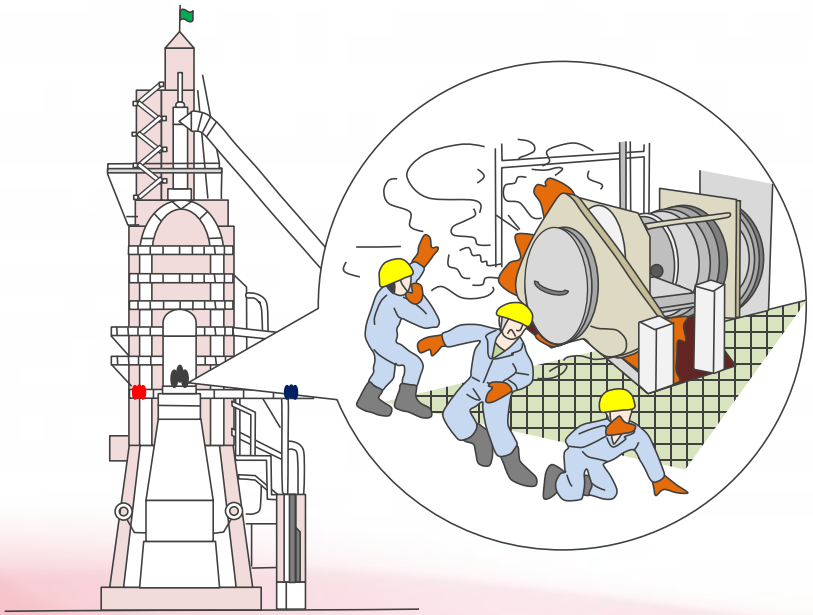

[Location of accident]

Inside the steelworks blast furnace

[Cause of accident]

The operator turned on the main power in the electric room, turned off the main circuit switch at the site, and then pressed the Advance button on the measuring instrument. The gas pressure in the furnace caused the measuring instrument to retract. The retraction of the measuring instrument stopped briefly when the operator pressed the Stop button, but resumed when the purge button used to insert the antenna of the measuring instrument into the furnace was pressed. The gas in the furnace leaked through the tire seal from the ball valve intended to prevent gas leaks.

[Damage/injuries]

Many observing the test at points close to and distant from the control panel were exposed to gas from the furnace and poisoned by carbon monoxide.

Wearing gas detectors on a routine basis enables early detection of toxic gas leaks and improves work safety.

Fuel supply was resumed after repairs of a recovery furnace. Welding sparks ignited and caused an explosion of coke oven gas that had leaked into the furnace, resulting in major damage.

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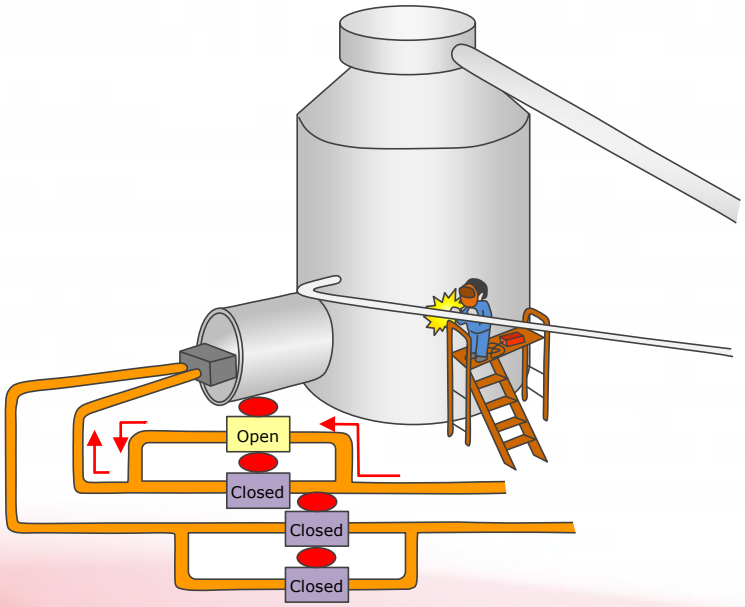

[Location of accident]

Hydrochloric acid recovery furnace used in the steelmaking process for washing the product

[Cause of accident]

Following repairs of the roasting furnace (furnace used to decompose iron chloride into hydrochloric acid and iron oxide by thermal decomposition and recover hydrochloric acid), the filling of coke oven gas was completed. To ignite the burner and resume combustion, the operator operated the start switch on the first floor of the roasting furnace to activate the exhaust blower that discharges residual coke oven gas from the furnace. The air blower that supplies air to the burner was then activated. An explosion occurred as the operator was moving to operate the ignition switch on the third floor, before the corresponding switch was operated.

[Damage/injuries]

The explosion blew off the upper part of the furnace and scattered fragments over surrounding areas. A plumbing worker doing cleanup work on the ground was seriously injured by the fragments. The operator who was in the process of moving to the third floor after operating the start switch on the first floor and a worker doing paint work on the third floor were struck by fragments and sustained injuries.

Wearing the gas detectors on a routine basis enables early detection of combustible gas leaks and improves work safety.

Carbon monoxide poisoning during cleaning of an absorption tower of desulfurization equipment in steelworks

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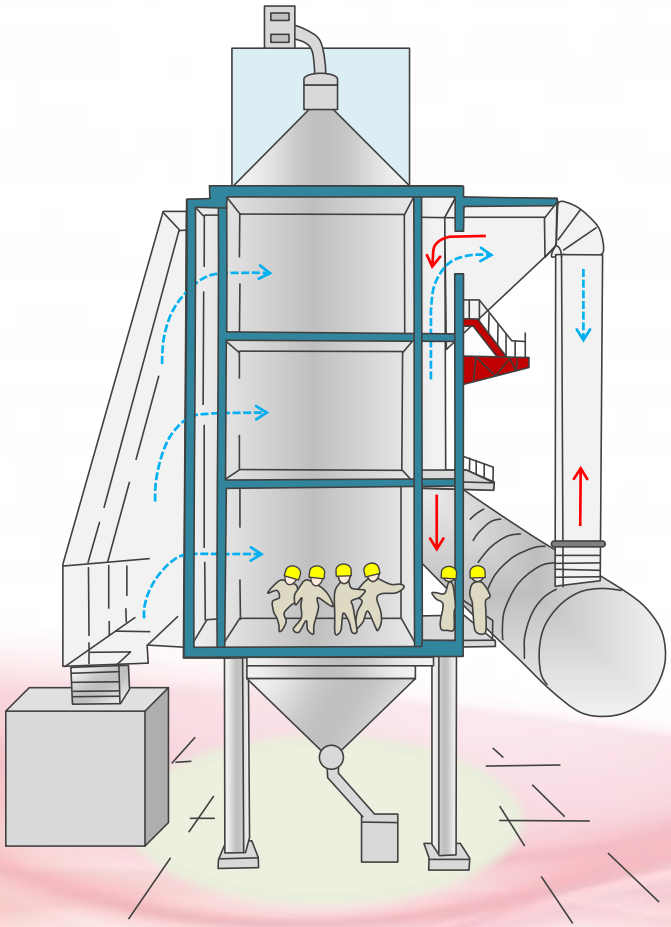

[Location of accident]

Absorption tower of desulfurization equipment for sintering machine at steelworks

[Cause of accident]

During the cleaning of the lower part of the desulfurization equipment, the victim and two other workers were positioned outside the inner manhole. Four workers were performing suction work with vacuum hoses in the inner manhole.
The steelworks observer detected an unpleasant and irritating odor and suspected exhaust gas had leaked in from the sintering machine. Measurements of concentrations of sulfur dioxide gas, oxygen, and carbon monoxide in the manhole showed an oxygen concentration of 18.8% and carbon monoxide concentrations of 130 ppm. The workers in the manhole were instructed to evacuate.

[Damage/injuries]

The parties affected were taken to a hospital by private car and examined. Doctors advised hospitalization for the observer and victim. The observer went home that day, while the victim remained hospitalized for a week for carbon monoxide poisoning.

Measuring gas concentrations made it possible to identify concentrations of the toxic gas at an early stage, which resulted in early evacuation and minimized health consequences.
Wearing gas detectors on a routine basis enables early detection and improves safety.

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Product Information

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SD-1
SD-1RI
(For combustible gases)

SD-1GH
(For combustible/ toxic gases)

SD-1EC
(For carbon monoxide/ hydrogen sulfide)

SD-1OX
(For oxygen)

Smart Transmitter/
Gas Detector

Model: SD-1 series

Features

- Suitable for use as an explosion-proof product, even in a hydrogen/acetylene atmosphere
- Waterproof/dustproof enclosure (IP 65 equivalent) allows deployment in severe environments.
- Supports HART Communication Protocol, allowing transmission of more information over legacy analog 4-20 mA connection.
  * Excluding SD-1 (TYPE NC)
- SD-1RI, SD-1EC, and SD-1OX are SIL 2 certified in all parts of the functional safety standard, marking a first for Japanese manufacturers.
- Using the suction cap for the SD-1 series and connecting the detector to a suction pump or an aspirator unit enables suction type operation.

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SD-D58
(With concentration indicator)

GD-D58
(Without concentration indicator)

Features

- Suitable for use as an explosion proof product even in hydrogen atmospheres
- Equipped with automatic flow rate abnormality detection function
- Integrated assemblies of replacement parts improve maintainability.
- Dustproof/waterproof enclosure (IP 67 equivalent)
- One-person maintenance possible

Flame-proof Suction Type Gas Detector

Model: SD-D58

Model: GD-D58

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GP-03 (For combustible gases)

OX-03 (For oxygen)

HS-03 (For hydrogen sulfide)

CO-03 (For carbon monoxide)

Features

- Models for use with rechargeable batteries have been added to the product line.
- Standard protective covers protect the main unit from scratches, dirt, and shock.
- Compact, lightweight design doesn't interfere with work.
- Inherently safe and explosion-proof enclosure is ideal for use in hazardous locations.

Personal Single Gas Monitor

Model: 03 series

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Features

- Suitable for use as an explosion-proof product, even in a hydrogen/acetylene atmosphere
- IP 67 equivalent protection for safe use in outdoor work
- Three alarm lamps and two alarm buzzers oriented in different directions to alert both the operator and those in surrounding areas
- 95+ dB buzzer audible even in the noisiest surroundings
- Simultaneous display of gas concentrations of four components on large LCD screen
- Also equipped with clock display and data logger functions

Four Gas Personal Monitor

Model: GX-2009

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International Agents

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International Agents

North America

South America

Asia and Pacific

Russia and Central Asia

Europe

Middle East

Africa

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International agents (table of contents)

North America	U.S.A.				
South America	Brazil	Argentina	Peru	Chile	Uruguay
Asia and Pacific	China	South Korea	Taiwan	Singapore	Malaysia
	Indonesia	Thailand	India	Vietnam	Philippines
	Australia				
Europe	Germany	Greece	THE NETHERLANDS	Norway	Turkey
	U.K.				
Middle East	U.A.E.	Israel			
Africa	South Africa				
Russia and Central Asia	Russia				

RIKEN KEIKI

International agents（U.S.A.）

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WEBSITE :	http://www.rkiinstruments.com/

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International agents（BRAZIL）

HIDEO NAKAYAMA IMP. EXP. COM. E INDUSTRIA LTDA

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PERSON : Alejandra Palominos (Marketing Manager)
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RIKEN KEIKI

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PERSON : Dra.Nermys Hernandez
WEBSITE : http://www.microsur.org

RIKEN KEIKI

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RIKEN KEIKI COMMERCIAL(SHANGHAI）CO., LTD.

ADDRESS :	HEAD OFFICE : ROOM4A SHANGHAI WATANABE INTERNATIONAL COMMERCIAL BUILDING NO.55, LINPING N.ROAD, HONGKOU DISTRICT, SHANGHAI, 200086 CHINA SALES DEPARTMENT OFFICE : ROOM1106 DALIAN LEE WAN HOTEL NO.8, MINZHU SQUARE, ZHONGSHAN DISTRICT, DALIAN, LIAONING, 116001 CHINA
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FAX :	86-411-8212-3833
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RIKEN KEIKI

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GANGSEO-GU, BUSAN, 46741 KOREA
TEL : 82-51-712-9900 FAX : 82-51-518-7736
E-MAIL : master@rikenkeiki.co.kr PERSON : MR.SUN-GU,LEE
WEBSITE :
(KOREAN) http://rikenkeiki.co.kr/bn/
(ENGLISH) http://rikenkeiki.co.kr/bn/english/

HIGH INTEGRATED TECHNOLOGY, INC.

ADDRESS : 72, SEGYOSANDAN-RO, PYEONGTAEK-SI,
GYEONGGI-DO, 17843, KOREA
TEL : 82-31-650-7000 FAX : 82-31-650-7007
E-MAIL : info@hitinc.co.kr PERSON : MR.HYUNG-SIL, KIM
WEBSITE :
(KOREAN) http://www.hitinc.co.kr/
(ENGLISH) http://www.hitinc.co.kr/?strMode=company_e/company

RIKEN KEIKI

International agents（TAIWAN）

RIKEN KEIKI TAIWAN CO., LTD. HEAD OFFICE

ADDRESS :	NO.87, YANGMING RD., SHANHUA JEN, TAINAN, 741, TAIWAN
TEL :	886-6-581-1224
FAX :	886-6-581-1250
E-MAIL :	episys@ms22.hinet.net
PERSON :	MR. SEITARO TAKAHASHI (PRESIDENT)
WEBSITE :	http://www.rikenkeiki.com.tw/admin/news/front/news.php

RIKEN KEIKI TAIWAN CO., LTD. TAICHUNG BRANCH

ADDRESS :	NO.2, ALY.14, LN.150-30, SEC.3, XITUN RD., XITUN DIST., TAICHUNG CITY 407, TAIWAN
TEL :	886-4-2462-5386
FAX :	886-4-2462-5508
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PERSON :	MR. WU WEN CHENG

RIKEN KEIKI

International agents（SINGAPORE）

R K INSTRUMENTS (S) PTE LTD

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FAX :	65-6275-3387
E-MAIL :	rk@rkinstruments.com.sg
PERSON :	MR. BERNARD QUEK (PRESIDENT)
WEBSITE :	http://www.rkinstruments.com.sg/

RIKEN KEIKI

International agents（MALAYSIA）

KINETICS SYSTEMS MALAYSIA SDN. BHD.

ADDRESS :	12A, JALAN RINGGIT 23/11 , SECTION 23, 40300 SHAH ALAM, SELANGOR DARUL EHSAN MALAYSIA
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FAX :	603-5542-2289
E-MAIL :	ck.chooi@kinetics.net
PERSON :	MR. CHOOI CHOON KEET (GENERAL MANAGER)
WEBSITE :	http://www.kinetics.net/

RIKEN KEIKI

International agents（INDONESIA）

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TEL :	62-21-6900656
FAX :	62-21-6900657
E-MAIL :	sales@ptpgs.co.id
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PT. CENTRADINDO UNITRAS (FOR PERTAMINA & MARINE SECTOR)

ADDRESS :	COMPLEX PERKANTORAN DUTA HARAPAN INDAH JL. KAPUK MUARA RAYA BLOK SS NO.3 JAKARTA UTARA 14460 INDONESIA
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RIKEN KEIKI

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TAIYO GASES CO., LTD.

ADDRESS :	17TH FLOOR SERM-MIT TOWER, 159 SUKHUMVIT 21 ROAD, NORTH KLONGTOEY, WATTANA, BANGKOK 10110 THAILAND
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RIKEN KEIKI

International agents（INDIA）

TRITECH

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PERSON : MR. CAO MINH LOI (Director)

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RIKEN KEIKI

International agents（PHILIPPINES）

PILIPINAS TRADE GAS, INC. (PTGI)

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RIKEN KEIKI

International agents（AUSTRALIA）

CONTROL EQUIPMENT PTY. LTD.

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RIKEN KEIKI

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PERSON : MR. SHINTARO ONO(Managing Director)

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RIKEN KEIKI

International agents（GREECE）

ZERVOUDAKIS MARINE SUPPLIES LTD.

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RIKEN KEIKI

International agents（NORWAY）

MARTIN BRUUSGAARD & CO. AS.

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RIKEN KEIKI

International agents（TURKEY）

DOGANAK COLL. CO.

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RIKEN KEIKI

International agents（U.K.）

WEATHERALL EQUIPMENT & INSTRUMENTS LTD.

ADDRESS : UNIT 1 STATION APPROACH, WENDOVER AYLESBURY,
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TEL : +44 1296 622180

FAX : +44 1296 624955

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WEBSITE : http://weatherall-uk.com/

RIKEN KEIKI

International agents（U.A.E.）

METRO　MAC

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FAX :	+971-4-5519973
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RIKEN KEIKI

International agents（ISRAEL）

MODCON SYSTEMS LTD.

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FAX : +972-4-9553956

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RIKEN KEIKI

International agents（SOUTH AFRICA）

I.S.L. ENTERPRISES (PTY) LTD.

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RIKEN KEIKI

International agents（RUSSIA）

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E-MAIL : tairiku@tairiku-trading.co.jp

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OOO"TAIRIKU MOSCOW LTD."

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