



Combustion equipment

~ for your energy-saving and CO₂ emission reduction ~

A photograph of industrial combustion equipment, showing a large, bright yellow flame or fire burning within a complex metal structure. The background is a blue-tinted image of a globe with glowing lines, suggesting global reach and energy efficiency.

Katsura Company, Ltd.



Message from the President

Dear Valued Customers,

In publishing "Combustion equipment for your energy-saving and CO2 emission reduction", I would like to write a word of greetings. Along with your supports, we have worked on the research and development of equipment which contributes to the safe gas supply, energy-saving and CO2 emission reduction for more than 60 years.

For many years, through the development, production and delivery of gas supply equipment, safety device, industrial combustion equipment and device for "business, industry and agriculture", we have accumulated usage technologies corresponding to them. We have realized our valuable customers' energy-saving and CO2 reduction with 26 qualified persons for energy management which is a national license in Japan.

After nuclear accident in Japan, the energy situation changing dramatically, increasing price and levy squeezes the management of the company. Among them, the importance of choosing the energy source is increasing, heat unit price of gas energy which is 1/3 or less of electricity is taking the spotlight.

While the prospect of nuclear power plant restart is not established, significant increase in CO2 emissions has a major impact on environmental problems. From "Basic Energy Plan", gas energy with low CO2 emissions and superior environmental load will be continued to be emphasized for huge energy of industry.

From now on, by full import of "Shale gas (LNG) and accompanying LPG", stable supply and price stability are improved, we are convinced that gas is safe energy that will become the most competitive energy source.

Besides, energy best mix is very important. From over 50 years' experience and actual achievement in the industrial gas combustion, we believe that "Drying and Heating" is the optimal application of gas energy. Other source, such as oil, coal and steam, needs a heat exchanger, on the other hand, when the gas is completely burned, the exhaust gas can be used as it is and energy efficiency near 100% can be obtained. Especially in the drying applications for "Painting, Printing, Papermaking, Construction materials, Foods, Powder and Clothes", have huge demands. For the applications using high-temperature, you can consult with our subsidiary Tokyo Gasdenro CO., Ltd., as well.

We have an experiment building in Kanagawa factory with the total area of 1,440 m². You can test your product yourself with our automatic painting & drying (hot air, far infrared, hot air & far infrared, and high-speed hot air) furnace to check a best combination of painting and drying for your product. You can go through our gas combustion equipment that we have developed for over 60 years. We sincerely look forward to the use of everyone.

The following pages introduce you a part of our devices and equipment that we have developed under our policy and strategy described above. I would be happy to be of service to your energy saving, CO2 emission reduction and consequently global warming reduction. Thank you for your continuous support to us.

Yours faithfully

Hitoshi Marumo, President,

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■ Paint drying ovens for large workpieces



Large construction machine parts



Large vehicle



Auto parts

Usage

Paint drying for large workpiece

Features

1. Energy-saving available with the best mixture of far-infrared and hot-air
2. Quick start and less CO₂ emission
3. Best drying method proposed for various paints, such as solvent, color-wash, powder, etc
4. Energy-saving available by using waste heat from deodorizer and VOC treatment device

Specifications (example)

	Large construction machine parts	Large vehicle	Auto parts
Fuel consumption	37.2 m ³ /h(LNG)	23.2 m ³ /h(LPG)	14.5 m ³ /h(LPG)
Fuel	LNG (13A)	LPG	LPG
Combustion capacity	465 kW (400,000 kcal/h)	698 kW (600,000 kcal/h)	232 kW (200,000 kcal/h)
Heating method	Direct heating hot-air circulation	Direct heating hot-air circulation	Direct heating hot-air circulation

Paint drying ovens for small and middle workpieces



Continuous conveyor oven for auto plastic parts



Continuous direct hot-air / far-infrared oven for painted engine parts



Continuous jet-nozzle hot-air oven for preheating building materials

Usage

Paint drying and/or heating for various workpieces

Features

Best combination available for heating (hot-air circulation, high-speed hot-air, far-infrared, etc), transportation (overhead, conveyor, cart, etc), and furnace structure

Specifications (example)

	Continuous conveyor oven for auto plastic parts	Continuous direct hot-air / far-infrared oven for paint drying engine parts	Continuous jet-nozzle hot-air oven for preheating building materials
Fuel consumption	4.2 m ³ /h(LPG)	14.6 m ³ /h(LNG)	12.5 m ³ /h(LPG)
Fuel	LPG	LNG(13A)	LPG
Combustion capacity	116 kW(100,000 kcal/h)	Hot-air 116 kW + Far-infrared 66 kW(100,000 + 56,760)kcal/h	349 kW(300,000 kcal/h)
Heating method	Direct heating hot-air circulation	Direct heating hot-air circulation + Far-infrared	Direct heating hot-air circulation

Far-infrared furnaces



Testing furnace at our Kanagawa Factory
Far-infrared burner BT-33NH x 4 units



Continuous paint drying furnace for plastic parts
Far-infrared burner BT-33NH x 6 units

Usage

Paint drying, dry-off, and heating & drying

Features

1. High efficiency (quick temperature rising of workpiece) and energy & space saving
2. No dust adherence and no powder paint spattering
3. Free layout of emitting tubes available according to installation space



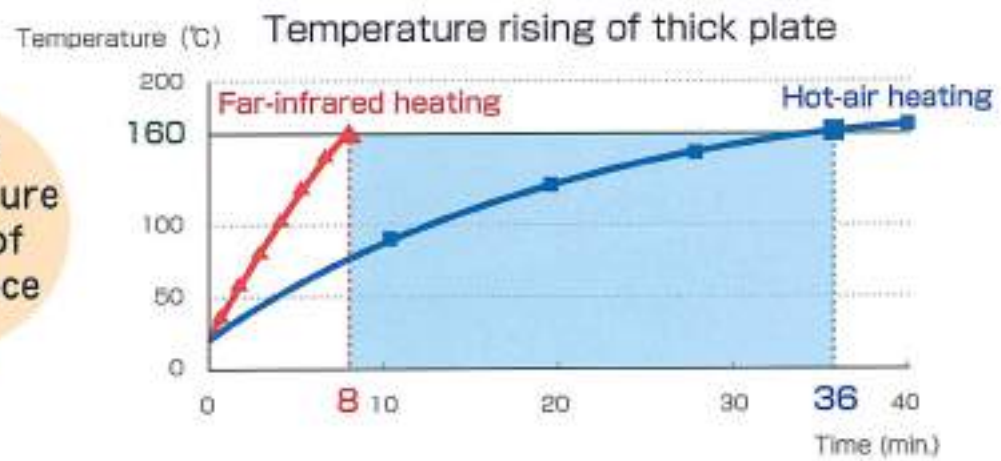
Inside of continuous paint drying furnace
for construction machine parts
Far-infrared burner BT-33NH x 16 units

Specifications (Far-infrared burner: BT-33NH)

Type	BT-33NH	Workpiece heating temperature	60 - 250°C
LPG consumption	2.4 kg/h	Supply pressure LPG	2.8 kPa
LNG consumption	2.6 m ³ /h (LNG:13A type)	Supply pressure LNG	2 kPa
Combustion capacity	33 kW (28,380 kcal/h)	Flame detection	Flame rod
Temperature control	ON-OFF control	Power supply	AC 100V 50/60 Hz

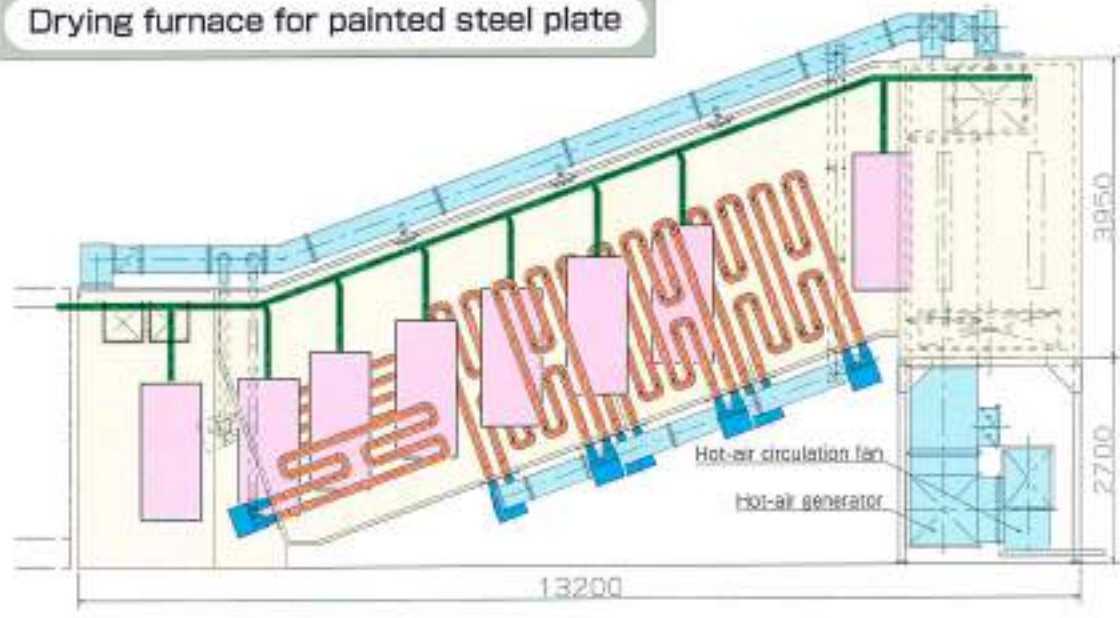
★Your experimental trial available at our testing furnace

Quick temperature rising of workpiece

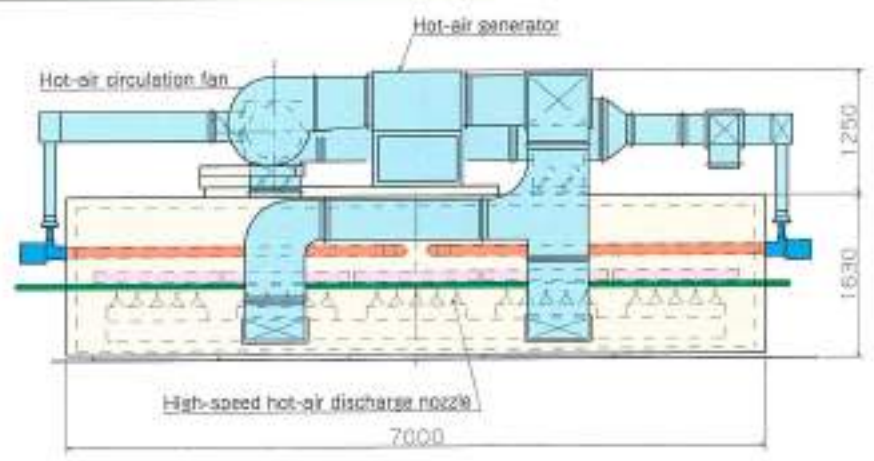


Case example

Drying furnace for painted steel plate



Drying furnace for painted plastics



1 Dryer

Dryer



Metallic parts jet hot air painting furnace (slit nozzle type)
Indirect hot air type (Radiation amount 152 kW)
Max. gas consumption LPG 12.5kg/h, 13A 14.0m³/h

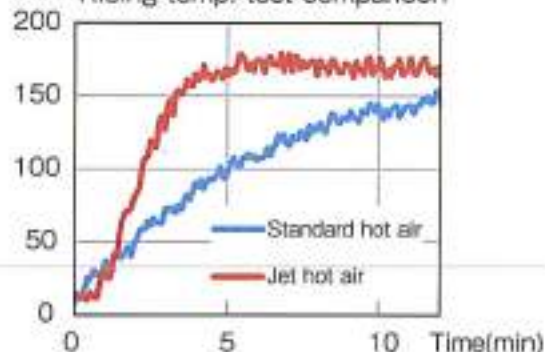
Usage

Painting drying, dewatering drying and various types of heating or drying

Features

1. High efficiency heating by high-speed hot air (energy/CO₂-savings)
2. Shorttime heating
3. Space-saving
4. Best for heating of heavy objects or mixed shin/heavy parts plate

Object temp. (2.3 t iron plate)
Rising temp. test comparison



Case examples

[Case1] Auto parts, high-speed painting furnace (Major automobile maker)

For productivity increase in a limited space
⇒LPG Max. gas consumption 25 kg/h and LNG 27.9 m³/h)

[Case2] Auto parts, preheating before painting furnace (Major auto parts maker)

For improvement facility of electric furnace including space-saving
⇒Realized running cost/CO₂-saving by gasification heat source in 1/3 space of existing furnace, LPG Max. gas consumption 20.8 kg/h and LNG 23.3 m³/h)

[Case3] Auto parts, painting furnace (Major auto parts maker)

For increasing productivity in the same space
⇒Realized 1/3 space of existing furnace, LPG Max. gas consumption 16.7 kg/h and LNG 18.6 m³/h)

★Available to experiment with jet hot air-test furnace at Kanagawa factory (Ref. P. 10)

■ Case of painting facility unit



Pretreatment



Dry-off furnace



Robot booth



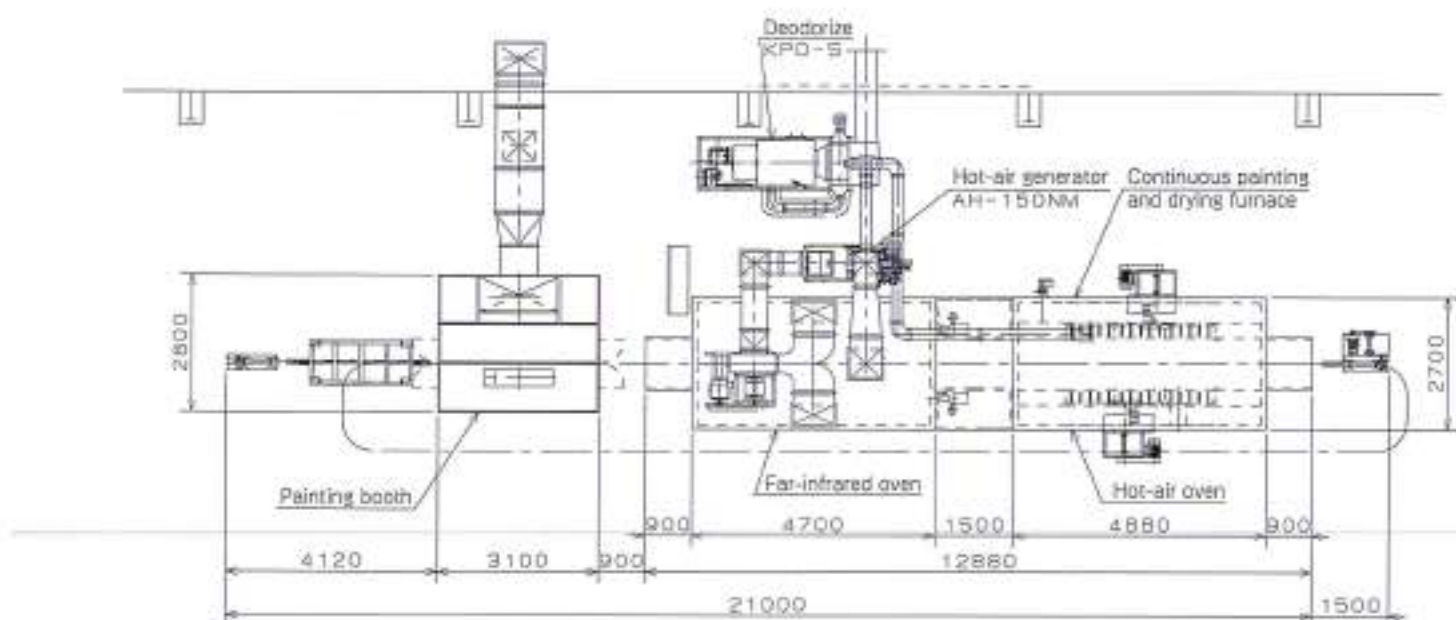
Control panel and entrance of drying furnace



Solvent booth and exit of drying furnace

1 Dryer

■ Testing equipment at our Kanagawa Factory:



Usage

Painting and drying for a large, middle, and small workpiece

Features

1. Temperature rising test available with a various heating combination of far-infrared, hot-air, and high-speed hot-air
2. Painting and drying available at our factory (Workpiece and paint shall be prepared yourself.)
3. Temperature rising test result can be reported by chart.

Continuous painting and drying furnaces



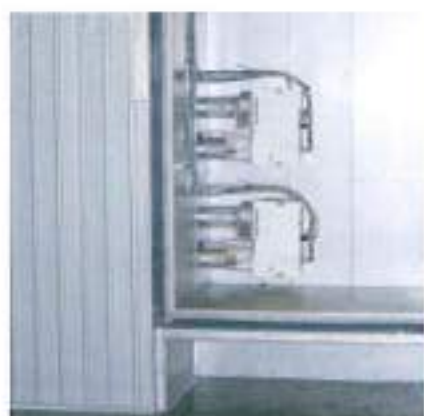
Dry-type paint booth



Zone for simultaneous use of far-infrared and hot-air



Zone for hot-air or jet hot-air



Far-infrared burner unit



Hot-air generator



Deodorizer

Specifications

Heating method	Direct heating hot-air circulation + Far-infrared	
Transportation method	Overhead conveyor or Cart	
Fuel	LPG	
Furnace dimensions	Far-infrared zone W2700 x L4700 x H3050	Hot-air zone W2700 x L4880 x H3600
Combustion capacity	Far-infrared 132 kW (113,520 kcal/h) + Hot-air 174 kW (150,000 kcal/h)	
Amount of treatment	Overhead conveyor: 100 kg, Cart: 500 kg	
Circulation fan	150 m ³ /min (Far-infrared zone)	300 m ³ /min (Hot-air zone)
Transportation speed	Overhead conveyor: 2 m/min, Cart: 1.5 m/min	
Passing speed	Adjustable (Furnace length: Approx. 11 m)	
Furnace temperature	200°C	
Heat insulator	100 t of rockwool	

1

Dryer

Other testing furnaces



Far-infrared conveyor furnace



TBE Type continuous hot-air tempering furnaces



Indirect hot-air circulation batch furnace



Indirect hot-air heating

★Indirect hot-air heating available with an inner plate

Far-infrared radiation heating

★Far-infrared heating available without an inner plate

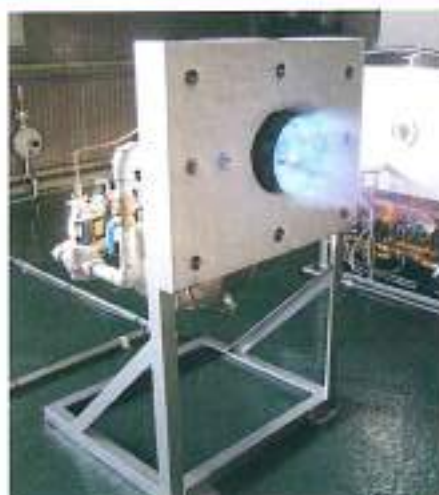
Specifications

	Furnace for simultaneous use of far-infrared and hot-air	Far-infrared conveyor furnace	Indirect hot-air circulation batch furnace
Heating method	Far-infrared / hot-air / Far-infrared + hot-air	Far-infrared radiation	Indirect hot-air / Far-infrared radiation
Combustion capacity	Hot-air 116 kW+Far-infrared 66 kW (100,000 + 56,760) kcal/h	Far-infrared 66 kW (56,760 kcal/h)	Far-infrared 66 kW (56,760 kcal/h)
Furnace dimensions	1600W x 2600L x 2300H	800W x 3000L x 300H	1400W x 2000L x 2000H
Transportation method	Reciprocating transportation in the furnace	Wire mesh conveyor	None

Showpieces



Flat flame burner and Excess air burner



Gun-type burner



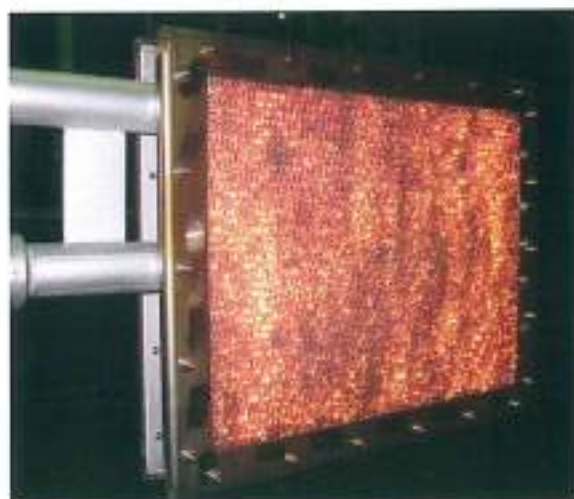
Pre-mix type hot-air generator



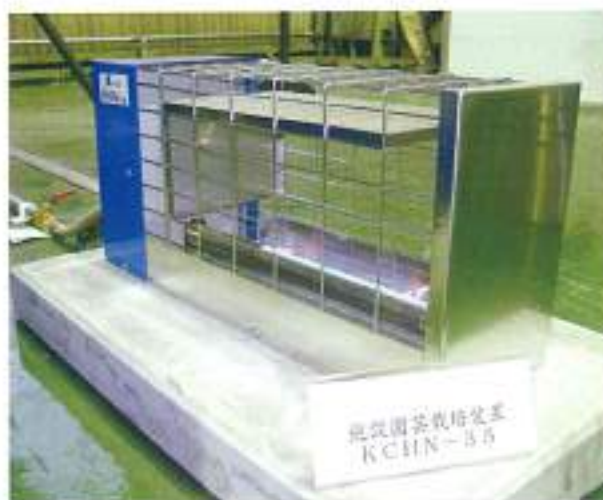
Nozzle-mix type hot air generator



Gas bonfire



Metal knit burner



Forcing equipment

Batch type direct-firing hot-air ovens



Usage

Painting and drying of small workpiece

Features

1. Quick start and less CO₂ emission.
2. Optimal drying method available for various paints, such as solvent, color-wash, powder, etc
3. Coupling with small deodorizer (2 m³/min) available
4. Optimal air circulation minimizes temperature unevenness
5. Design of any dimensions available according to customer's request

Specifications (example)

Capacity	10 m ³	20 m ³
Usable dimensions	2800 x 1800 x 2000 (mm)	5600 x 1800 x 2000 (mm)
Consumption (LPG)	4.2 kg/h	8.3 kg/h
Consumption (LNG)	4.6 m ³ /h (LNG: 13A type)	9.3 m ³ /h (LNG: 13A type)
Combustion capacity	58 kW (50,000 kcal/h)	116 kW (100,000 kcal/h)
Supply pressure	LPG: 2.8 kPa, LNG: 2.0 kPa	

■ Batch type indirect firing hot-air oven



Usage

Painting and drying of small workpiece ※No yellowing because of indirect heating

Features

1. Significant space-saving compared with a plate type heat exchanging method
2. Quick start and less CO₂ emission
3. Optimal drying method available for various paints, such as solvent, color-wash, powder, etc
4. Coupling with small deodorizer (2 m³/min) available
5. Optimal air circulation minimizes temperature unevenness
6. Design of any dimensions available according to customer's request

Specifications (example)

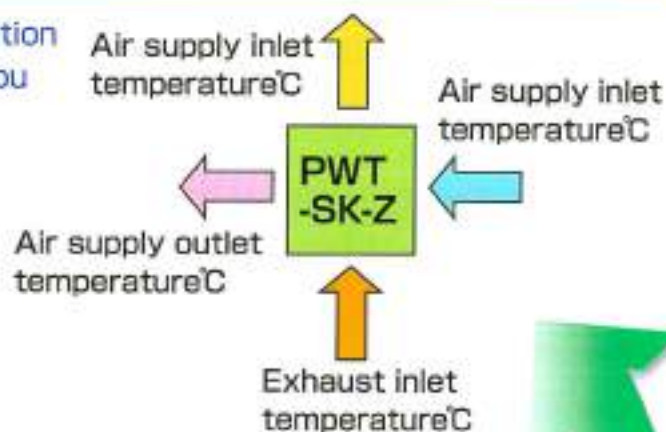
Capacity	10 m ³	20 m ³
Usable dimensions	2800 x 1800 x 2000 (mm)	5800 x 1800 x 2000 (mm)
Consumption (LPG)	4.7 kg/h	11.8 kg/h
Consumption (LNG)	5.2 m ³ /h (LNG: 13A type)	13.2 m ³ /h (LNG: 13A type)
Combustion capacity	66 kW (56,760 kcal/h)	165 kW (141,900 kcal/h)
Supply pressure	LPG: 2.8 kPa, LNG: 2.0 kPa	

1 Dryer

Low temperature exhaust heat recovery heat-exchanger PWT-SK-Z series



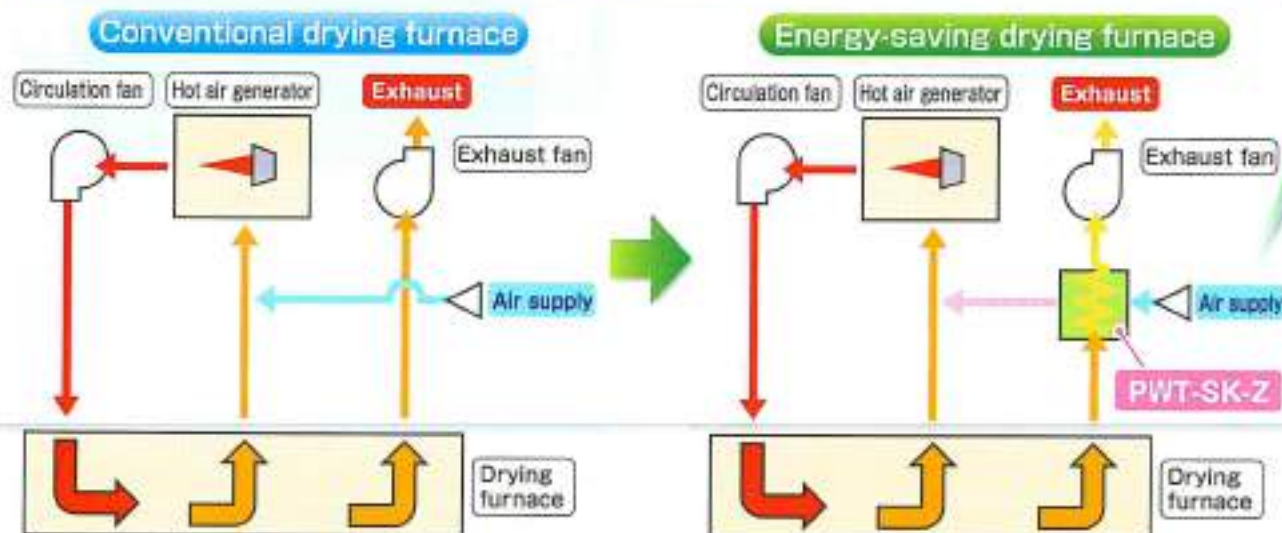
★Tecnial collaboration product with Seibu Giken Co., Ltd.



Usage

Energy-saving of drying furnace

Standard system flow



特長

1. Energy-saving efficiency of exhaust recovery system is 50 - 60 % by using of 200 °C or less exhaust heat and heating air supply.
2. In case of new drying furnace, available to **decrease energy 7%** entire furnace

Features

Exhaust inlet temp.°C	Exhaust outlet temp.°C	Air supply inlet temp.°C	Air supply outlet temp.°C	Exhaust heat recovery efficiency%	Recovery temp. difference Δt /°C
50	41	28	41	59	13
100	61	27	65	52	38
150	88	25	94	55	69
200	107	29	127	57	98

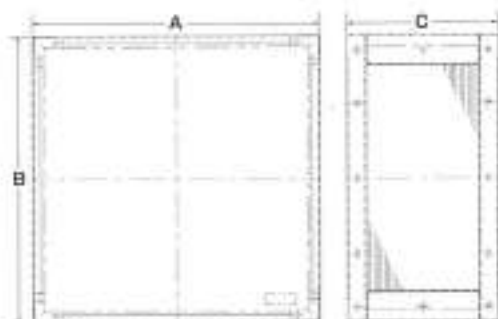
※Measured data of exhaust and air supply. Actual measured value at $\approx 5\text{m}^3/\text{min}$.

Case examples



Solvent coating, New batch furnace equipped with PWT

Light weight designed
PWT-SK-Z realizes
easy installation work
for existing drying furnace.

Installation work in Aichi prefecture.
Installing to continuous painting drying furnace

仕様

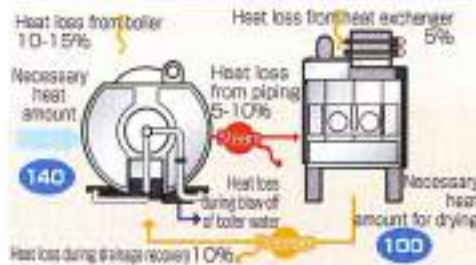
Model No.	Air flow (Nm ³ /min)	Approx. dimensions A×B×C (mm)	Weight (kg)
PWT-05SK-Z	5	400×400×200	10
PWT-10SK-Z	10	400×400×400	20
PWT-25SK-Z	25	500×500×600	40
PWT-50SK-Z	50	600×600×900	90

1 Dryer

Gas direct firing tumble dryer



Indirect steam dryer has ...



about 40% of heat loss in total.

In addition, it needs electric expenses for boiler operation, water and sewage bills, labor cost, chemical feed cost, maintenance fee for steam heat exchanger, etc.

Direct heating tumble dryer has ...



NO heat loss!

Usage

Linen drying for towels, sheets, uniforms, etc

Features

1. Energy-saving available by 20 - 40% (compared with indirect steam dryer with heavy oil boiler.)
2. Shortening of drying time available.
3. Any drying temperature available, unrelated to the outside temperature.
4. Shortened drying time extends life of cloths.
5. Thoroughgoing safety device (fire extinguisher in the drum regularly equipped.)

Specifications

Processing amount /batch	50 kg	100 kg	200 kg
LPG consumption	12.5 kg/h	25 kg/h	50 kg/h
LNG consumption	14 m ³ /h (LNG: 13A type)	28 m ³ /h (LNG: 13A type)	42 m ³ /h (LNG: 13A type)
Combustion capacity	174 kW (150,000 kcal/h)	348 kW (300,000 kcal/h)	697 kW (450,000 kcal/h)
Supply pressure	LPG: 2.8 - 10 kPa, LNG: 2.0 - 10 kPa		

■ Nozzle-mix type hot-air generator



Usage

- Coating industry Baking drying, booth heating, dry-off, metal drying
- Paper making, textile factory Tenter machine, laminate dryer, gravure drying, other dryer
- Food factory Grain drying
- Ceramic industry Ceramic drying, refractory drying, roof tile drying

Features

1. Wide combustion range available (turndown ratio 1: 8 or more)
2. Easy operation
3. High output and small size
4. Stable continuous combustion available with air-fuel mixture at low combustion
5. High reliable safety device equipped

Specifications

Type		AH-100-NM	AH-200-NM	AH-300-NM	AH-400-NM	AH-600-NM	AH-900-NM
Max. output kW (kcal/h)		116(100,000)	233(200,000)	349(300,000)	465(400,000)	698(600,000)	1,047(900,000)
Gas consumption m ³ /h	LPG 100 MJ/m ³ (24,000 kcal/m ³)	4.2	8.3	12.5	16.7	25.0	37.5
	LNG(13A type) 45 MJ/m ³ (10,750 kcal/m ³)	9.3	18.6	27.9	37.2	55.8	83.7
Supply pressure kPa	LPG	2.8 kPa					
	LNG	2 kPa					
Power supply		AC 200V · φ3, 50/60 Hz					
Flame detection		Flame rod or Ultra vision					
Hot-air discharge dimensions(mm)		450 x 450	450 x 800	450 x 800	500 x 1,000	600 x 1,200	600 x 1,500

1

Dryer

■ Pre-mix type hot-air generator



Usage

- Coating industry Baking drying, booth heating, dry-off, metal drying
- Paper making, textile factory Tenter machine, laminate dryer
- Food factory Spray dryer, grain drying
- Ceramic industry Ceramic drying, refractory drying, roof tile drying, crucible drying

Features

1. Gas-contact parts in the furnace available in stainless steel
2. Easy operation
3. High output but small size
4. Robustness and stable function
5. High reliable safety device equipped

Specifications

Type		NAH-75	NAH-150	NAH-300	NAH-450	NAH-600	NAH-900
Max. output kW (kcal/h)		87(75,000)	174(150,000)	349(300,000)	523(450,000)	698(600,000)	1,047(900,000)
Gas consumption m ³ /h	LPG 100 MJ/m ³ (24,000 kcal/m ³)	3.2	6.3	12.5	18.8	25.0	37.5
	LNG(13A type) 45 MJ/m ³ (10,750 kcal/m ³)	7.0	14.0	27.9	41.9	55.8	83.7
Supply pressure kPa	LPG	2.8 kPa					
	LNG	2 kPa					
Power supply		AC 200V · φ3, 50/60 Hz					
Flame detection		Flame rod or Ultra vision					
Hot-air discharge dimensions(mm)		500 x 500	500 x 500	500 x 800	500 x 1,050	800 x 800	800 x 1,100

■ Scroll type air heater KSH-series



Indirect-type KSH-1000 for chemical factory



Direct-type KSH-200

Usage

Various type of drying furnace, heat-treatment furnace, spray dryer, other testing equipment, etc.

Features

1. Wide combustion range design is available from compact to large volume products.
2. High temperature hot air (over 800°C) is available compared to duct heater AH and NAH-type.
3. Using as an indirect-type hot air generator is available by combined with heat exchanger.
4. It is available in wide range of field such as painting, adhesive, printing, chemical, rubber or food. Especially, it is best for batch furnace in small painting industry.
5. It is available under high pressure conditions in furnace. Please contact us for the detail conditions.

Specifications

Type	KSH-50	KSH-200	KSH-500	KSH-1000	KSH-3000	KSH-5000	
Max. output (kcal/h)	58(50,000)	232(200,000)	581(500,000)	1,162(1,000,000)	3,488(3,000,000)	5,813(5,000,000)	
Gas consumption m ³ /h	LPG 100MJ/m ³ (24,000kcal/m ³)	2.1	8.3	20.8	41.7	125	208
	13A 45MJ/m ³ (10,750kcal/m ³)	4.7	18.6	46.5	93	279	465
Supply pressure kPa	LPG	2.8kPa-30kPa (please consult separately)					
	13A	2kPa-30kPa (please consult separately)					
Power supply	AC200V · 3φ · 50/60Hz						
Flame detection	Flame rod or Ultra vision						
Hot air discharge dimensions	Please consult separately						

2 Deodorizer

Direct-firing type deodorizer KPD Series



KPD-100 (Air treatment volume: 100 Nm³/min)



KPD-50 (Air treatment volume: 50 Nm³/min)



Usage

Deodorization and/or VOC treatment at a factory for coating, chemical, printing and pulp

Features

1. Treatments for a wide range of odors and VOC, including ash dust, tar, and mist
2. Easy maintenance and low maintenance cost
3. Energy-saving and running cost saving available due to effective exhaust heat recovery
Hot-air recovery by the second heat exchanger (Basic system flow), waste heat boiler

Standard specifications

Type	Air treatment volume (Nm ³ /min)	Dimensions (m)			Combustion capacity (kW / kcal/h)	Max. gas consumption	
		L	W	H		LPG (kg/h)	LNG (m ³ /h)
KPD-20	20	5.01	2.24	1.35	233 / 200,000	17	19
KPD-40	40	5.13	2.68	1.55	465 / 400,000	33	37
KPD-60	60	6.69	3.13	1.73	698 / 600,000	50	56
KPD-80	80	7.24	3.33	1.77	930 / 800,000	67	75
KPD-100	100	7.59	3.36	1.91	1,163 / 1,000,000	83	93

★ Custom specifications available

■ Gas direct-firing small deodorizer (2 Nm³/min.)



★Co-development with Tokyo Gas

Usage

Deodorizing and VOC treatment

Features

1. High deodorizing efficiency (95% or more)
2. Space saving due to all-in-one unit design including odor fan
3. Energy saving due to exhaust heat recovery
4. Treatments for a wide range of odors and VOC, including ash dust, tar, and mist
5. Wide application for the small business, such as coating, adhesive joining, printing, chemistries, rubbers, foods

Best solution for the batch furnace of small coating industry

Specifications

Treatment volume	2 Nm ³ /min. (Max. 200°C)		Dimensions (mm)	L1175 x W730 x H1450
Fuel	LNG (13A type)	LPG	Weight	Approx. 350 kg
Inlet pressure	2 - 5 kPa	2.8 - 5 kPa	Odor fan	AC 200V 150W, Heat proof 260°C (Max.)
Combustion capacity	47 kW (40,000 kcal/h)		Control panel	Integral touch panel
Power supply	AC 200V, 3 Phase, 50 Hz/60 Hz		Control	Proportional control with an inverter
Treatment temperature	750°C (Max.)		Safety device	Gas/Air pressure limit switch, gas shutoff valve, and flame detector

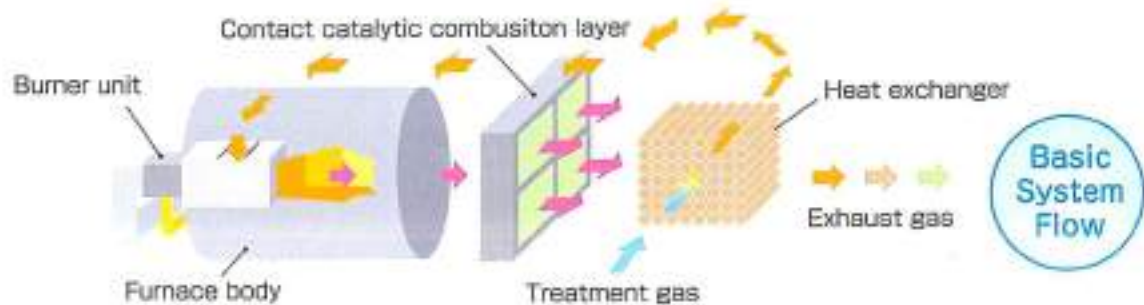
Contact catalytic combustion type deodorizer



KPDC-140 (Air treatment volume: 140 Nm³/min)



KPDC-30 (Air treatment volume: 30 Nm³/min)



Usage

Deodorization and/or VOC treatment at a factory for coating, chemical, printing and pulp

Features

1. Low running cost because the catalyzed reaction enables oxidative degradation of odor and VOC in low temperature
2. Suitable for a treatment of less-pyrophoric and low-concentrated VOC
3. May not suitable for the gas including catalytic poison, such as silicon, and a case that density of gas changes drastically

Standard specifications

Type	Air treatment volume (Nm ³ /min)	Dimensions (m)			Combustion capacity (kW / kcal/h)	Max. gas consumption	
		L	W	H		LPG (kg/h)	LNG (m ³ /h)
KPDC-25	25	3.30	2.00	2.10	116 / 100,000	8	9
KPDC-50	50	3.65	2.20	2.30	232 / 200,000	16	18
KPDC-100	100	4.15	3.10	2.80	349 / 300,000	25	28

★Custom specifications available

3 Heater

Far-infrared heater HOKADAN-KUN



Usage

The key words are "High / Large / Opened"

For a frigid space, such as **high** roof building, **large** space, and well-ventilated **opened** space

Features

1. "Quick start" Gas combustion in a far-infrared emission tube
2. "Energy-saving" The radiant energy is converted into heat when absorbed by objects in its path.
3. "Space-saving" No floor space required due to overhead installation
4. "Zone heating" Heating for a limited areas available
5. "Clean heating" No dust fly-up

Specifications

Type	BT-22N	BT-33N	BT-22N-G
Consumption LPG	1.57 kg/h	2.36 kg/h	1.4 kg/h
Consumption LNG(13A type)	1.78 m ³ /h	2.64 m ³ /h	1.6 m ³ /h
Combustion capacity kW(kcal/h)	22 (18,920)	33 (28,380)	20 (17,200)
Supply pressure	LPG: 2.8 kPa, LNG: 2 kPa		
Connections	15A (PT1/2)		
Power supply / Electricity	AC 100V 50/60 Hz · 0.1 kW		

4

Protected horticulture

Equipment for protected horticulture

Greenhouse heater KOH Type



Usage

Greenhouse heating and carbon dioxide generating

Features

1. Built-in carbon dioxide supply device workable during operation
2. Adjustable carbon dioxide supply pipe (manually or automatically)
3. Less aged deterioration due to stainless steel combustion chamber
4. Safe operation due to safe combustion system and warning lamp which lights when the fire went out
5. No carbon adherence and long efficiency

Specifications

Type	KOH-100	KOH-150
Standard effective area	660 - 990 m ² /unit	990 - 1,850 m ² /unit
Fuel	LPG (2.8 kPa)	
Combustion capacity	116 kW (100,000 kcal/h)	174 kW (150,000 kcal/h)
Power supply	AC 200V φ3 50/60 Hz	
Dimensions(mm)	L2,020 x W1,060 x H1,290	L2,020 x W1,060 x H1,450
Weight (kg)	260	350
Safety device	With flame detector, overload protector, draft switch and overheat preventer	

■ Forcing equipment MINORU-KUN "KCH-20Z"



Usage

Greenhouse (especially for strawberries and orchids)

Features

1. Clean and low-cost carbon dioxide supply increases crop yield
2. Easy combined operation with greenhouse heater
3. Less aged deterioration due to stainless steel combustion chamber
4. Safe operation due to safe combustion system and warning lamp which lights when the fire went out
5. No carbon adherence and long efficiency
6. Density control available with carbon dioxide controller (option)

Specifications

Standard effective area	1,000 m ² /unit	Dimensions	L860 x W430 x H660
Fuel	LPG	Weight	Approx. 30 kg
Supply pressure	2.8 kPa	Gas connection	R1/2
Combustion capacity	23 kW (20,000 kcal/h)	Amount of emergence	5.05 kg/h
Power supply	AC 200V ϕ 3 50/60 Hz	Control	Automatic ON-OFF by 24 hours timer
Electricity consumption	150/220 W	Safety device	With flame detector, overload protector, draft switch, and overheat preventer

4

Protected horticulture

■ Forcing equipment MINORU-KUN "KCHN-35"



Usage

Greenhouse (especially for strawberries)

Features

1. Clean and low-cost carbon dioxide supply increases crop yield
2. High portability due to its small size and light weight. Easy to be installed in a greenhouse
3. Safe operation due to safe combustion system and a buzzer sounds if the fire went out during the operation
4. Applying time settable by 24 hours timer
5. No carbon adherence and long efficiency
6. Density control available with carbon dioxide controller (option)

Specifications

Standard effective area	100 m ² /unit	Dimensions	L508 x W152 x H224
Fuel	LPG	Weight	Approx. 3.7 kg
Supply pressure	2.8 kPa	Gas connection	φ9.5 hose-end
Combustion capacity	3.5 kW (3,000 kcal/h)	Amount of emergence	0.75 kg/h (Carbon dioxide)
Power supply	AC 100V 50/60 Hz	Control	Automatic ON-OFF by 24 hours timer
Electricity consumption	12 W	Safety device	With flame rod and overload preventer

5

Commercial Applications

Hand torch burner



Large size



Small size

Usage

for various kinds of industries

- Road paving work
- Plastic processing
- Cane working
- Precious metal processing
- Woodworking

Specifications

Nozzle								
	Small size nozzle					Large size nozzle		
Type	KB-15	KB-19	KB-25	KB-32	KB-45	KB-60	KB-80	KB-100
Nozzle diameter(A) x length(B)	15 x 90	19 x 71	25 x 69	32 x 83	45 x 103	60 x 135	78 x 171	100 x 205
Weight (g)	50	80	50	75	175	340	600	1,080
Connection	M8 P0.75					M16 P1.5		
Flame diameter(D)	7	8	18	32	38	50	70	80
Flame length(L)	Inner flame 50	Inner flame 60	220	300	350	600	620	800
Flame temperature(°C)	1,300	1,300	1,200	1,200	1,200	1,200	1,200	1,200
Gas consumption(lph)	0.03	0.1	0.25	1.02	1.835	3.45	6.115	11.4
Flame characteristics	Concentrated flame			Stick flame				

*Gas consumption calculated with gas pressure of 0.4 MPa. **KB-100 with a hose over 5 m does not reach the catalogue specifications.

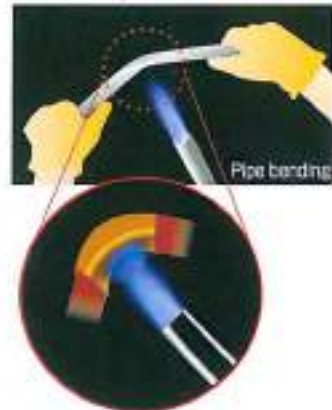
Nozzle pipe					
Type	KB-201	KB-202	KB-202L	KB-203	KB-204
Length(mm)	112	65		120	70
Weight(g)	65	50		65	45
Connections	M8 P0.75 x M16 P1.25 (hexagon cap nut)				
Compatible nozzle	KB-15, KB-19, KB-25, KB-32, AND KB-45				
Compatible handle	KB-301 *No other handle can be used.				

*KB-100 with a hose over 5 m does not reach the catalogue specifications.

Handle	Type	Length(mm)	Weight(g)	Connections	
	Small size	KB-301	170	330	M16 P1.25 x Rc1/4
	Large size	KB-304	920	1,000	M16 P1.5 x Rc1/4
		KB-305	920	1,000	
		KB-306	300	520	

Hose	Type	Length(m)	Connections
	KB-312	2	POL male (hand-tight) x R1/4
	KB-313	3	
	KB-315	5	
	KB-320	10	

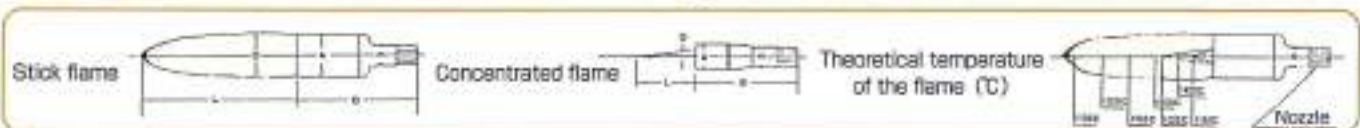
Example



Example



Road paving



5

Commercial Applications

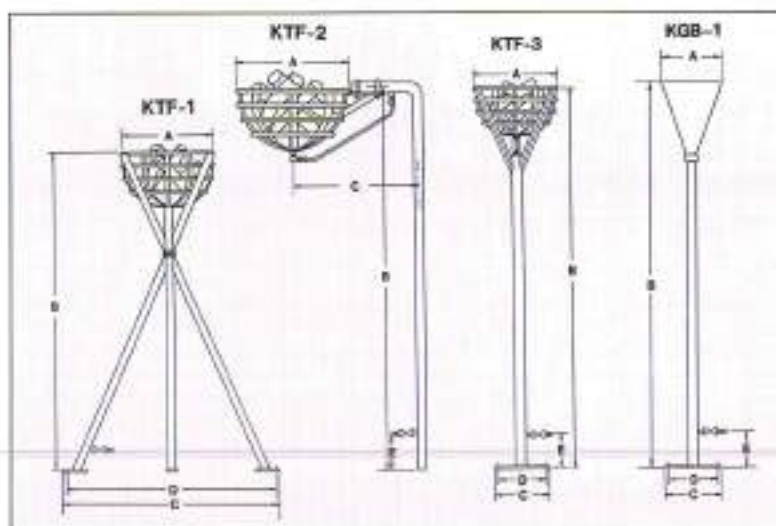
Gas Bonfire for LPG and LNG

Clear flame brings comfort to us.



Usage

Restaurant, marriage-hall, event site, shrine, temple, garden, etc



Type	KTF-1	KTF-2	KTF-3	KGB-1	
Heat amount (kW)			21		
Gas pressure (kPa)			2.8		
Gas connection			Rc3/8		
Weight (kg)	25	23	26.5	13	
Dimensions	A (φ)	450		300	
	B (mm)	1,500	1,800		
	C	φ1,350	500	300□	
	D (fixing holes)	φ1,290 3-φ12	—	250 4-φ12	
	E (mm)	150			

6 Other Usage

■ Flame holder burners



Usage

Athletic meeting, ceremony, festivity, etc

Specifications

- Type of gas: LPG and LNG



■ Relay torches



6 Other usage

Energy-saving type Aluminum melting and holding furnaces



Usage

Melting and holding metals

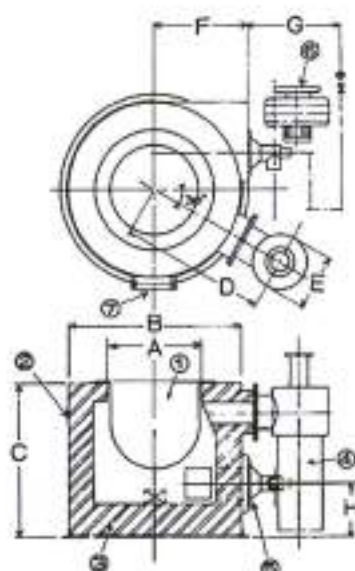
Features

Economically

1. High heat efficiency by exhaust heat exchanger. (Max 500 °C pre-heating)
2. Realize long life furnace by balanced heating.
3. Since the high melting performance, can be melting and holding at the same furnace.

Safety

1. Using safely by built-in automatic various safety devices.
2. Alarm and stop the burner by detection circuit, when crucible damaged and leakage.



Specifications

Furnace type	Capacity	A	B	C	D	E	F	G	H
EM-150E	55 ℓ	555	1,210	905	920	380	615	510	330
M-300	110 ℓ	690	1,330	1,015	990	400	675	510	330
EM-500	160 ℓ	805	1,460	1,115	1,065	400	740	510	330

※The above are standard furnace sizes. Please indicate your crucible size when you place an order.

- | | |
|-------------------------------|---------------------|
| ① Crucible | ⑤ Hot air burner |
| ② Furnace casing | ⑥ Combustion blower |
| ③ Thermal insulation material | ⑦ Slag outlet |
| ④ Heat exchanger | |

7

Combustion devices

■ Metal knit burners



A metal knit burner is a surface combustion type burner which is made of a refractory metal fiber. It is a compact burner which can be changed to cylindrical, hemispherical, cone-shaped, etc.

Usage

Die heating and various heating



Die preheating (both sides)



Heating for liquid crystal parts



Features

1. Easy operation Stable combustion, quick temperature up & down, and wide turn-down ratio
2. Free shaping Cylindrical, hemispherical, cone-shaped, etc
3. Compact Space-saving and Bunsen combustion available
4. High-efficiency & energy-saving Efficient heating due to burner surface radiation and high temperature combustion gas convection
5. Uniform heating Uniform heating, due to surface combustion on the metal fibers, upgrades quality of the products
6. Eco friendliness Extremely small amount of Nox & CO emissions

Specifications

Combustion capacity	200 - 1,000 kW/m ² (172,000 - 860,000 kcal/h/㎡)
Max. surface temperature	1,000°C
Best air ratio	1.0 - 1.1
Material	Refractory metal fibers (Fecralloy)

Gun-type burner AG Series



Developed for high safety and complete combustion



Installation example for coating drying furnace
AG-40S

Usage

Various kinds of heating and drying

Features

1. Safe design
2. Compact design & wide utility
3. Easy maintenance & check-up
4. Safe & unerring ignition
5. Easy operation

Specifications

Model	Max. output kW(kcal/h)	Max. gas consumption		Gas type (kPa)	Power supply		Control
		LPG (kg/h)	LNG (m ³ /min)		Voltage	Phase	
AG-5S	58.1 (50,000)	4.2	4.7	LPG : 2.8 LNG (13A type) : 2.0	100/200	1	ON-OFF High-Low-Off Proportional
AG-10S	116 (100,000)	8.3	9.3		100/200/200	1/1/3	
AG-15S	174 (150,000)	12.5	14.0		200	3	
AG-25S	291 (250,000)	20.8	23.3				
AG-30S	349 (300,000)	25	28				
AG-40S	465 (400,000)	33	37				
AG-45S	523 (450,000)	38	42				
AG-60S	698 (600,000)	50	56				
AGP-80S	930 (800,000)	67	74		Proportional		
AGP-100S	1,163 (1,000,000)	83	93				
AGP-150S	1,744 (1,500,000)	125	140				
AGP-200S	2,325 (2,000,000)	167	186				
AGP-250S	2,907 (2,500,000)	208	233				
AGP-300S	3,488 (3,000,000)	250	279				

■ Liquid heating gas burner, KGSI series



Usage

Liquid heating

Overview

Compact and high efficiency package type burners for cleaning liquid etc.

Heating method is immersion heating.

It realized the highest level combustion load in immersion heating package gas burners.

To make compact cleaning facility and heat cleaning liquid with over 90% efficiency.

Features

1. [High load] While gas supply pressure is low pressure, realized high load.
2. [High efficiency] Adopting excellent combustion burner structure and high wind pressure turbo blower, realize high efficiency over 90%.
3. [Saving space] Realize compact heating immersion pipe size by high combustion load, and also saving-space and compact facility by package type burner.
4. [Easy maintenance] Easy maintenance and user friendly by package type burner.
5. [Wide utility] The products line up from 58 kW to 233 kW, can be used wide utilities such as heating pre-painting cleaning liquid, etc.

Specifications

		Type	KGSI-5X	KGSI-10X	KGSI-20X
Burner specifications	Burner output	kW	58	116	233
	Control		ON-OFF control (High-Low control)		
	Fuel		LPG (2.8kPa) · 13A (2.0kPa)		
	Blower	W	200	300	400
	Connections	Nominal diameter (B)	20A (3/4")		25 (1")
Performance	Standard immersion pipe diameter	Nominal diameter (B)	65A (2.1/2")	80A (3")	100A (4")
	Immersion pipe length	m	8	10	13
	Exhaust gas temperature	°C	200~220		
	Effective and efficiency	%	90~92		

6

Combustion devices

Nozzle mix burners

Usage

- Forging furnaces
- Metal rolling furnaces
- Heat treatment furnaces
- Incinerators
- Hot-dig galvanizing furnaces
- Ladle heating
- Hot air generators

Features

1. Short flame lengths
2. High furnace circulation & uniform heating
3. Preheated air up to 500 °C
4. Fuel - Various fuel, such as LPG, Butane, City gas, Natural gas, etc



Specifications

Type	Combustion capacity kW (kcal/h)	Type	Combustion capacity kW (kcal/h)
NM-101S	9.9 - 46.5 (8,500 - 40,000)	NM-2501R	245 - 1,163 (211,000 - 1,000,000)
NM-301S	28 - 140 (24,000 - 120,000)	NM-4001R	395 - 1,874 (340,000 - 1,612,000)
NM-601S	58 - 279 (50,000 - 240,000)	NM-6001R	577 - 2,793 (496,000 - 2,402,000)
NM-1001S	99 - 465 (85,000 - 400,000)	NM-8001R	779 - 3,733 (670,000 - 3,210,000)
NM-1501S	163 - 713 (140,000 - 613,000)		

*Combustion air: 0.2 - 4 kPa

Excess air burner

Usage

- Heating furnaces
- Heat treatment furnaces
- Forging furnaces
- Rotary kiln
- Reverberatory furnaces
- Hot-air generators
- Glass furnaces

Features

1. Excellent flame stability with excess air, excess gas and theoretical air ratio
2. High flame velocities for better furnace circulation
3. Simple design, easy handling and maintenance
4. Increase furnace (or fuel) efficiency with preheated air



Specifications

Type	Combustion capacity kW (kcal/h)	Type	Combustion capacity kW (kcal/h)
EA-30S	5.8 - 35 (5,000 - 30,000)	EA-250S	52 - 291 (45,000 - 250,000)
EA-60S	14 - 72 (12,000 - 62,000)	EA-370S	85 - 436 (73,000 - 375,000)
EA-80S	23 - 102 (20,000 - 88,000)	EA-750R	165 - 873 (142,000 - 751,000)
EA-170S	38 - 201 (33,000 - 173,000)	EA-1500R	299 - 1,744 (257,000 - 1,500,000)

*Combustion air: 0.1 - 2.5 kPa

Pilot burner

Usage

- Pilot
- Small heating

Features

Stable flame

Consists of burner tip with spark-plug, gas-air mixer, zero governor, adjustable gas and air cock, assembled



Specifications

Type	Combustion capacity kW (kcal/h)
P-15	2.3 (2,000)
P-20	9.3 (8,000)
P-25	17 (15,000)

*Combustion air: 6 kPa

Stick-tight burner

Usage

- Ceramic calcination
- Glass furnaces
- Steel annealing

Features

Blowing nozzle designed for stick-type flame burner
Combustion available with Katsura Venturi, Mixer, or Aspirator mixer



Specifications

● Combination with Katsura Venturi Type KB

Type	Combustion capacity kW (kcal/h)	Type	Combustion capacity kW (kcal/h)
KVB200-1/2	1.2 - 5.6 (1,000 - 4,800)	KVB200-1 1/2	10 - 45 (8,300 - 38,400)
KVB200-3/4	1.6 - 7.6 (1,400 - 6,500)	KVB200-2	12 - 56 (10,300 - 47,800)
KVB200-1	2.7 - 12 (2,300 - 10,700)	KVB200-3	18 - 81 (15,100 - 70,000)
KVB200-1 1/4	5.6 - 26 (4,800 - 22,400)		

*Gas pressure: 2.8 - 60 kPa

● Combination with Katsura Mixer Type HM

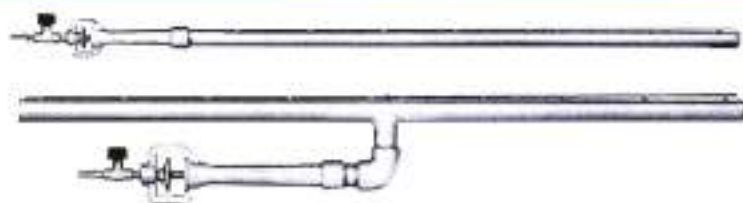
Type	Combustion capacity kW (kcal/h)	Type	Combustion capacity kW (kcal/h)
HMB200-3/4	10 - 31 (8,500 - 26,800)	HMB200-1 1/2	66 - 167 (56,400 - 144,000)
HMB200-1	22 - 63 (18,500 - 54,000)	HMB200-2	92 - 237 (79,200 - 204,000)
HMB200-1 1/4	38 - 101 (32,400 - 86,700)	HMB200-3	220 - 488 (189,000 - 420,000)

*Combustion air: 1 - 4.5 kPa

■ Pipe burner

Usage

- Dry off oven
- Welding preheating
- Die heating ● Heating



Features

Stable combustion due to blow-out preventer equipped on the nozzle Stainless steel pipe available on request

Specifications

- Standard specifications with Katsura Venturi

Type	Combustion capacity kW (kcal/h)
PLA 1/2 x 400	3.4 - 12 (2,900 - 10,700)
PLA 3/4 x 800	6.5 - 26 (5,600 - 22,400)
PLA1 x 1,200	10 - 39 (8,300 - 33,900)
PLA1 1/4 x 1,600	15 - 62 (12,600 - 53,000)
PLA1 1/2 x 2,000	21 - 89 (17,900 - 76,300)

*Gas pressure: 2.0 - 60 kPa

■ Ring burner

Usage

- Bath heating ● Heating



KVB300-5B-P



KVB300-10B



KVB300-15

Features

Ring-shaped burner designed to generate plenty of heat in short time Combustion available with Katsura Venturi and Katsura Mixer

Specifications

- Standard specifications with Katsura Venturi

Type	Combustion capacity kW (kcal/h)
KVB300-5B	13 - 29 (11,000 - 24,600)
KVB300-10B	39 - 88 (33,800 - 75,400)
KVB300-15	51 - 115 (44,200 - 98,800)

*Gas pressure: 20 - 100 kPa

High-speed heater

Usage

- Heat for lightening holes in complex core boxes
- Paper and textile drying
- Film drying
- Coating dryers
- Mold and core box heating
- Plastic treating, curing and forming
- Salvage (edge) dryers
- High speed flameless soldering
- Wax carton sealing
- Glass tempering, lehring, forming
- Metal heating
- Air curtains
- Food processing



Features

1. Capable of operating wide temperature range, in the 150 to 900°C
2. Direct firing and high efficient heating
3. Compact and high output design

Specifications

Type	Combustion capacity kW (kcal/h)	Air capacity (m ³ /min)	Outlet pressure (Pa)
12KL-2	3.5 (3,000)	0.57 - 1.0	250
12KL-4	8.7 (7,500)	1.0 - 1.7	250
12KL-6	11.6 (10,000)	1.5 - 2.3	250
16KL-4	10.5 (9,000)	1.3 - 2.0	500
16KL-6	14.5 (12,500)	1.8 - 2.8	500

* Combustion air: 7 kPa

Type	Combustion capacity kW (kcal/h)	Air capacity (m ³ /min)	Outlet pressure (Pa)	Temperature (°C)
12KH-2	4.7 (4,000)	0.37 - 0.62	250	650
12KH-6	14.5 (12,500)	0.91 - 1.56	500	870
16KH-6	17.4 (15,000)	1.3 - 2.3	500	760

* Combustion air: 7 kPa

Tokyo Gasdenro Co., Ltd.

■ Address: No. 964-21, Nippa-cho, Kohoku-ku, Yokohama 223-0057

■ Tel.: 81-45-542-0771 ■ Fax.: 81-45-541-1725

Advanced heat technology for high quality and energy-saving.

■ TSO Type continuous austempering furnaces



Usage

- Thin flat springs
- Small parts

Features

1. Stable quality

Excellent temperature distribution is available due to 2 to 5 points furnace temperature control.

Backflow prevention device is installed against the emission from a salt bath.

2. Power-saving

Continuous input of complicated-shaped workpieces is available due to conveyor drive system.

3. Energy-saving

Compact furnace and minimized atmosphere gas consumption.

4. Easy maintenance

Separatable furnace and unit heat generator make it easy to maintain.

■ TS Type continuous quenching & tempering furnaces



Usage

- Bolts, bearing, etc
- Flat springs, disc springs, etc
- Carbonitriding of small screws and tapping screws

Features

1. Stable quality

An even carburizing is available due to furnace fan.

2. Energy-saving

High energysaving effect is available due to less heat storage light-weight insulator.

3. Others

Net conveyor type and shaker hearth type is available.

Product preheating by exhaust gas.

TBE Type continuous hot-air tempering furnaces



Usage

- Tempering of coiled springs ● Bluing ● Drying and baking
- Low-temperature annealing of flat springs

Features

1. Stable quality

Temperature control by automatic digital temperature controller.
Constant processing time by mesh conveyor transportation.
Less temperature difference in the furnace due to well-agitated uniform hot-air temperature.

2. Power-saving

In-line operation with coiling machine is available.

3. Energy-saving

Equipped with lightweight conveyor, builtin heater, and outer conveyor cover.

4. Easy handling

Compact and lightweight design.

Easy movement with wheels. (TBE210-420)

Vertical height adjustment is available. (TBE210-420)

Openable cover for easy access to inside of the furnace.
(TBE210-420)

TC Type continuous hot-air tempering furnaces



Usage

- Tempering ● Annealing and solution treatment
- Drying and baking ● Bluing

Features

1. Stable quality

Temperature control by automatic digital temperature controller.
Constant processing time by mesh conveyor transportation.
Less temperature difference in the furnace due to well-agitated uniform hot-air temperature.

2. Power-saving

Continuous processing under given conditions.

3. Easy maintenance

Unit heat generator makes it easy to maintain.

TT Type batch hot-air tempering furnaces



Usage

- Tempering ● Annealing and solution treatment
- Drying and baking ● Bluing

Features

1. Stable quality

Separation by muffles avoids direct heating. Hot-air circulation by fan enables even processing.

2. Power-saving

Door with balancing weight, handle, or air cylinder is available.

3. Energy-saving

Less electricity consumption.

4. Easy handling

Easy operation and ideal for high-mix low-volume production.

KATSURA PLANTEC CO., LTD.

■ **Company name** KATSURA PLANTEC CO., LTD.

■ **Address** KDX Yokohama Building 8F., No1-1, Sakae-cho, Kanagawa-ku, Yokohama, Kanagawa 221-0052, Japan

■ **Tel:** 045-549-1232 ■ **Fax:** 045-549-1208

Business line / Service KATSURA PLANTEC CO., LTD. is an expert of the plant engineering



LP Gas plant design and constructions

- **Construct LP Gas filling bases**

The our policy is "meet customer's needs"

We design and construct LP gas filling bases safely and efficiently.



LNG plant design and constructions

- **Construct LNG Satellite facilities**

By air-fin type vaporizer or hot water type vaporizer, realizing efficient and stable gas supply.



Industrial plant design and constructions

- **Construct Industrial consumption plants**

Regardless of the sizes, design and construction For example, LP gas bulk cylinder, replacing the LP gas storage and various industrial gas plants.

Community gas facility design and constructions

- **Construct community gas supply plants**

Planning design, Creating application forms,
Construction and Pre-use inspection
Construct quickly and appropriately.
(Cylinder, Bulk, Storage tank)

Underground piping design and constructions

Construct and manage by appropriate method.

高斯達樂工業炉(丹陽)有限公司 GASDENRO DANGYANG CO., LTD.

- 住 所: Building 4, No. 68, Tonggang West Road, Danyang Economic Development Zone, Jiangsu Province, China
- Tel: 86-511-8699-7070 ■ Fax: 86-511-8699-7071



KATSURA VIETNAM CO. LTD.

- 住 所: Lot D1, Long Hau IP, Long Hau Commune, Can Giuoc District, Long An Province, Vietnam
- Tel: 84-8-3873-4848 ■ Fax: 84-8-3873-4851



- 弊社神奈川県工場実験設備
遠隔遠征乾燥装置
- Far-Infrared Furnaces
- ジェット熱風乾燥炉
- Batch Type Direct-Firing
Hot-Air Ovens
- Indirect Firing Hot-Air
Ovens

Product TOP Example Photograph Drawing



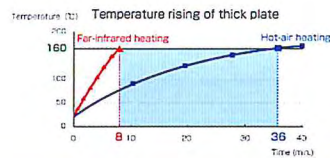
Features

- 1 High efficiency (quick temperature rising of workpiece) and energy & space saving
- 2 No dust adherence and no powder paint spattering
- 3 Free layout of emitting tubes available according to installation space

Usage

- Paint drying, dry-off, and heating & drying

Quick temperature rising of workpiece



Related Product

- > Far-Infrared Burners
- > Pre-mix type Hot-air generator
- > Gun-type burner

Both continuous type and batch type furnace are design and made to order for customer requirements.

Represented by:

Prolific Heating International Co., Ltd

11/11 Moo 11, Soi Kingkaew 37, Rachatheva, Bangplee,
 Samutprakarn, Thailand - 10540

Phone : +66 2170 8171

E-mail : prolific@phiheating.com
 supportsales@phiheating.com

Website : www.phiheating.com



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