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Corporate Profile

Address	11 Tsutsumisoto-cho Kisshoin Minami-ku,
	601-8399 Kyoto, JAPAN
	TEL: 0/5-314-8/60
	FAX: 075-314-4167
Establishment	1954/02
Capital	1,0000000 JPY
CEO	Kazuo KAWATA
Employees	168 (2021/01)
Main site	Head Office (Kyoto), Fukuchiyama plants (2 plants), Suzhou plan
Representative office	Tokyo, Osaka, Sendai, Fukuoka, Nagoya
Branch	Suzhou (China), Seoul (Korea)
Certification	TUV Sud ISO 9001
	TUV Sud ISO 14001

Corporate philosophy

At FKK we are constantly thinking about how to contribute to today's environmental challenges via solutions and systems to save energy. We are constantly looking for innovative and smarter solutions and achieve our goal through customer's satisfaction. We are building harmony between people, foster a supportive and dynamic workplace, and deal sincerely with all tasks and people we encounter. We achieve this through strong principles to ensure a permanent and responsible prosperity, considering human, human development and its relation with environment as the center of our business strategy.

Environment

In a world where our natural environment is a bit more threatened every day, FKK have always been committed to nature. Considering the environmental protection as an essential purpose, in compliance with environmental standards (ISO 14001, REACH and RoHS) FKK designs and develops solutions that are more respectful of nature.

Quality

FKK gain the satisfaction and trust of the customer by drawing on unique technology and skills. We take customer's point of view all the time and constantly improving customer satisfaction, responsiveness and the ability to take prompt and effective action. FKK put the quality management system (ISO 9001) to effective use and constantly improve the quality of products and services.

History

1954.02: Foundation of Fuji Kogyo in Kyoto, Japan

- 1957.02: Production of spark plug for agricultural machinery
- 1970.02: First production of igniters for oil burner
- 1985.02: The headquarter moved to Kisshoin, Kawata Genjiro becomes president of the group

1988.04: New factory built in Fukuchiyama

- 2003.02: Establishment of Shanghai subsidiary
- 2005.05: Obtained ISO 9001 certification
- 2006.02: Award of the best top 300 Japanese SME from the Japanese Ministry of Industry
- 2006.02: Award for the Best 21st century's SME from Kyoto prefecture

2007.06: Obtaining the ISO 14001 certification. Fuji Industries becomes FKK Corporation, a new headquarters is built 2010.02: New plant in Fukuchiyama

- 2011.07: Production of igniters and busbar for fuel cell appliances. International development start
- 2012.08: Partnership bind in UK, Belgium and Russia
- 2013.01: Fukuchiyama ignition electrode plant is automated
- 2014.07: Foundation of Suzhou FKK Corporation
- 2015.07: TUV certification of all biomass alumina ceramic igniter products
- 2019.10: PSx series ceramic igniter for biomass and wood pellet reached a cumulated sales of 1M pcs.
- 2020.07: European distribution network is consolidate, H&S Sensortecnik GmbH appointed as new EU distributor

International Network

FAX

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Starting international development in 2011, FKK is nowaday present in Europe and Asia and exporting products worlwide on all continents.



PLUG HEATER LINE UP Products presentation

	Ignition Electrode		Ionization prob and f	Spark rod			
Product type	Ignition electrode Simple	Ignition electrode Assembly	Flame sensor rod	lonization rod with fitting	Industrial size spark rod		
Materials	Alumina 90~99.9% Kanthal, Hitachy SYTT, Stainless steel, Steel All connector available	Alumina 90~99.9% Kanthal, Hitachy SYTT, Stainless steel, Steel All connector and fitting available	Alumina 90~99.9% Kanthal, Hitachy SYTT, Stainless steel, Steel All connector and fitting available	Alumina 90~99.9% Kanthal, Hitachy SYTT, Stainless steel, Steel All connector and fitting available	Alumina 90~99.9% Kanthal, Hitachy SYTT, Stainless steel, Steel All connector and fit- ting available		
Application	Cooktop/water heater	Water heater	Cooktop/Burner	Industrial			
Possible size (mm)	All lengths possible from 30 to 1800 mm, all electrode diameters possible						
Range of temperature	600 to 1400 °C						
Image							



To the essence of heat

Ignition components are essential in the design of heating application and burner. Seek efficiency in ignition is our job, revolutionize industry is our goal.



	Hot Surface Igniter (pla	ate type)	Hot Surface Igniter (r	Planar heater		
Product type	t type Silicone Nitride Silicone Nitride Igniter 1000~1200°C Igniter 1200~1400°C		Biomass pellet /log/ chips/coal igniter 300W	Biomass pellet /log/ chips/coal igniter 240W	Alumina heater for molding press	
Materials	Silicone Nitride Flange Alumina 90~99.9% All connector and fitting available	Silicone Nitride Flange Alumina 90~99.9% All connector and fitting available	Metalized Alumina 92% Flange Alumina 90~99.9% All connector and fitting available	talized Alumina 92% Alumina 92% Flange Alumina 99.9% connector and fitting ilable All connector and fitting available		
Application	Boiler/Burner	Burner /Gas Reformer	Stove/Boiler/Burner	Industrial		
Features	High speed 6s to 1000 °C 1200~1350 °C	High temperature 90000 hrs at 1350 °C	High temperature and long rated life 100/120/220~240V	Long rated life Design for 120V market	High speed, high efficieny	
Range of temperature	1000~1200 °C	1200~1350 °C	970~1050 °C	950~970 °C	600~1000 °C	
lmage						
Special order	ОК ОК		OK	ОК	ОК	







Every day in Asia, Europe or America, FKK is present in the lives of millions of people around the world through boilers, water heaters and stoves components.

In Japan, FKK Corporation has led the way in designing and manufacturing high quality components for over 60 years.

Today, FKK Corporation with its new assembly line offers engineering solutions for production of divers ignition components for gas, oil wood as well as Fuel cell and other renewable energy appliance ignition and heat detection systems.

If your application requires an electrode or sensing rod, we can provide one of our model or design it and produce it for you.

Products

Application

- ignition electrodes Gas Bath heater / gas water heating equipment single electrodes Furnace/burner heating equipment double electrodes Boiler blocks of electrodes Table stove electrode assemblies Table top burner single or multiple pole ignition electrode Commercial kitchen equipment flame monitoring pole Industrial heating Equipment flame sensor rods ionisation electrodes Renewable energy Pellet stove/boiler/burner igniter ceramics hot surface igniter Stirling engine ignition electrode double plan igniter MCHP Fuel Cell SOFC/PEFC burner igniter pellet stove igniter Fuel Cell reformer components cathode and anode
- spark plug
- interference suppressors
- temperature sensors
- advanced ceramics



Automated Line

Better. Faster.

A part of standard production is fully automated. Automaziation have been implemented to increase quality while reducing cost for customers. Workers can now concentrate on increasing tailor made products quality.

Production process



Insulation tester

All ceramic body are tested before the begining of the production. Robot apply 15KV for few seconds inside the ceramic body



Croping machine

Kanthal, SYTT Hitachi Metal, FCHW made electrode are crope automatically



Ceramic sealant bonder

Robot seal the electrode and ceramic insulator with FKK Corporation made ceramic compound



Oven and trail

After sealing process the trail go to oven to solidy the sealant.



Bending machine

Bending machine perform the bending of the electrode from 1 to 4 bending points.

Ignition and sensing electrodes

Ignition electrodes and flame sensor rods



Ignition electrodes used for the ignition and temperature control in gas and oil combustion equipment, work on the principle of ignition by high voltage flashover.

FKK Corporation ignition electrodes, flame sensor rods and assemblies come in over infinite configurations.

If your application requires an electrode or sensing rod, we can provide one of our model or design it and produce it for you.

Application

- Gas Gas boiler / water heating equipment Furnace/burner heating equipment Table stove / Table top burner Commercial kitchen equipment Commercial burner Industrial burner equipment
- Oil Oil hot water equipment Heating equipment Portable stove Furnace/burner Industrial burner equipment



Specification

- Inusulator material available: Mullite, Steatite, Heat Resistant Resin, Alumina 90~99.6%
- Electrode material available: Kanthal A, C, D, Hitachi Metals Ltd. YSS-SYTT, PYROMAX,
- FCHW1/FCHW2, SUS304/310/316, Inconel, Various Ni-Cr alloy wire
- Wiring and connector available: all type
- Ceramic insulator size available: length 10 to 1800 mm, diameter 3 to 15mm
- Heat resistance range 700 to 1400°C



Overview of ignition and sensing electrodes

Examples of industrial ignition and sensing rods

Unit (mm)





Ignition and sensing electrodes

Ignition electrodes and flame sensor rods product range overview



M14xP1.0 or P1.25



M18 Spark Plug



PT1/2 Spark Plug

PT1/2 Spark plug with flame rod



Unit (mm)

Biomass hot surface igniters

Wood pellet, wood chips and biomass hot surface ignition components

Introducing the PSx[®] series ceramic biomass igniters range, an advance in ignition technology for solid fuels.

FKK Corporation specialises in ceramic hot surface igniters and has many years of experience of working closely with customers to develop bespoke solutions for innovative appliances manufacturers. We are a trusted supplier of hot surface igniter products to many biomass/pellet stoves, burners and boilers manufacturers.

These advanced igniters are simply the best for lighting wood pellet and biomass burners. They use only a fraction of the energy required by hot air fans and ignition blowers and will light all fuel types. Ideal for wood pellets, wood chips, lot, corn, maize, etc.

With a considerably higher temperature, around twice that of traditional metal sheathed products, ignition times are reduced to as little as 60 seconds. This makes them significantly more economical in use.

All our range can be customized to fit perfectly in your appliance.

Ceramic ignition technology benefits

- A fraction of the energy consumption compared to conventional heater
- Long lasting (non aging)
- Time to ignition 60~90 seconds
- Tested to 100,000 cycles, used for long time in Japanese market (15 years)
- Easy to install and retrofit
- Fits any steel tube with an inner diameter of ≥18mm
- 1000°C at steady-state temperature
- Cannot overheat even with blower failure
- Available in 100V / 120V / 230V AC
- Fully electrically insulated with no exposed electric contacts
- UL/CE certified wiring (200 to 500°C heat resistant wire)
- Impervious to oxidation and corrosion
- Ignite wood pellet, wood chips, split logs, straw and other biomass
- Comply with RoHS, REACH regulation on Hazardous Subsctances

Systems

- Wood pellet stove
- Wood pellet boiler
- Wood pellet burner
- Wood chips burner
- Straw burner
- Other biomass burner

Certification

- TUV Rheinland EN 60335
- TUV Rheinland RoHS



A revolutionary way to ignite biomass

PSx series igniters revolutionize biomass heating appliances ignition process. FKK developed several types to fit in every appliances.

Tubular radiant structure type (Blowing air system: PSx-2 /PSx-7) ceramic igniters have a through hole that let air through the heating element body. With this structure, ignition performance can be increase by 1.4 times compare to metal cartridge heater.

Hermetic radiant structure type (PSx-1 / PSx-6) ceramic igniters heat the surround air for indirect ignition of pellet. These models are economical and more easy to install into airtight systems.



Rising surface temperature



Heat distribution



Nominal resistance: 44.64Ω Inrush current: 5.05A (@240V/50Hz) Current: 1.45A (@240V/50Hz)

PSx series igniters line up

A simple and efficient solution for biomass ignition

Application

Heaters suitable for ignition of biomass, wood pellet, wood chips, wood log, for stoves, boilers and burners.

Features

- Tested to 100,000 ON/OFF cycles.
- Fast ignition time (60~90s to ignite pellet according to burner)
- Wiring available in UL or CE certified version.
- Totally customizable solution, many design available
- 240W and 300W type
- Available in 100V, 120V , 230V

Line up



All drawings and data-sheets are available for download at : www.plug.fkk-corporation.com/en/download You can also scan the QR code to go directly on the related page.



Pellet igniter catalog is also available in BG, CN, CZ, DE, DK, ES, EN, FR, GR, IT, JP, KR, NL, PL, RU, SE, TR language.

Line up

300W Class - Black coating alumina heaters (B)



Hermetic system

Blow through system

Туре	Reference	Flange type	Heater length (mm)	Available voltage (V)	Cable length (mm)	
	PSx-1-240-B	Ceramic 26mm	107	230V		
	PSx-2-240-B	Ceramic bushing 17.7 mm	110	230V		
	PSx-3-240-B	Flange less - Retrofit	107	230V		
300W	PSx-4-240-B	Flange less - Retrofit	107	230V	250mm	
	PSx-5-240-B	G3/8" flange - Retrofit	107	230V	330000	
	PSx-6-240-B	G3/8" flange 17mm	107	230V	*All lengths	
	PSx-7-240-B	G3/8" flange 17mm	107	230V	available upon	
	PSx-1-120-W	Ceramic 26mm	107	120V	request	
240W	PSx-2-120-W	Ceramic bushing 17.7 mm	110	120V		
	PSx-3-120-W	Flange less - Retrofit	107	120V		
	PSx-6-120-W	G3/8" flange 17mm	107	120V		

SiN ceramic igniters

Silicone nitride ceramic hot surface igniters

FKK Corporation producing OEM custom order ceramic silicon nitride hot surface igniters for gas energy-efficient equipments. FKK Corporation is now one of the world's leading manufacturer of ceramic hot surface igniters for compact boilers and tankless water heater as well as Fuel Cell SOFC/PEFC appliances, covering Asia and America.

Features

Long Rated life

While standard igniters only last 2 or 3 years, FKK hot surface igniters are made to last at least 90000 hours (nearly 10 years) according to Japanese standard and made to be very resistant in all conditions (high humidity, freezing temperatures, strong vibrations, etc.). We are the unique maker in the world to be able to design SiN igniters with average life greater than 90,000 hours in continuous operation at nearly 1400°C.

High temprature, high constraint

FKK ceramic hot surface igniters can reach 1400°C. However, due to perfect sealing process, lead wire junction temperature do not exceed 150°C. You can miniturize your system, make it safer and prolonged the rated life of other components.

Faster

Rising temperature is faster: up to 1000°C in 6 seconds.

High efficiency

High-watt density discharge allow high thermic efficiency.

Superior properties

Highly resistant to mechanical strength, high temperature strength and thermal shock. Excellent electrical insulation, dielectric strength and thermal shock resistance.

No electromagnetic discharge

Contrary to spark electrode, ceramic igniters generate no electromagnetic interference so it can be safely use in systems and applications sensitive to electromagnetic discharge.

How hot surface igniters are made

Igniter assembly

Heating element external structure



Heating element internal structure



Material

• Silicone Nitride Si₃N₄

Range of temperature

• 1100~1400 °C

Application

- Gas furnace, burner, kiln
- Gas water heater, boiler or other heating equipment
- SOFC, PEFC Fuel Cell
 MCHP burner and re former unit
- Gas reforming
- Post gas combustion
- Laboratory equipment
- Biomass boiler secondary combustion

Heating element standard line up





Si₃N₄ Igniter 72L





Si₃N₄ Igniter 100L







Unit (mm)



Mechanical and Thermal Properties

ltome	11	SiN Ig	niter
items	Unit	SN220	SN362
Maximum temperature	°C	1300	1400
Typical temperature	°C	1200	1300
Thermal conducticity	w/mk	25	31
Linear expansion coefficient	/°C(40-800°C)	3.2x10 ⁻⁶	3.7x10 ⁻⁶
Vickers hardness (500g load)	GPa	14.7	17.1
Bending strength	MPa	590	900
High-temperature strength (Flexural strength at 800°C)	perature strength MPa strength at 800°C)		900
Thermal shock resistance	°C	600	900

Temperature coefficient of resistance



Resistance

High speed type





Chemical characteristics (nitric acid resistance)





SNx series igniters line up

Silicone nitride ceramic hot surface igniters standard products

Features

- High temperatue1200~1400°C
- 1000°C in 6 seconds
- High resistance to thermal shock (600~900°C) •
- Designed for over 90000h of powering .
- 90~120V, 220~240V current available •
- Totally customizable solution, many design available upon request

Standard line up







All drawings and data-sheets are available for download at: www.plug.fkk-corporation.com/en/products/sin-ceramic-igniter You can also scan the QR code below to go directly to the related page.





D.8mm x L40mm ceramic flange 1200°C type





SNx-2

M18 thread nut flange





SNx-3

D14mmx L30mm ceramic flange 1200°C type



SNx-4

D19mm x L50mm ceramic flange 1300°C type





SNx-5

M16 thread nut flange 1300°C type





SNx-6

32mm round metal flange 1300°C type





Line up

1200°C type



32~45W - 1200°C

1300°C type





SNx-5

ΗZ

M1<u>6x1.5</u>

4.9

Ø10.5

Ø12.1

47~65W - 1300°C

10

56.6

27

15

28

Ø19

83.6

SNx-3 ΗZ 5 9 8

Unit (mm)

HZ = Heating zone

Ø12



83.6 27 Ø10.5 Ø17.5 , 12.5 α Ø33 Ø12.1 Ø25 б_{яз} 47~65W - 1300°C

Туре	Reference	Flange type	Heater length (mm)	Available voltage (V)	Cable length (mm)
	SNx-1	Ceramic 8 x 40mm	38	100~120	
32~45W 1200°C 47~65W 1300°C	SNx-2	M18 flange 24mm 34		100~120	350mm
	SNx-3	Ceramic 14 x 30mm	* 4 11 1		
	SNx-4	Ceramic 19 x 50mm	56.5	100~120	*All lengths availble upon
	SNx-5	M16 flange 19mm	56.6	100~120	request
	SNx-6	Metal flange 32mm	56.6	100~120	

Fuel Cell Burner Igniter

Fuel cell SOFC/PEFC high temperature burner components

High sealing property

30s to 1400°C

FKK provide all the major Japanese Fuel cell appliances manufactures as well well as abroad MCHP SOFC systems maker with advanced ceramics igniters allowing long rated life (up to 90000 hours), high reliability, high temperature (up to 1300°C) and good sealing properties (lead wire temperature junction below 150-200°C). With high temperature performance you save energy on start-up burner gas pre heating operation, off-gas burner exhaust gas combustion as well as air preheating.

Worldwide customer make the choice of FKK for several reasons

- High reliability and quality: over 90000 hours (nearly 10 years) of rated life, Japanese quality
- Very high temperature: 1350°C, 1000°C in less than 6s
- High pressure resistance and very low temperature at lead wire junction (below 100-200°C)
- 30-60 Ohms resistance
- Power rating: 45-75 Watt
- Competitive cost: by providing major fuel cell makers, we achieved high cost/quality performance
- Major accounts within MCHP system integrator: Panasonic, Osaka gas, Tokyo gas, Eneos, Toshiba



Systems

- Micro CHP : SOFC / PEFC (high temperature)
- Back up power
- Stirling engine

Application

- Igniter for gas pre-heating
- Igniter for start-up burner
- Igniter for off-gas burner
- Igniter for cathode air preheater
- Igniter for SOFC/PEFC reformer high temperature burner

References

- Osaka gas Ene- Farm
- Panasonic Ene-Farm
- Toshiba Fuel cell
- Toyota fuel cell
- Tokyo gas fuel cell
- JX Eneos fuel cell



Engineered material, fine ceramics or technical ceramics support the development of cutting-edge technology.

With more than 60 years as major Japanese ignition electrode maker experience, FKK Corporation engineers developed a strong expertise in designing, manufacturing various technical ceramics products and components.

Material				Al ₂ O ₃	Al ₂ O ₃	Al ₂ O ₃	Mullite	Porcelain	MgO-SiO ₂	Zircon Cordierite	
	Alumina	content		%	95	92	90	50~60	-	-	-
	Apparent density (specific gravity)		kg/cm ³	3.7	3.6	3.6	2.6	2.5	2.7	2.8	
	Water ab	er absorption %		%	0	0	0	0	-	0	0
Mechanical	B	ending strength		N/mm ²	275	280	270	170	69	180	140
property	Con	npressive strength		N/mm ²	-	2150	2000	1470	411	-	580
		RT~200 °C			-	-	-	5.6	-	-	-
	Coefficient	RT~400°C			-	7.2	7.4	-	-	-	-
Thormal	of thermal	RT~500°C	×1	×10 ⁻⁶ /k		-	7.6	-	-	8	-
property	expansion	RT~700°C			-	7.4	7.8	-	5	-	2.8
	RT~800°C				-	-	-	-	-	-	-
	Thermal conductivity 20°C		W/(m/K)	16.7	16.7	16.7	3.5	1.16	2	2.9	
	Volume resistivity		kV/mm	>15	>13	12	10	<10	11	-	
	20°C 100°C Dielectric strength			>1014	>1014	>1014	-	10 ¹²	>1014	10 ¹²	
Electrical				>1013	-	>1013	10 ¹²	10 ¹⁰	-	-	
character-			200°C	Ω/cm	>1012	>1012	>1012	10 ⁹	10 ⁷	10 ¹²	10 ⁹
ISUCS		300°C			>1010	-	>1010	10 ⁸	10 ⁶	10 ¹⁰	-
	400°C			-	-	-	10 ⁷	10⁵	10 ⁹	-	
	Pe	rmittivity (1MHz)		-	9.3	9	8.5	-	5.5	7	5
Key Features				Injection molding complex shape possible	Powder molding press simple geometry effective mass produc- tion	Extrusion slip casting length- wise possible	Variety injection molded extrusion powder molding		Low thermal conductiv- ity large insulated	Low ther- mal expan- sion	

