

Boiler for LNG fueled vessel

Gas/Oil simultaneous mixed combustion DF burner

Volcano

Vignis



IGF code
IGC code

Completely compliant

Gas/Oil simultaneous mixed combustion DF burner called **"Vignis"** is developed for **boilers of LNG fueled vessels and LNG carriers**. Vignis contributes to **zero methane gas release into the atmosphere** because it equips **GCU mode** as a standard specification.

Note: GCU stands for "Gas Combustion Unit". GCU combusts boil off gas containing inert gas in various situation.

"Methane" is a major component of LNG (liquefied natural gas) fuel and has a **global warming potential 25 times that of carbon dioxide!**

The release of combustible gases into the atmosphere is prohibited under the IGF code*1.

*1. International Code of Safety for Ships Using Gases or Other Low-flashpoint Fuels

When use GCU mode ?

① LNG tank pressure adjustment

If the engine cannot completely consume the gas, the boil off gas will need to be treated in order to adjust the pressure inside the tank

② Inert gas treatment during LNG bunkering

Boil off gas becomes mixed with inert gas inside pipes, and must be treated when bunkering

③ LNG tank cooling down / gas-freeing

Gas let out from the tank during initial bunkering, when docking, or when performing maintenance work on the tank must be treated

To Select mode

Boiler mode

GCU mode

It makes possible to combust gas of any ratio due to continuous combustion of the oil burner.

Switching combustion mode is possible without stopping the fire.

Boiler generates steam.

We have a **wide range type** with three times higher capacity than standard type on GCU mode.

Gas/Oil simultaneous mixed combustion DF burner features

Gas/Oil simultaneous mixed combustion

Capable of burning Gas and Oil simultaneously as well as separately

Equipped GCU mode

Usable of boiler as GCU by Gas/Oil simultaneous mixed combustion

Combustion gas of any ratio

Capable of treating inert gas up to 100% content due to Gas/Oil simultaneous mixed combustion

Wide range Turndown Ratio

Reductive of heat loss by decreasing frequency of both firing and extinguishing thanks to wide range Turndown Ratio up to 10:1

Target boilers

Applicable to boilers with evaporation rate of 1 to 7 t/h
Gas/Oil simultaneous mixed combustion DF burner "SFFG II" can be used for boilers which evaporation rate is higher than 7 t/h

Specifications of Vignis

TYPE		Vignis-80	Vignis-120	Vignis-150	Vignis-210	Vignis-280	Vignis-350	Vignis-410	Vignis-480
Boiler evaporation	t/h	1	1.5	2	3	4	5	6	7
Usable fuel		LNG, LPG, HFO (700cst), MDO, MGO, ULSHFO, VLSHFO, Crude oil							
Max. Combustion Rate (HFO)	kg/h	100	150	190	260	350	435	510	600
Max. Combustion Rate (MGO)	kg/h	95	140	180	250	330	410	485	565
Max. Combustion Rate (Gas)* ¹	kg/h	80	120	150	210	280	350	410	480
Rated discharge pressure of HFO pump	MPaG	2.0							
Atomized air pressure	MPaG	0.5							
Gas pressure* ²	MPaG	From free flow to 1.0* ³							
Control method		Proportional control							
Turn down ratio (gas)		10:1							

*1. CH₄: 100% (as low calorific value 50 MJ / kg)

*2. Gas supply pressure at gas valve unit inlet

*3. "Free flow" is when gas is supplied at the tank pressure without pressurizing BOG

Specifications of Vignis - W (wide range type)

Gas combustion amount for GCU mode is 3 times higher than normal operation, and effective for gas freeing operation.

TYPE		Vignis-W240		Vignis-W360		Vignis-W450	
Mode		Normal use	GCU mode	Normal use	GCU mode	Normal use	GCU mode
Boiler evaporation	t/h	1	-	1.5	-	2	-
Max. Combustion Rate (HFO)	kg/h	100	-	150	-	190	-
Max. Combustion Rate (MGO)	kg/h	95	-	140	-	180	-
Max. Combustion Rate (Gas)* ¹	kg/h	80	240	120	360	150	450

*1. CH₄: 100% (as low calorific value 50 MJ / kg)

Configuration

1. Burner assembly
(Include a pilot burner, FD fans, HFO heater)
2. Gas valve unit (right picture) & solenoid valve board
3. Control panel & remote control panel
4. Pilot burner pump unit



Gas valve unit

Possible vessel types for installation

- All types of gas fueled vessels
- Gas fueled bunkering vessels

* Not just LNG gas fuel!
Supports a various kinds of gas fuels.

- LNG-Ready vessels
- LNG carrier, LPG carrier etc

VOLCANO solution for LNG fueled vessel issues

Use/treat Boil Off Gas as fuel

➔ VOLCANO Gas/Oil simultaneous mixed combustion DF burners for boiler

"Vignis" is for boiler-evaporation rate 1 ~ 7t/h

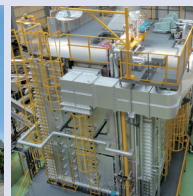
"SFFG II" is for boiler-evaporation rate more than 7t/h

Combust and treat Boil Off Gas

➔ VOLCANO Gas Combustion Unit [MECS-GCU]

Combustion Engineering Expert

VOLCANO Co., Ltd. provides products for LNG as fuel and solution for LNG utilization, based on our experiences on Gas/Oil simultaneous mixed combustion DF burner for Marine-use, Gas burner for Industrial-use and Ultra-low NOx burner for Industrial-use.



VOLCANO Combustion Test Site responsible for verification testing during the development of Vignis

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