



## VOLCANO announced the new type Gas/Oil simultaneous mixed combustion DF burner for LNG Fueled Vessel “Vignis”

VOLCANO announced the new Gas/Oil simultaneous mixed combustion DF burner “Vignis” for boilers of LNG fueled vessels into the global market on Mar 5th, 2020.

Gas/Oil simultaneous mixed combustion DF (Dual Fuel, which means gas and oil) burner for boiler of LNG (Liquefied Natural Gas) fueled vessel “Vignis” has Gas/Oil simultaneous mixed combustion mode as well as HFO-mono, MGO-mono and LNG-mono combustion mode.

Gas/Oil simultaneous mixed combustion mode can efficiently utilize BOG (Boil Off Gas) as fuel. Shortage of calorie can be fulfilled by “Fuel Oil” because combustion condition is stable even at Gas/Oil simultaneous mixed combustion mode. Fuels can be easily changed over, and also it is useful in preventing human error.

The new “Vignis” also equips GCU mode<sup>※1</sup> and can be used as GCU (Gas Combustion Unit). Also, the wide range type is possible to process more Boil Off Gases.

VOLCANO DF burners have wide size composition from 1t/h to 70t/h as the boiler evaporation rate.



LNG fuel utilization is expanding in marine field in order to meet the stricter exhaust gas regulation, and boil off gas in LNG tank needs to be processed safely and eco-friendly.

“Methane (CH<sub>4</sub>)” is a major component of LNG fuel and has a global warming potential 25 times that of carbon dioxide(CO<sub>2</sub>), and the IGF code, which is international standard for gas fueled vessels, prohibits LNG fueled vessels from releasing combustible gas into the atmosphere. Many ships are considering installation of Gas/Oil simultaneous mixed combustion DF burner “Vignis” as one of the means of processing boil off gas, and that is the reason VOLCANO released the new type “Vignis”. “Vignis” can combust/utilize boil off gas in the boiler of LNG fueled vessels and contribute to zero “methane” (CH<sub>4</sub>) release into the atmosphere.

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## Press Information

### Wide range type (Vignis-W)

Gas combustion amount for GCU mode is three times higher capacity than normal operation.

That can reduce working hours when LNG fueled vessels and bunkering vessels are gas freeing<sup>※4</sup>.

### Features of VOLCANO Gas/Oil simultaneous mixed combustion DF burner

#### ▪ **Gas/Oil simultaneous mixed combustion**

Fuel can be changed automatically and safely because it is capable of burning Gas and Oil simultaneously.

“Vignis” contributes to zero methane gas release into the atmosphere because it equips GCU mode by the simultaneous mixed combustion.

#### ▪ **GCU mode**

All types of “Vignis” equips GCU mode as a standard specification in addition to the boiler mode.

It contributes to simplify device configuration and in some cases, no need to install GCU by using GCU mode.

#### ▪ **Combusts gas of any ratio**

“Vignis” is capable of treating inert gas up to 100% content due to Gas/Oil simultaneous mixed combustion.

#### ▪ **Wide turndown ratio “10:1”**

“Vignis” reduces heat loss by decreasing frequency of both firing and extinguishing due to wide range Turndown Ratio up to 10:1

#### ▪ **Compatible with a wide range boilers**

“Vignis” is applicable to boilers with evaporation rate of 1 to 7t/h

Gas/Oil simultaneous mixed combustion DF burner “SFFG II”

can be used for boilers which evaporation rate is higher than 7t/h.

#### ▪ **Completely compliant with international standard IGF code<sup>※2</sup> and IGC code<sup>※3</sup>**

Based on 38 years of experience in gas combustion on vessels,

VOLCANO DF burner is completely compliant with international standard IGF code and IGC code.

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Press Information

Product Specifications Overview

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, CH<sub>4</sub>: 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. CH<sub>4</sub>: 100% (as low calorific value 50 MJ / kg)

- ※1 GCU : GCU stands for "Gas Combustion Unit". GCU combusts Boil Off Gas containing inert gas in various situation.
- ※2 IGF CODE : International Code Of Safety for the ships using Gases Or other Low-Flash Point Fuels.  
International standards applicable to LNG fueled ships.
- ※3 IGC CODE : International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk.  
International standards applicable to LNG carriers.
- ※4 Gas-free : LNG fueled vessels and bunkering vessels have to remove combustible gas in the LNG tank before docking. A large amount of combustible gas must be processed in the case