

Mitsubishi Dual Firing Auxiliary Boiler

MC, MJC

August, 2022

BZA-S08055-R3

- 1. Dual Firing boiler production record**
- 2. Lineup of Auxiliary and Composite Boiler**
- 3. Specification of MC-EF Boiler**
- 4. Feature of MC-EF Boiler**
- 5. Specification of MJC-F Composite Boiler**
- 6. Feature of MJC-F Composite Boiler**
- 7. Boiler Control System**
- 8. Dual Fuel Burner**
- 9. Auxiliary Machinery**





1. Dual Firing boiler production record

- More than **130** years history in the marine market
- Manufacturing Record;
Total about 6,035 sets as of April 2022 including Main Boiler and Economizer)
459 sets of the boilers are for Dual firing Boiler.

Robust and Proven Design !!





2. Lineup of Auxiliary and Composite Boiler

Oil Firing

Evaporation (t/h)		5	10	15	Image
Aux. boiler	MC-A 0.7MPa	1~14 t/h			
	MC-E 0.7MPa		5~8 t/h		
	MC-D 0.7MPa	1~4.5 t/h			
Composite boiler	MJC 0.7MPa		2~5 t/h		

2. Lineup of Auxiliary and Composite Boiler

■ Dual Firing

Evaporation (t/h)		5	10	15	Image
Aux. boiler	MC-AF 0.7MPa		5~11 t/h *1		
	MC-EF 0.7MPa		5~8 t/h *1		
	MC-DF 0.7MPa	1~4 t/h			
Composite boiler	MJC-F 0.7MPa		2~5 t/h		

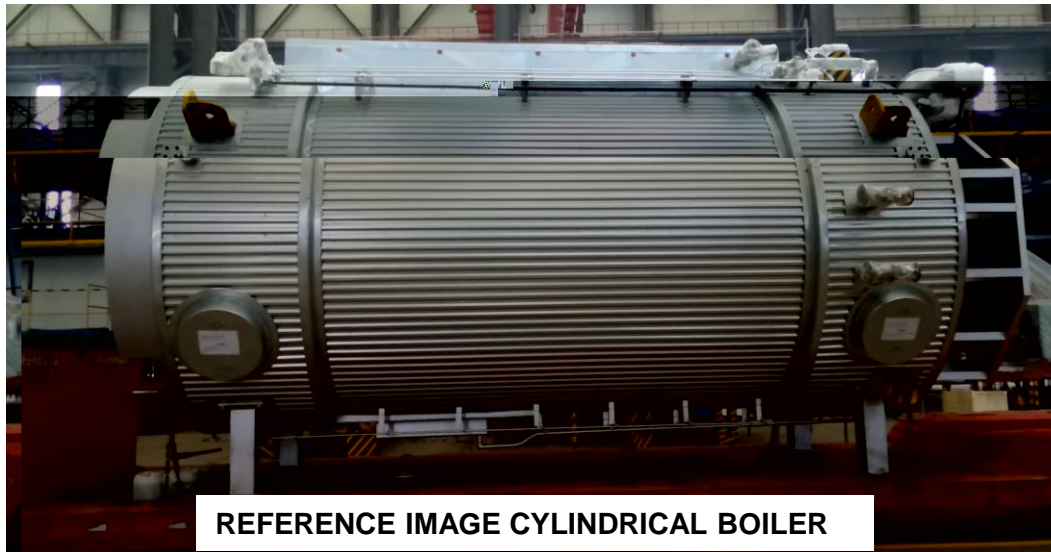
*1 Less than 5 t/h is available.

3. Specification of MC-EF Boiler

■ Specification

Type	MC-50EF	MC-60EF	MC-70EF	MC-80EF
Evaporation	5t/h	6t/h	7t/h	8t/h
Design Press.	0.9MPa			
Working Press.	0.7MPa			
Steam Temp.	Saturated			
Fuel	Gas, HFO, MGO, LSHFO			
FGC ^{*1}	322kg/h	387kg/h	451kg/h	516kg/h

*1 Fuel Gas Consumption CH4 : 100% (50MJ/kg LHV)



4. Feature of MC-EF Boiler

■ Structure

Top-firing Burner

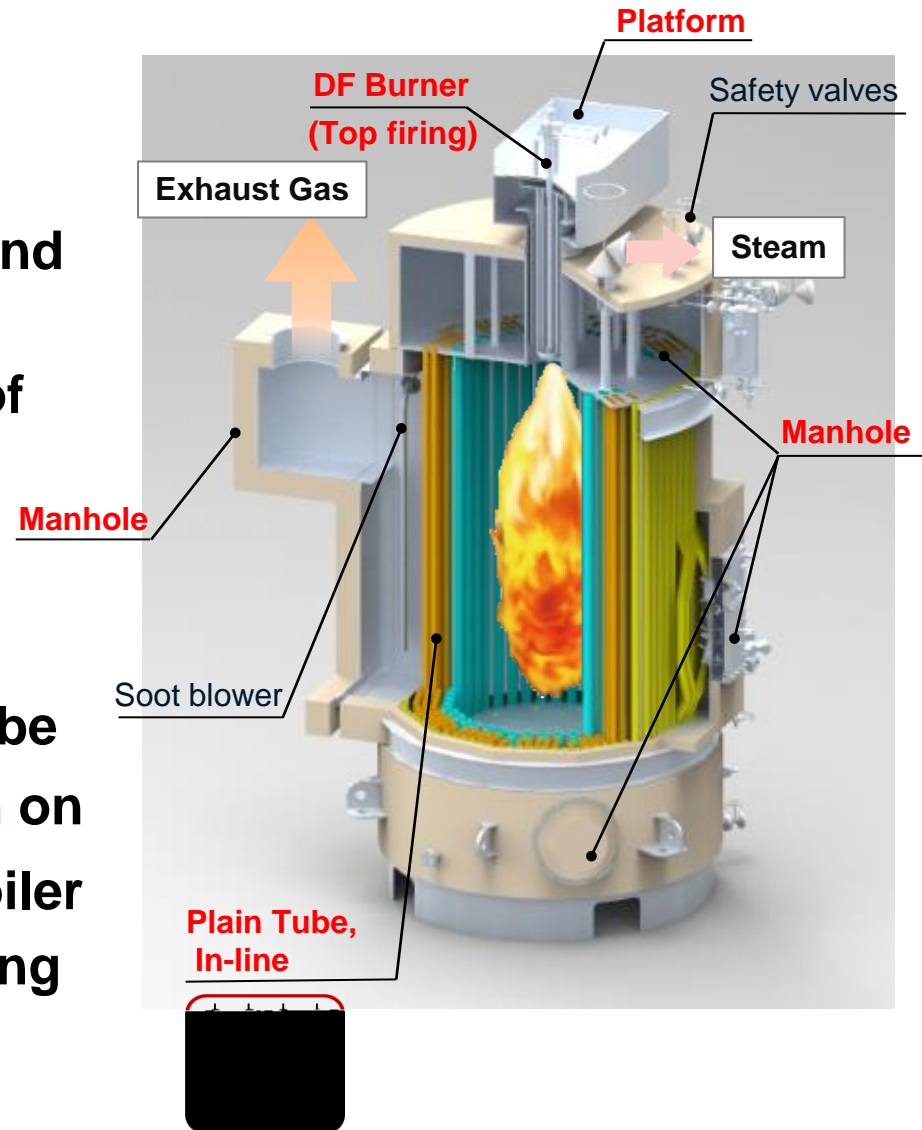
Water tube type

Manhole on steam/water drum and furnace side

Platform for access to top part of Boiler

■ Feature

- **Less soot deposit** using plain tube
- Applied **MHI own control system** on basis of conventional MAC-B boiler
- Safety **Control system** considering Furnace Explosion prevention



5. Specification of MJC-F Composite Boiler

■ Specification

Type	MJC -250F	MJC -280F	MJC -340F	MJC -360F
Evaporation at BNR. section	2t/h		3t/h	5t/h
Design Press.	0.9MPa			
Working Press.	0.7MPa			
Steam Temp.	Saturated			
Fuel	Gas, HFO, MGO, LSHFO			
FGC* ¹	129kg/h		193kg/h	323kg/h
Exh. gas flow at Eco. section	30~ 100t/h	60~ 130t/h	70~ 180t/h	

*1 Fuel Gas Consumption CH₄ : 100% (50MJ/kg LHV)



6. Feature of MJC-F Composite Boiler

■ Structure

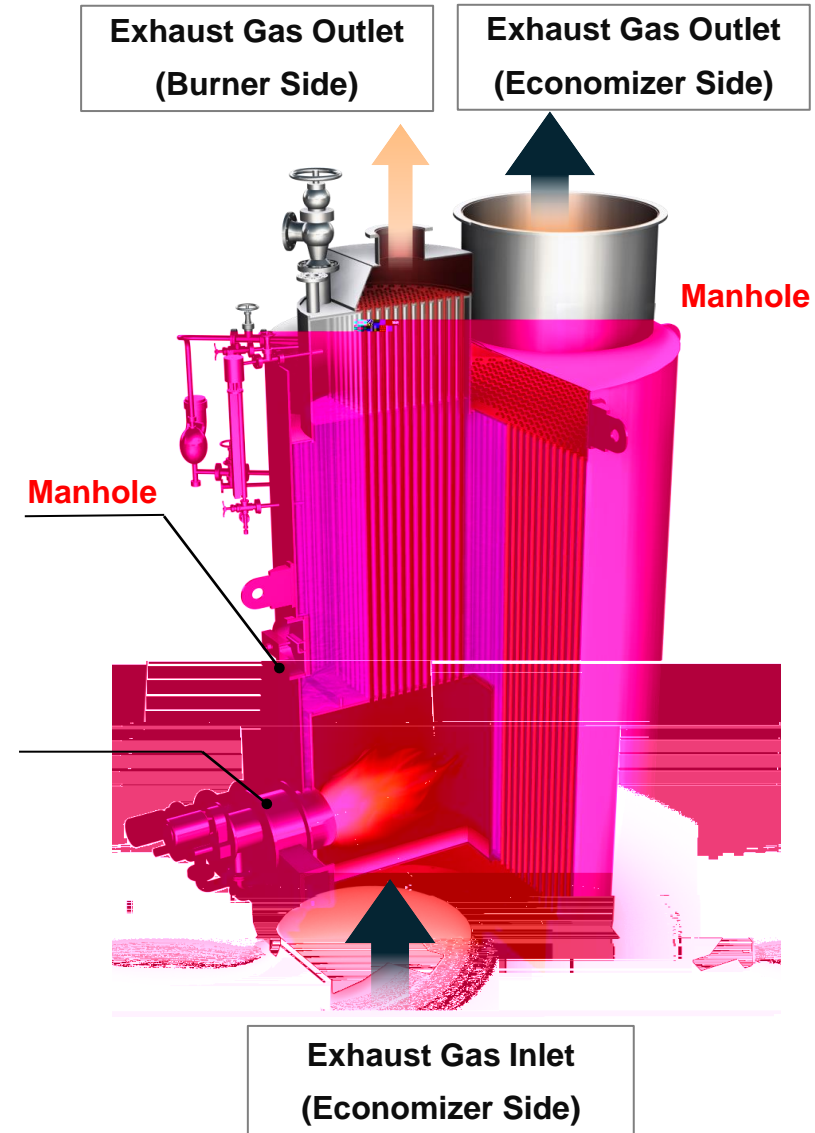
Side-firing Burner

Smoke tube type

Manhole on water drum and exh. gas side

■ Feature

- Applied **MHI own control system** on basis of conventional MAC-B boiler
- Safety **Control system** considering Furnace Explosion prevention



7. Boiler Control System

■ High Reliability & Safety Control System

MADIC : **M**itsubishi **A**utomatic **D**igital **I**llustrated **C**ontrol **S**ystem

ABC : Automatic Boiler Control

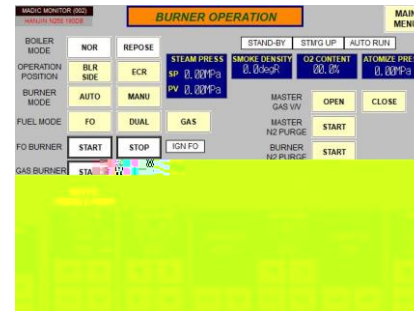
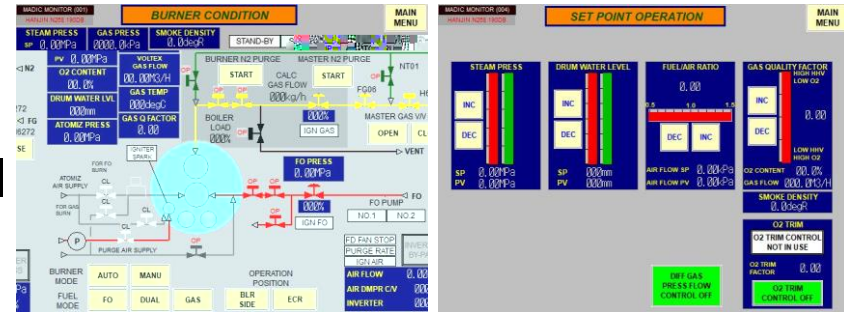
■ ACC : Automatic Combustion Control

- Master control
- Fuel flow control
- Air flow control

■ FWC : Feed Water Control

BMS : Burner Management System

- Burner Ignition / Extinguish
- Burner Purge Sequence
- Boiler Shut-down for safeguard



Emergency operation



Boiler control panel

● M

MADIC MONITOR (0010)
DSME H5389S

SEQUENCE MONITOR NO.2 BLR MAIN MENU

0	NOT RUN	PURGE TIME SET	
1	START	FURNACE PURGE	00.0sec
2	FURNACE PURGE ORDER	BNR STEAM PURGE	00.0sec
3	FURNACE PURGE ESTABLISH		
4	FO REC V CLOSE	FURNACE PURGE CONDIT	

IGNITION CONDITION

- FO VALVE OPEN
- FO FLOW CV IGN POSITION
- IGNITION AIR FLOW
- ATOMIZ V OPEN (LS)

9 STOP

10 BURNER PURGE

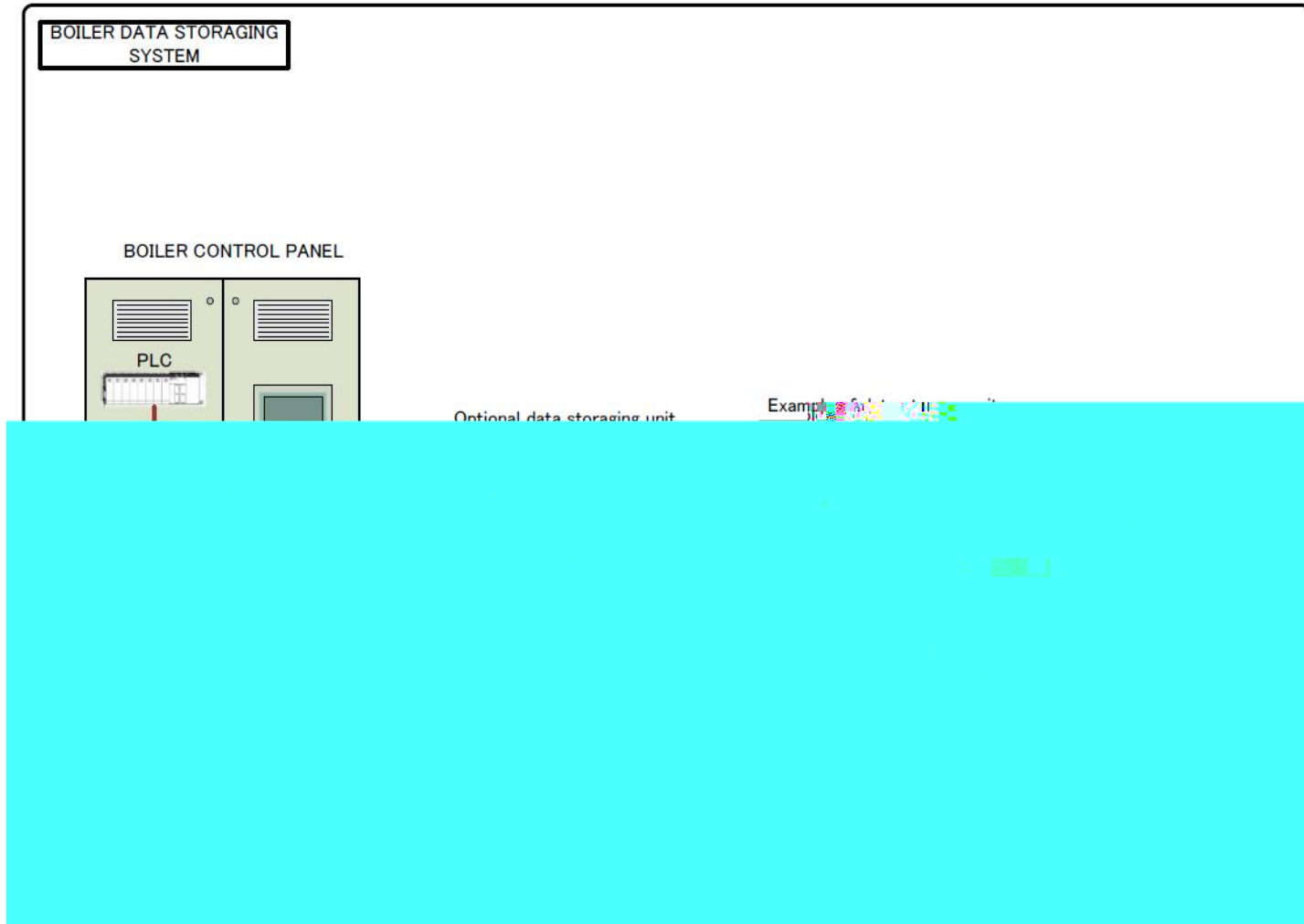
11 POST FURNACE PURGE ORDER

IGNITION VALIDITY TIME 000.0sec NO.1 BOILER IG

7. Boiler Control System

■ Boiler data storage system

- **Data collection** can be available.



8. Dual Fuel Burner




■ Burner selection

- Burner maker is Volcano or Sunflame
- Burner is varied depending on the steam evaporation

Evaporation	Burner type (Maker)	Control system supplier
1~4 t/h	SDR (Sunflame) or Vignis (Volcano)	Burner maker
5~11 t/h	SFFGII (Volcano)	MHI-MME

8. Dual Fuel Burner

■ Burner specification

Maker		Volcano		Sunflame
Burner type		SFFGII	Vignis	SDR
Fuel spray method	OIL	Steam/Air atomizing type		Rotary cup type
	GAS	External mixing		External mixing
Turn down ratio		4.6~10:1	10:1	10:1
Appearance				

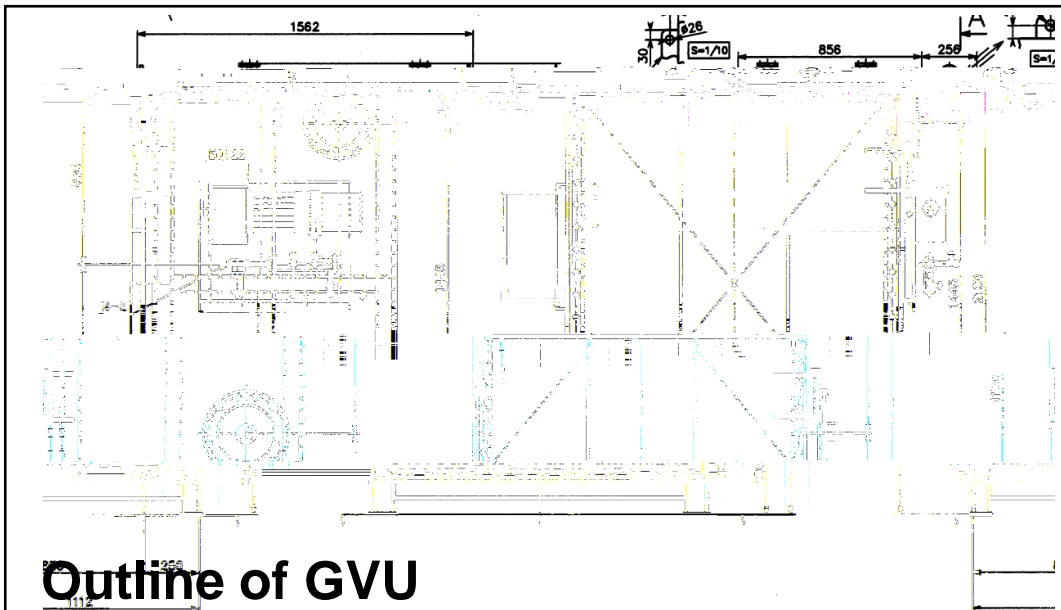
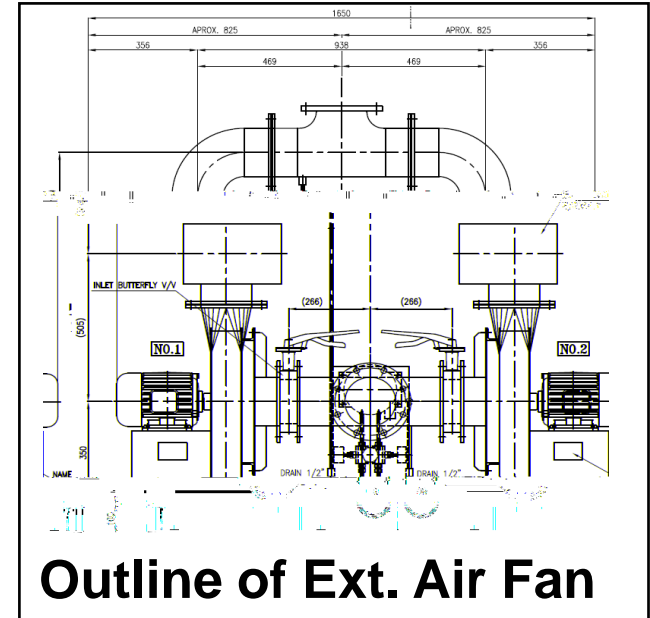
9. Auxiliary Machinery

Special Accessories for Dual Firing Boiler can be provided

■ Extraction Air Fan Unit

■ Gas Valve Unit with Enclosure

- Gas Detector
- Junction Box & Solenoid valve board
- Safety devices etc.



MOVE THE WORLD FORWARD

