



# With you at every step



## Keep up with COVID-19 by taking the right measures for your Heating Equipment



Bringing you knowledgeable insights and information that will keep your Heating Equipment up and running during and post lockdown period. Kindly refer to the Standard Operation Procedures (SOP) for the equipment that is applicable to you.

<b>CUSTOMER SERVICE BULLETIN</b>	<b>Ref:TL/HTG/SERV/CSB-2020/002</b>
<b>SCOPE</b>	<b>THERMAX SOILD FUEL FIRED HEATERS AND BOILERS</b>
<b>SUBJECT</b>	<b>STANDARD OPERATING PROCEDURE FOR STARTUP OF BOILERS &amp; HEATERS</b>
<b>DATE OF RELEASE</b>	<b>APRIL 2020</b>

### Brief Background:

Thermax Limited Heating Division has been into the manufacturing & servicing of boilers & heaters since over 50 years now. In order to support / assist the customers to have a smooth startup post the lock down period Heating Services is sharing a standard operating procedure for starting of solid fuel fired boilers and heaters. Thermax recommends this document should be referred in accordance with the operation & maintenance manuals for the respective units.

Sl.No	Activities	Boiler	Heater
<b>1</b>	<b>Feed Water readiness</b>		
1.01	Check and ensure the readiness of Softener/RO	✓	✗
1.02	Check and ensure the soft water tank is full and free from dirt and other foreign particles	✓	✗
1.03	Ensure to check the feed water parameters as per recommendation given in P&I	✓	✗
1.04	Inlet pipes and filters to be flushed and cleaned properly to ensure readiness of Feed water availability up to feed pump suction.	✓	✗
1.05	Now the feed water Pump is again ready for operation	✓	✗
<b>2</b>	<b>Fuel &amp; Fuel Handling System</b>		
2.01	Check and ensure fuel is stored at a proper place and ready to be fed up to fuel feeder	✓	✓
2.02	Ensure readiness of fuel conveyor with respect to bucket, belt, motor, gearbox, any external noise condition.	✓	✓
2.03	Ensure Screw/rotary feeder Casing should be properly cleaned and ready to be operated in fresh condition. Do not forget to check Gearbox oil condition/level.	✓	✓
<b>3</b>	<b>Electrical Panel &amp; Instruments</b>		
3.01	Panel should be cleaned externally and internally with help of blower to remove external/internal dust accumulation and ingress.	✓	✓
3.02	Also recommended to use hot air with help of hand blower to remove moisture because of long storage.	✓	✓
3.03	Ensure power and instrument earthing termination condition.	✓	✓
3.04	Care to be taken while restart up of VFD and kindly follow the OEM manual	✓	✓
3.05	Before startup of the boiler don't forget to ensure phase voltage, line voltage and voltage between Earth and Neutral.	✓	✓
3.06	Ensure wiring are properly connected/intact	✓	✓
3.07	If the voltage ranges are ok, panel is ready for startup.	✓	✓
3.08	Restart the panel power and control and ensure to check rotation direction of rotary equipment's with closing damper condition.	✓	✓
<b>4</b>	<b>General checks of Boiler / Heater before Startup</b>		
4.01	Ensure all the blow down, drain valves are kept closed.	✓	✗
4.02	Ensure and check Main steam stop valves should be closed.	✓	✗
4.03	Ensure and check Air vent valve should be opened.	✓	✗



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4.04	Now Boiler water can be filled up to 60%-gauge glass level with fill mode of operation.	✓	✗
4.05	Ensure to check mobility operation for automatic feed water start/stop operation.	✓	✗
4.06	Ensure there should not be any leakage from any joint/valves/gasket area.	✓	✗
4.07	Ensure and check furnace/grate is properly cleaned from ash/deposition if any.	✓	✗
4.08	Ensure to check FD fan, ID fan Damper operation.	✓	✗
4.09	Ensure to check instrument air availability for feed water control valve and pneumatic damper operation if applicable.	✓	✗
4.1	Now the fuel can be fed inside the furnace/retort as per feeding philosophy.	✓	✗
4.11	Initial firing can be now started with recommended sequence. Like in case of FBC boilers Bed preparation and initial Bed temp to be maintained as per standard practice recommended during commissioning and handover of the unit.	✓	✗
4.12	Ensure to reconfirm the Auto start and stop sequence of firing mode	✓	✗
4.13	Ensure to close air vent @ 2Kg/cm <sup>2</sup> pressure.	✓	✗
4.14	Safety valve and pressure switch operation need to be checked to ensure safety is in line.	✓	✗
4.15	In case of HMI operation Look up table parameters to be reconfirmed and rechecked to avoid immediate overfeeding and other unwanted happenings.	✓	✗
4.16	Ensure to start RAV operation for proper disposal of ash from HRU/PCE.	✓	✗
4.17	Ensure to re start Ash crew operation as per recommended operational philosophy only like Ash screw should be properly covered with old ash in case of UFS units.	✓	✗
4.18	Ensure to check the healthiness of the expansion tank level. It should be maintained at around 40-50%.	✓	✗
4.19	Check the water level in the feed water tank which should be more than 60%.	✓	✗
4.2	Open the isolation valves of the IBH make up pump.	✓	✗
4.21	Check the strainer of the pump.	✓	✗
4.22	Open the vent valves of the WTH in case of VTIF units	✗	✓
4.23	Check whether the blow down and drain lines are closed.	✗	✓
4.24	Fill the DM water mixed with the required amount [as per unit capacity] of tri-sodium phosphate in the WTH with IBH assembly up to 400mm above the level sensor probe keeping the air vent open. Make sure the IBH water level low indication is healthy in case of VTIF units.	✗	✓
4.25	Open the isolation valves in the TF line.	✗	✓
4.26	Check the strainers of the TF pumps.	✗	✓
4.27	Start the TF circulation pump and circulate the TF through the cooling circuit to remove the air using the vents of WTH and cooling line till the pressure gauges show constant pressure reading.	✗	✓
4.28	Make sure the differential pressure across the coil as well as the flow across IBH is healthy.	✗	✓
4.29	After the removal of the air, the circulation can be started through the process circuit.	✗	✓
4.3	Check the water level in the feed water tank which should be more than 60%.	✗	✓
4.31	Open the isolation valves of the IBH make up pump.	✗	✓
4.32	Check the strainer of the pump.	✗	✓
4.33	Open the vent valves of the WTH if applicable	✗	✓
4.34	Check whether the blowdown and drain lines are closed.	✗	✓



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4.35	Fill the DM water mixed with the required amount [as per unit capacity] of tri-sodium phosphate in the WTH with IBH assembly up to 400mm above the level sensor probe keeping the air vent open. Make sure the IBH water level low indication is healthy.	x	✓
4.36	Open the isolation valves in the TF line.	x	✓
4.37	Check the strainers of the TF pumps.	x	✓
4.38	Start the TF circulation pump and circulate the TF through the cooling circuit to remove the air using the vents of WTH and cooling line till the pressure gauges show constant pressure reading.	x	✓
4.39	Make sure the differential pressure across the coil as well as the flow across IBH is healthy.	x	✓
4.4	After the removal of the air, the circulation can be started through the process circuit.	x	✓
4.41	Further gradual Heating of TF can be done as per SOP of TF heating and Bed firing of FBC.	x	✓
4.42	Please note WTH and IBH checks and precaution will be applicable wherever provided like VTIF units.	x	✓
4.43	Greasing of all rotating equipment's for bearing lubrication	✓	✓
<b>5</b>	<b>Feed water Pump</b>		
5.01	Check level of Storage tank/ Deaerator tank.	✓	x
5.02	Open the valve of Storage/ Deaerator tank outlet line to inlet of Pump.	✓	x
5.03	Open inlet valves of Feed water pump.	✓	x
5.04	Open outlet valves of feed water pump.	✓	x
5.05	Open inlet & outlet valve of Control valves.	✓	x
5.06	Open shell inlet valve of feed water line.	✓	x
5.07	Check strainer of pump.	✓	x
5.08	Start pump to fill the water in Boiler.	✓	x

Thermax Limited Heating Service recommends customer to get in touch with the local service points TCA / Thermax regional office team, details as below:

Region	First level	Second Level	Third Level
<b>North India</b>	<b>Dev Dutta R</b> ✉:dev.dutta@thermaxglobal.com	<b>Ajay Goyal</b> ✉:ajay.goel@thermaxglobal.com	<b>Sachin Kulkarni</b> ✉:sachin.p.kulkarni@thermaxglobal.com
<b>East India</b>	<b>Bapi Roy</b> ✉:bapi.roy@thermaxglobal.com	<b>Prabhakar Kumar</b> ✉:prabhakar.kumar@thermaxglobal.com	
<b>West India</b>	<b>Vaibhav Waghmare</b> ✉:vaibhav.waghmare@thermaxglobal.com	<b>D Thiyagarajan</b> ✉:thiyagarajan.d@thermaxglobal.com	
<b>South India</b>	<b>M Kumar</b> ✉:m.kumar@thermaxglobal.com	<b>R Mahendran</b> ✉:r.mahendran@thermaxglobal.com	
<b>CUSTOMER RELATIONSHIP CENTER - 1800-209-0115</b>			