



भारत हेवी इलेक्ट्रिकल्स लीमिटेड  
Bharat Heavy Electricals Limited  
Ramachandrapuram, Hyderabad

## LUBE OIL SYSTEMS

## PRODUCT CATALOGUE

ISSUE: FEB, 2020

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# LUBE OIL SYSTEMS

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## INTRODUCTION

Bharat Heavy Electricals Limited (BHEL) is today the largest engineering and manufacturing enterprise of its kind in India. BHEL has a wide range of products of Thermal, Hydro and Nuclear power stations, Transmission, Transportation, Oil & Gas and Non-Conventional Energy.

To meet stakeholders' expectations, BHEL lays great emphasis on the continuous up gradation of products and related technologies and development of new products so as to remain competitive & future ready. The company has upgraded its products to contemporary levels through continuous in—house efforts as well as through acquisition of new technologies from leading engineering organizations of the world.

BHEL Manufactures complete range of Lube Oil systems for all applications. If customer provides technical parameters like Rated flow, Rated pressure, Heat load, Filtration required, water inlet temperature and allowable raise in temperature at out let BHEL design and manufacture the systems. Lube oil systems has to lubricate and cool the gears and hydro dynamic bearings continuously. This system is essential to the life and maintenance free operation of the Equipment. In addition to lubrication some equipment's needs additional requirement of hydrostatic starting aid (Jacking oil system). BHEL meets specific requirement of customers for any application by customization and provides technical support for Installation, commissioning, overhaul, repair and spares and services .BHEL manufactured more than 150 systems to meet various requirements and providing technical support.



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## APPLICATION

Lube oil systems are used in

1. Lubrication of Bowl mill gear box in thermal power plant.
2. Lubrication of Ball mill in thermal power plant.
3. Lubrication of mill in Cement industries.
4. Lubrication of mill in Steel industries.
5. Lubrication of Ball mill in FGD (Flue Gas Desulphurization) in Thermal power plant.

## FUNCTION

The lube oil system consists of Lube oil tank, 2x100 % screw pumps & motors, 2x100% filters, and 2x100% oil coolers. The screw pump is used for normal lube oil unit operation.

Filtered and cooled oil, to the required temperature range of 30 to 50 deg C, is supplied to the gearbox thrust pad bearing, input shaft bearings and gears. Temperature control valve after cooler decides to bypass the cooler or flow through cooler depending on the temperature setting. The return line from the gearbox is connected to the tank. A series of heaters provided in the Lube oil tank are used to raise the oil temperature to permit pump operation. Once the pump is operating and oil temperature is above 40 deg C, the heaters are shut off.



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## FEATURES

1. Custom design for various heat loads and flows
2. Ease maintenance and construction
3. Low operating and maintenance cost
4. Compact in nature
5. Highly Reliable.
6. Hydrostatic starting aid along with Lubrication
7. Custom design for 1 out of 2 / 2 out of 3 logics

## PRODUCT VARIANTS MANUFACTURED

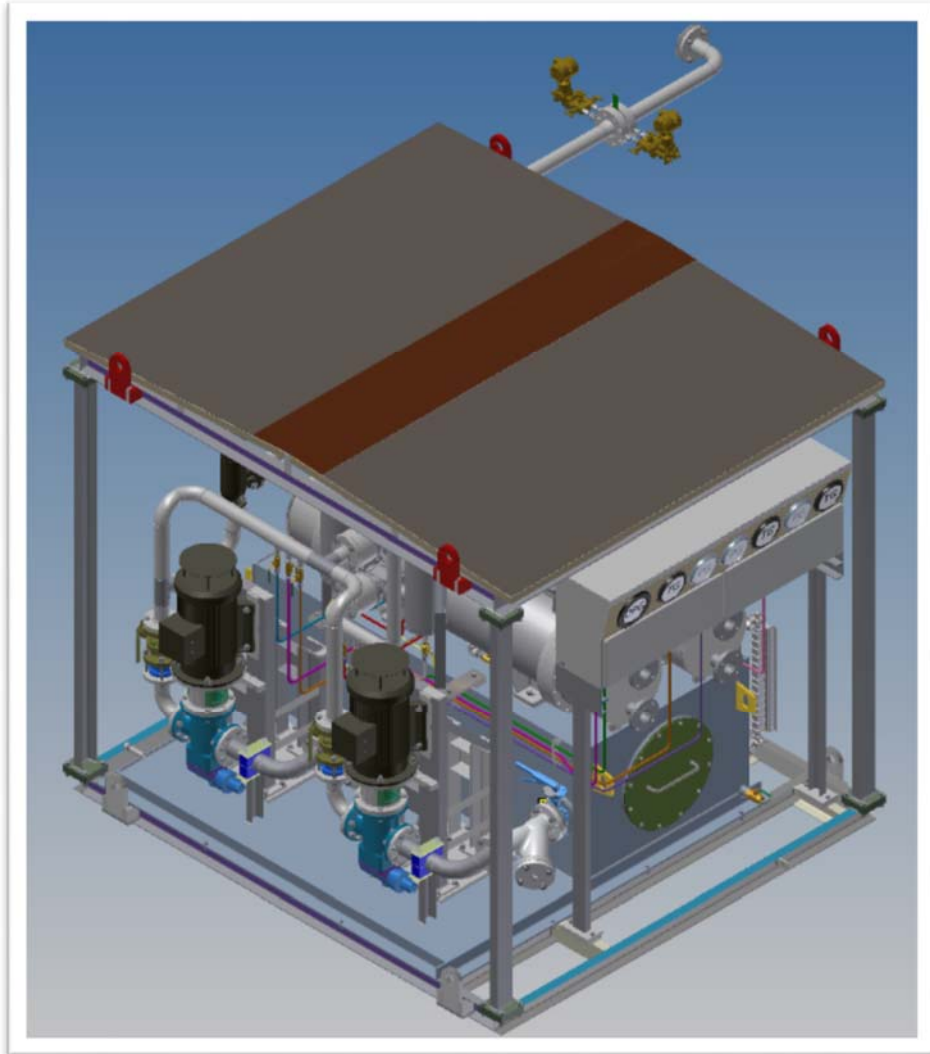
1. 250 LPM LUBE OIL SYSTEM WITH TANK FOR OIL STORAGE
2. 250 LPM LUBE OIL STSTEM WITHOUT TANK
3. 341 LPM LUBE OIL SYSTEM WITH TANK FOR OIL STORAGE
4. 250 LPM LUBE OIL STSTEM WITHOUT TANK



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## TECHNICAL DETAILS

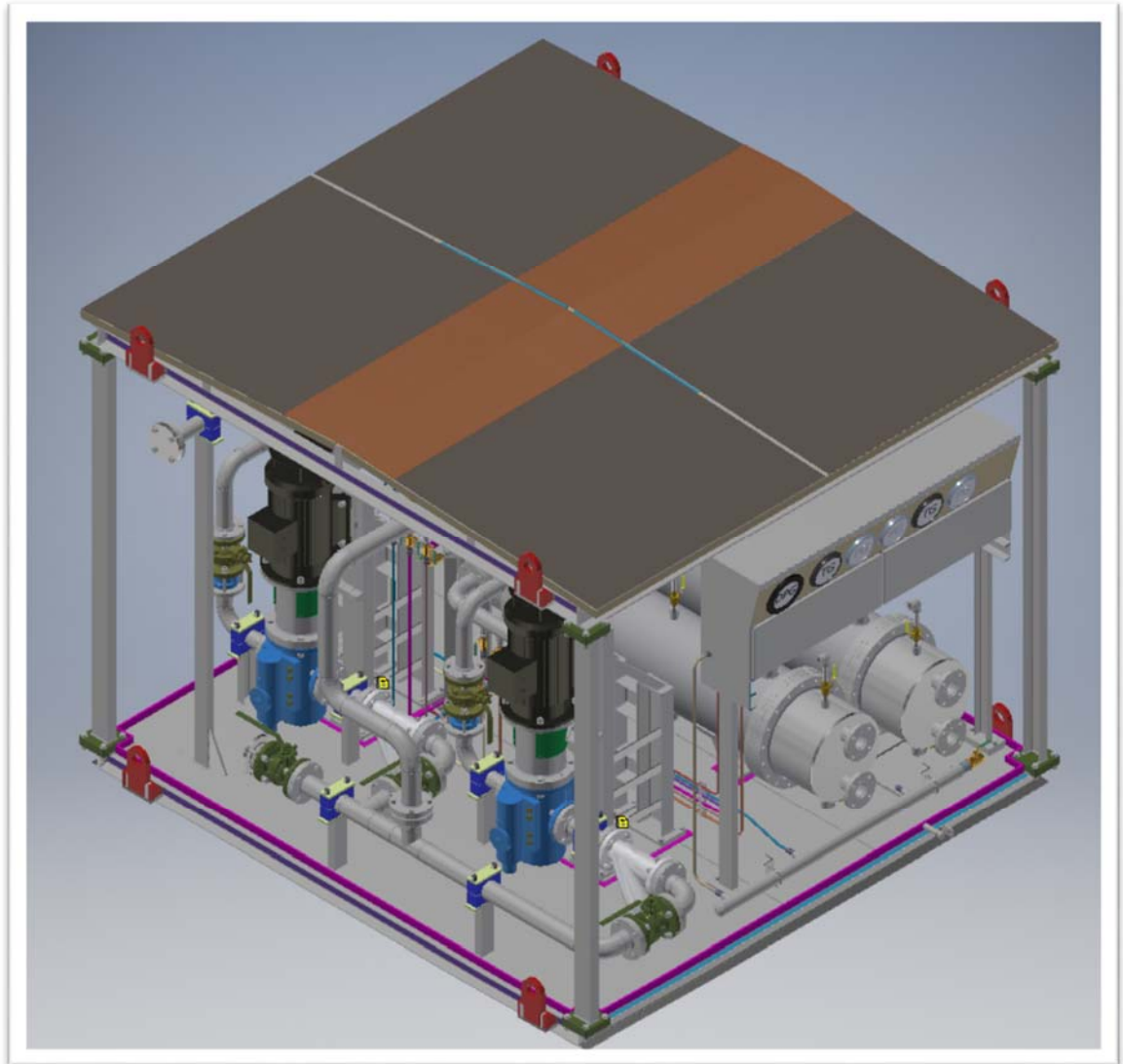
### 250 LPM LUBE OIL SYSTEM WITH TANK FOR OIL STORAGE



1. Lube oil tank capacity	:	1700 Liters
2. Rated Flow rate	:	250 lpm
3. Oil	:	ISO VG-320
4. Pressure at discharge header	:	3 - 5 kg/cm <sup>2</sup>
5. Filtration	:	25 Microns (nominal)
6. Operating temperature	:	40 to 60 Degree C
7. Water Temp at cooler inlet	:	38 Degree C
8. Water Temp at cooler outlet	:	42 Degree C
9. Heat Dissipation capacity	:	57 kW

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## 250 LPM LUBE OIL SYSTEM WITH OUT TANK

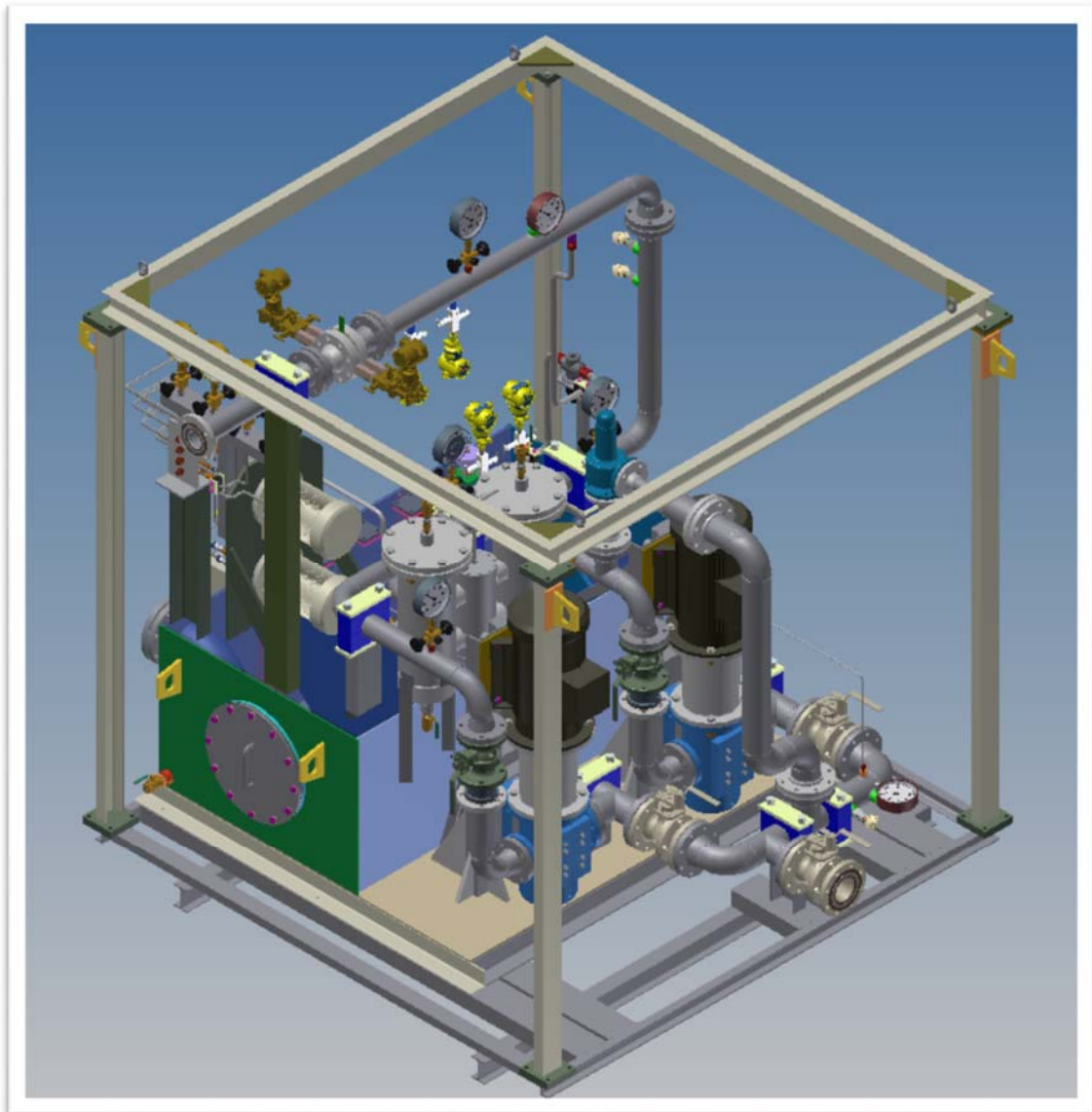


1. Rated Flow rate	:	250 lpm
2. Oil	:	ISO VG-320
3. Pressure at discharge header	:	3 - 5 kg/cm <sup>2</sup>
4. Filtration	:	25 Microns (nominal)
5. Operating temperature	:	40 to 60 Degree C
6. Water Temp at cooler inlet	:	38 Degree C
7. Water Temp at cooler outlet	:	42 Degree C
8. Heat Dissipation capacity	:	57 kW





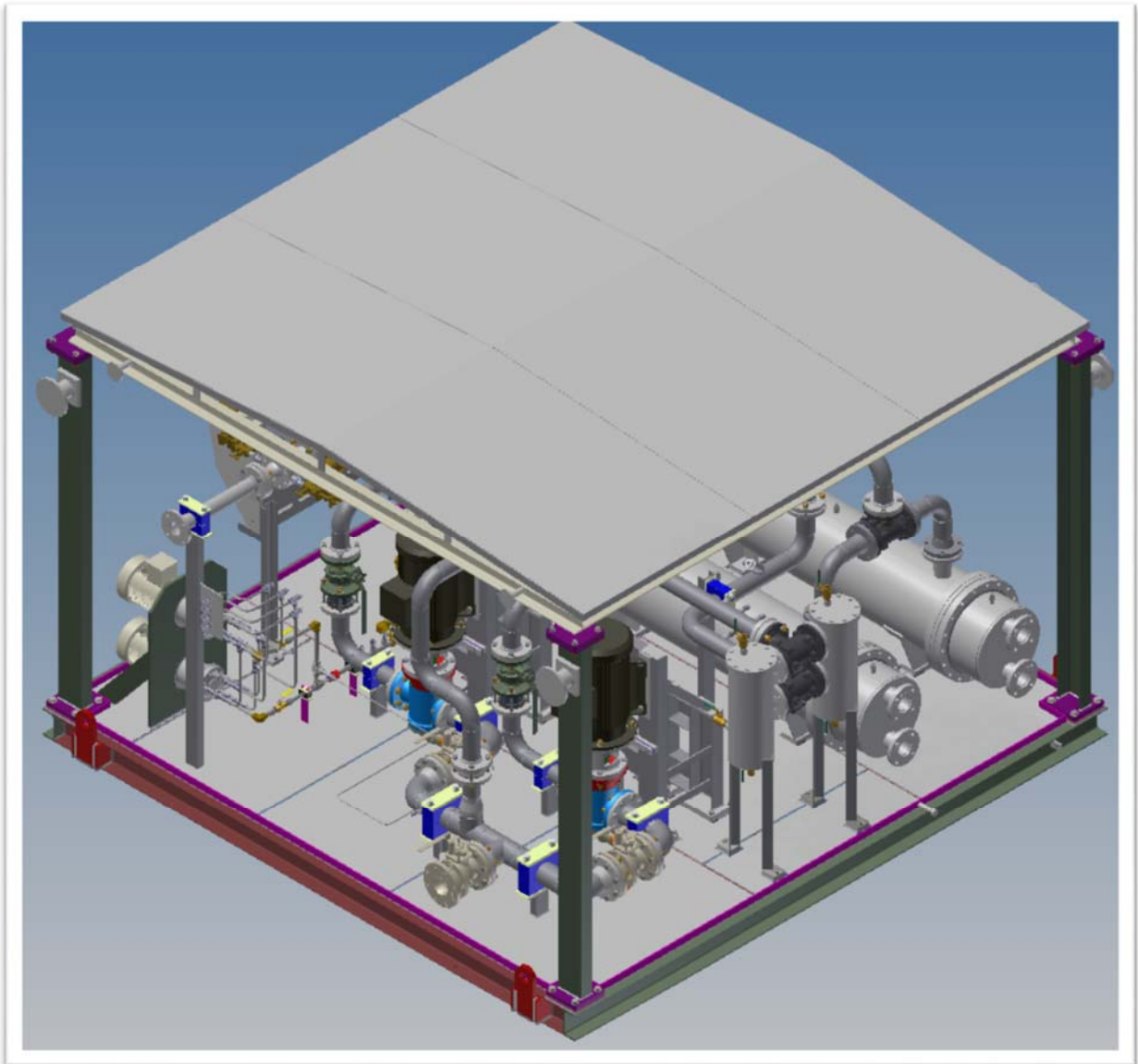
## 341 LPM LUBE OIL SYSTEM WITH TANK FOR OIL STORAGE



1. Lube oil tank capacity	:	1700 Liters
2. Rated Flow rate	:	341 lpm
3. Oil	:	ISO VG-320
4. Pressure at discharge header	:	3 - 5 kg/cm <sup>2</sup>
5. Filtration	:	25 Microns (nominal)
6. Operating temperature	:	40 to 60 Degree C
7. Heat Dissipation capacity	:	69 KW
8. Rated pressure of HP line	:	250 bar
9. Rated flow of HP line	:	4 X 1.7 LPM

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## 341 LPM LUBE OIL SYSTEM WITHOUT TANK



1. Rated Flow rate	:	250 lpm
2. Oil	:	ISO VG-320
3. Pressure at discharge header	:	3 - 5 kg/cm <sup>2</sup>
4. Filtration	:	25 Microns (nominal)
5. Operating temperature	:	40 to 60 Degree C
6. Heat Dissipation capacity	:	66 KW
7. Rated pressure of HP line	:	250 bar
8. Rated flow of HP line	:	4 X 1.7 LPM



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## MANUFACTURING & TEST FACILITIES

Lube oil systems are carefully tested throughout the manufacturing process in order to guarantee a perfect match to their design criteria and to assure long lasting, continuous operation.

The following tests are typically carried out at on components, sub-assemblies and final assembly.

1. Dye penetrant test on Root welding
2. Hydraulic pressure test on pipe line
3. Four hours mechanical run test complete assembly
4. Functional test on complete assembly
5. High pressure test on HP side.
6. Sound level and vibration measurement
7. Paint peel off test

The following operations have been performed on Pipe lines to ensure good quality.

1. 100% Dye penetrant test on Root welding
2. 100% Dye penetrant test on fillet welding
3. Hydraulic pressure test on pipe lines
4. Burning operation
5. Pickling and passivation
6. Painting as per customer requirement.



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BHEL having complete in- house manufacturing and test facility for the lube oil systems. Some of the facilities listed below

- Test beds for testing 4 systems at a time
- Sound level meter for measuring sound level
- Accelerometer for measuring vibrations
- High pressure testing arrangement to test HP line
- Paint thickness measurement gauge
- Hydraulic pressure testing equipment
- Grit blasting equipment
- Picking and passivation plant
- Furnace for burning operation
- Paint booths for painting
- Tachometer for speed measurement
- Kerosene jet cleaning for filter element cleaning
- Tube bending facility



Lube oil systems under testing

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## SPARES & SERVICE

BHEL provides spares and service support to customer. Major spares required for system is listed below.

S.NO	MATERIAL DESCRIPTION
1	25 Micron Filter Element
2	Love Joy Coupling
3	Pressure Relief Valve
4	Motors
5	Triplex Screw Pump
6	Radial Piston Pump Multi Pressure Port
7	NRV-Dual Plate Wafer type
8	Pressure Gauges
9	Differential Pressure Gauges
10	Temperature Gauges
11	Resistance Temperature Detectors (RTD)
12	Inductive Sensor
13	Mechanical Face Seals for Screw Pumps
14	Set Of O rings & Gaskets for Screw Pumps
15	Dowty Seals
16	Pump-Motor Assembly
17	Filter Breather
18	Electrical Heaters
19	Strainer Y Type
20	Pressure Transmitter
21	Differential Pressure Transmitter
22	Guided Wave level transmitter
23	Temperature Transmitter
24	Orifice Flange assembly



## REFERENCE LIST

S.No	Flow (LPM)	Project Name	Qty	Supplied on (Month/year)	Remarks
1	341	NTPC-NORTH KARANPURA-I (3X660 MW)	8	12/2016	Without tank
2	341	NTPC-NORTH KARANPURA-II (3X660 MW)	8	02/2017	Without tank
3	341	NTPC-DARLIPALI-I (2X800 MW)	9	05/2017	Without tank
4	341	NTPC-DARLIPALI-II (2X800 MW)	9	08/2017	Without tank
5	341	NTPC-NORTH KARANPURA-III (3X660 MW)	8	10/2017	Without tank
6	250	APGENCO- VIJAYAWADA(1x800 MW)	8	02/2018	With tank
7	250	APPDCL-KRISHNAPATNAM (1x800 MW)	8	03/2018	With tank
8	250	TANGEDCO-ENNORE-I (2x660 MW)	8	08/2018	With tank
9	250	TANGEDCO-ENNORE-II (2x660 MW)	8	09/2018	With tank
10	250	TANGEDCO-UPPUR-I (2x800 MW)	9	12/2018	With tank
11	250	BIFPCL-MAITREE -I (2x660 MW)	6	02/2019	With tank
12	250	BIFPCL-MAITREE -II (2x660 MW)	6	03/2019	With tank



13	250	NTPC-TELANGANA-I (2X800 MW)	9	06/2019	Without Tank
14	250	TANGEDCO-UPPUR-II (2x800 MW)	9	07/2019	With tank
15	250	NTPC-TELANGANA-I (2X800 MW)	9	08/2019	Without Tank
16	250	TSGENCO-YADADRI-I (5X800 MW)	8	09/2019	With tank
17	250	TSGENCO-YADADRI-II (5X800 MW)	8	10/2019	With tank
18	250	TSGENCO-YADADRI-III (5X800 MW)	8	12/2019	With tank
19	250	TSGENCO-YADADRI-IV (5X800 MW)	8	01/2020	With tank
20	250	TSGENCO-YADADRI-V (5X800 MW)	8	02/2020	With tank
21	250	THERMAX-JSW BELLARY (80TPH)	1	03/2020	With tank

