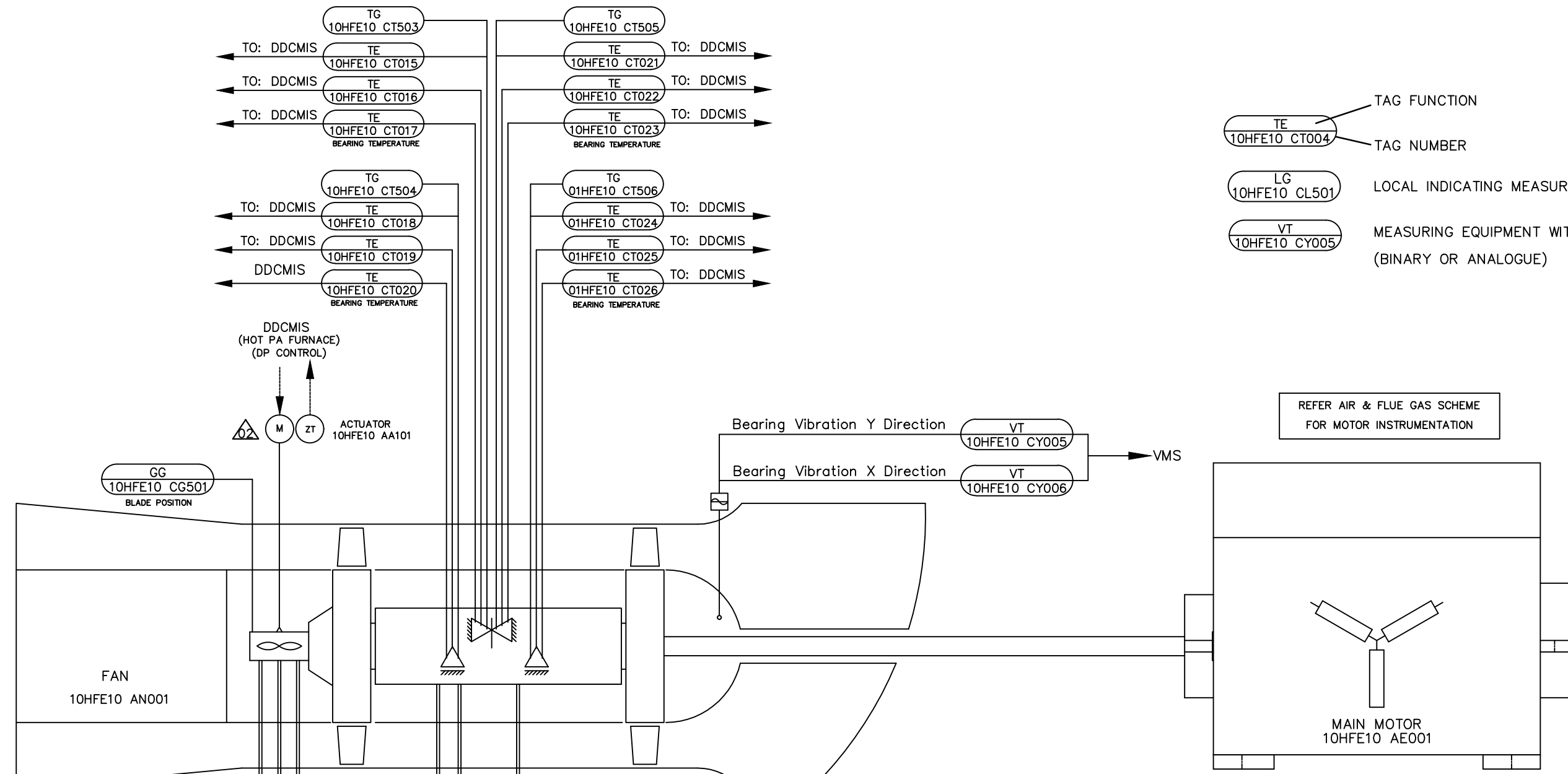


DESIGNATION:

001 to 100	- OIL TANK
101 to 199	- CONTROL OIL CIRCUIT
201 to 299	- LUBE OIL CIRCUIT
301 to 399	- FAN INSTRUMENTATION



LEGEND

AA0XX	CONTROL VALVE
AA3XX	SAFETY VALVE
AA4XX	NON-RETURN VALVE
AA5XX	HAND VALVE
Bx0xx	ANALOGUE MEASURING
Bx3xx	BINARY MEASURING
Bx5xx	LOCAL INDICATING MEASURING EQUIPMENT

ADDITIONAL INFORMATION FOR VALVES:

LUBE OIL LINE DETAIL	SIZE	MOC
PH: PRESSURE OIL HYDRAULIC	OD15X1.5Thk.	SEAMLESS STEEL (CARBON STEEL-CS)
RH: RETURN OIL HYDRAULIC	OD15X1.5Thk.	
LH: LEAKAGE OIL HYDRAULIC	OD15X1.5Thk.	
PL: PRESSURE OIL MAIN BEARING	OD15X1.5Thk.	
RL: RETURN OIL MAIN BEARING	NB40, SCH40	
EL: PRESSURE EQUALISATION LINE	OD15X1.5Thk.	
ML: PRESSURE OIL MOTOR BEARING	OD15X1.5Thk.	
RM: RETURN OIL MOTOR BEARING	NB40, SCH40	

COOLING WATER LINE DETAIL	SIZE
W1: WATER CONNECTION INPUT COOLER 1	40 NB
W01: WATER CONNECTION OUTPUT COOLER 1	40 NB
W2: WATER CONNECTION INPUT COOLER 2	40 NB
W02: WATER CONNECTION OUTPUT COOLER 2	40 NB

INSTRUMENTATION LOGIC TABLE

SEQUENCE	ALARM	FAN MOTOR START PERMISSIVE	FAN MOTOR TRIP	LUBE OIL PUMP MOTOR TRIP	STAND BY OIL PUMP ON	HEATER ON	HEATER OFF	INITIATED BY
FAN BLADES & OUTLET DAMPER CLOSED		●						Refer A & FG Drawing
MAX. LEVEL IN OIL TANK ≥ 75%		●						LT(007,008) 10HFE10 CL001/002
MIN. LEVEL IN OIL TANK ≤ 60%		●						LT(007,008) 10HFE10 CL001/002
MIN. LEVEL IN OIL TANK ≤ 50%				●				10HFE10 CL001/002
OIL TANK TEMPERATURE ≤ 17°C	●							TE(009,010) 10HFE10 CT028,030
OIL TANK TEMPERATURE ≥ 60°C	●							TE(009,010) 10HFE10 CT028,030
TEMP. IN OIL TANK ≤ 25°C						●		HEATER WITH THERMOSTAT (003)
TEMP. IN OIL TANK ≥ 35°C						●		HEATER WITH THERMOSTAT (003)
DIFF. PRESSURE ACROSS FILTER ≥ 5 bar	●							DPT(120) 10HFE10 CP301
CONTROL OIL PRESSURE ≥ 16 bar	●		●					PT(123,125) 10HFE10 CP004/005
CONTROL OIL PRESSURE ≤ 12 bar (Time delay: 15 sec)	●				●			PT(123,125) 10HFE10 CP004/005
LUB OIL FLOW ≥ 16 l/min (Fan Brgs.)		●						FI&T(212) 10HFE10 CF001
LUB OIL FLOW ≤ 12 l/min (Fan Brgs.)	●							FI&T(212) 10HFE10 CF001
LUBE OIL TEMPERATURE > 70°C	●							TE(207) 10HFE10 CT029
FAN BRG. TEMP HIGH ≥ 90°C	●							TE (301-312) 10HFE10 CT015-CT026
FAN BRG. TEMP VERY HIGH ≥ 110°C			●					TE (301-312) 10HFE10 CT015-CT026
FAN BRG. VIBRATION LEVEL > 4.5mm/s [rms] (Lead time: Nil)	●							VT(319,320) 10HFE10 CY005,006
FAN BRG. VIBRATION LEVEL > 9mm/s [rms] (Lead time: 2min)			●					VT(319,320) 10HFE10 CY005,006
FAN BRG. VIBRATION LEVEL > 15mm/s [rms] (Lead time: 5 sec)			●					VT(319,320) 10HFE10 CY005,006

NOTES:-

- THIS SCHEME IS APPLICABLE FOR ONE FAN AND SIMILAR SYSTEM IS APPLICABLE FOR OTHER FAN AND ALSO FOR OTHER UNITS.
- KKS TAG NOS. HAVE BEEN MARKED FOR PA FAN - A LUBE OIL SYSTEM.
- KKS TAG NOS. FOR PA FAN - B LUBE OIL SYSTEM SHALL BE 10HFE15. FOR UNIT-2 IT SHALL BE 20HFE10 & 20HFE15 RESPECTIVELY FOR PA FAN-A & B.
- PIPE LINES & VALVES IN THE COOLING WATER INLET & OUTLET ARE IN THE SCOPE OF BHEL/PC REFER THE SCHEME OF COOLING WATER SUPPLY & RETURN DRG NO: 0-00-303-31747 SUBMITTED BY BHEL/PC FOR COOLING WATER DETAILS & COOLER CONNECTIONS.
- REFER SCHEME OF AIR & FLUE GAS PATH WITH INSTRUMENTATION DRG NO: 0-97-288-91000 SUBMITTED BY BHEL/C&I TRICHY FOR INSTRUMENTS OTHER THAN FAN LUBE OIL SYSTEM.
- GRADE OF OIL : ISO VG68
- FOR LOCATION OF LUBE OIL SYSTEM PLEASE REFER GA DRAWING FOR PA FAN AND MOTOR WITH FOUNDATION PLAN AND LOADING DETAILS BHEL DRG NO:1-00-100-29190.
- ACTUATOR (ELECTRICAL)(ITEM NO: 318) FOR BLADE PITCH CONTROL SHALL BE SUPPLIED BY BHEL/TRICHY.
- TEMPERATURE SENSING ELEMENT (DUPLEX-RTD) (ITEM NO: 301 TO 312) & TEMPERATURE GAUGE (ITEM NO:313-316) ARE NOT PART OF LUBE OIL SYSTEM AND WILL BE SUPPLIED SEPARATELY BY BHEL/BAP.
- VIBRATION PROBES (ITEM NO: 319, 320) ARE NOT PART OF LUBE OIL SYSTEM AND WILL BE SUPPLIED SEPARATELY BY BHEL/EDN.
- 2 OUT OF 3 LOGIC COMPUTATION FOR FAN BEARING RTD (TAG:10HFE10 CT015 TO 10HFE10 CT026) SHALL BE IMPLEMENTED BY BHEL/PEM IN DCS FOR GENERATING ALARM/TRIP SIGNAL.
- TEMPERATURE SENSING ELEMENT (RTD) IN FAN BEARING AND LUBE OIL SYSTEM SHALL BE 4-WIRE DUPLEX TYPE ONLY.
- PRESSURE GAUGE'S SHALL BE PROVIDED WITH SNUBBER(SS) TO SUPPRESS THE EFFECT OF PRESSURE PULSE.
- 2-WAY VALVE MANIFOLD(SS) IS APPLICABLE FOR PG & PT. 5-WAY VALVE MANIFOLD(SS) IS APPLICABLE FOR DPG, DPT & FT.

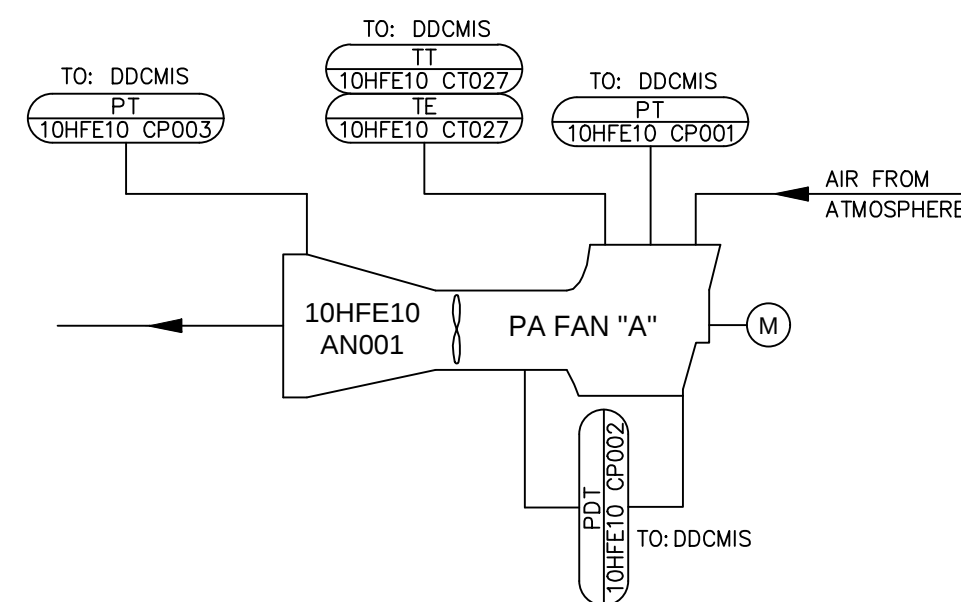
P&I-SYMBOLS (AS PER DIN 10628)

	OIL		COUPLING		ROTOR BLADE ADJUSTMENT
	AIR		HEATER		ELECTRIC MOTOR
	WATER		FLOW SIGHT-GLASS		FAN
	SAFETY VALVE		THERMOMETER		PNEUMATIC ACTUATOR
	PRESSURE RELIEF VALVE		FLOW MEASURING DEVICE		ELECTRIC ACTUATOR
	NON RETURN VALVE		PUMP		ORIFICE
	SHUT-OFF VALVE		FILTER		OIL TOP UP LOCATION
	3-WAY VALVE		HEAT EXCHANGER (OIL COOLER)		NON RETURN FLAP
	SLIDING VALVE				SUCTION STRAINER
	THROTTLE VALVE				

IMPORTANT NOTE:

BHEL/SITE C&I SHALL ENSURE INSTALLATION OF STALL WARNING INSTRUMENTS AS PER ERECTION DRAWING NO. 3-00-000-40682 RELEASED BY BHEL/RANIPET AND IMPLEMENTATION OF STALL WARNING CONTROL LOGIC FOR FAN AS PER SCHEME & WRITE-UP OF AUTO CONTROL RELEASED BY BHEL/TRICHY C&I

STALL WARNING INSTRUMENTS



REFER P & ID FOR COMBUSTION AIR & FLUE GAS SYSTEM DRG NO. : 0-97-288-91000 FOR FURTHER DETAILS.

NOTE: STALL WARNING INSTRUMENTS MENTIONED ABOVE WERE NOT PART OF LUBE OIL SYSTEM. THE SAME WILL BE SUPPLIED SEPARATELY BY BHEL/EDN.

CUSTOMER Nos. : R678 & R679

PROJECT	2X660MW TANGEDCO UDANGUDI STPP STAGE-I EPC			
CUSTOMER:	TAMILNADU GENERATION & DISTRIBUTION CORPORATION LTD. 5th Floor, Western Wing, NPKRR Maaligai 144, Anna salai, Chennai-600002			
CONSULTANT:	TATA CONSULTING ENGINEERS LIMITED BANGALORE, INDIA			
	BHARAT HEAVY ELECTRICALS LTD. BOILER AUXILIARIES PLANT RANIPET - 632 406			
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TITLE				NAME
LUBE OIL SCHEME FOR PA FAN PAF 19/11.8-2 CAPACITY: 40LPM/35BAR				SIGN
DRAWING NO.				DATE
1-00-107-29194				30.06.2018
SHEET				REV.
-				03