

ANNEXURE-1 (TEMPERATURE SENSOR FOR HYDRAULIC OILS)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Thermal sensor for measurement of temperature of synthetic/ mineral oils along with all accessories and in-built electronics for signals as per requirement				
1	Measuring Temperature low limit	0°C or less			
2	Measuring Temperature High limit	200°C or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Temp. measurement Accuracy (of Full scale value)	+/- 2 % or better			
5	Temp. measurement Repeatability (of Full scale value)	+/- 1 % or better			
6	Output measured values (within range)	Linear w.r.t measured values			
7	Mounting	Vertical			
8	Mounting Accessories for mounting on top of tank	To be included			
9	Probe Type	Straight and rigid			
10	Probe Material	Metallic (Stainless steel preferred)			
11	Medium	Mineral or Synthetic Oil			
12	Oil viscosity Low limit	10 centistokes or Less			
13	Oil viscosity High limit	220 centistokes or Higher			
14	Nominal Input Supply	24 VDC			
15	Pre-assembled connectors with 5m cable	To be included			
16	Dust proof safety cover	To be included			

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Saurabh Bora 9/12/98

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ANNEXURE-2 (TEMPERATURE SENSOR FOR RIGID MOUNTING)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Thermal sensor for measurement of temperature of metallic body along with all accessories and in-built electronics for signals as per requirement				
1	Measuring Temperature low limit	0°C or less			
2	Measuring Temperature High limit	200°C or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Temp. measurement Accuracy	+/- 2 % or better			
5	Temp. measurement Repeatability	+/- 1 % or better			
6	Output measured values (within range)	Linear w.r.t measured values			
7	Mounting	Vertical			
8	Mounting Accessories for mounting on top of metallic assembly	To be included			
9	Probe Type	Inbuilt			
10	Medium	Through metal to metal contact			
11	Nominal Input Supply	24 VDC			
12	Pre-assembled connectors with 5m cable	To be included			
13	Dust proof safety cover	To be included			

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ANNEXURE-3 (LEVEL SENSOR FOR HYDRAULIC OILS)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Level sensor for measurement of oil level along with all accessories and in-built electronics for signals as per requirement				
1	Signal Output	As per Clause 1.1 (b)			
2	Level measurement Accuracy	+/- 5 % or better			
3	Level measurement Repeatability	+/- 3 % or better			
4	Output measured values (within range)	Linear w.r.t measured values			
5	Permissible temperature of medium	100 °C or more			
6	Mounting	Vertical			
7	Mounting Accessories for mounting on top of tank	To be included			
8	Probe Type	Straight and rigid			
9	Probe Material	Vendor to specify			
10	Medium	Mineral and Synthetic Oil			
11	Oil viscosity Low limit	10 centistokes or Less			
12	Oil viscosity High limit	220 centistokes or Higher			
13	Nominal Input Supply	24 VDC			
14	Pre-assembled connectors with 5m cable	To be included			
15	Dust proof safety cover	To be included			

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Sanjay Chawla 9/24/2020

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ANNEXURE-5 (PRESSURE SENSOR FOR HYDRAULIC OILS)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Pressure sensor for measurement of pressure of synthetic/ mineral oils along with all accessories and in-built electronics for signals as per requirement				
1	Measuring Pressure low limit	0 bar			
2	Measuring Pressure High limit	200 bar or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Pressure measurement Accuracy	±/- 1 % or better			
5	Pressure measurement Repeatability	+/- 0.5 % or better			
6	Mounting	G 1/4" Male			
7	Mounting Accessories for mounting in pressure line	To be included (Connector & Couplings)			
8	Medium	Mineral or Synthetic Oil			
9	Oil viscosity Low limit	10 centistokes or Less			
10	Oil viscosity High limit	220 centistokes or Higher			
11	Nominal Input Supply	24 VDC			
12	Pre-assembled connectors with 5m cable	To be included			
13	Dust proof safety cover	To be included			

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ANNEXURE-6 (PRESSURE SENSOR FOR COMPRESSED AIR)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Pressure sensor for measurement of air pressure along with all accessories and in-built electronics for signals as per requirement				
1	Measuring Pressure low limit	0 bar			
2	Measuring Pressure High limit	10 bar or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Pressure measurement Accuracy	+/- 1 % or better			
5	Pressure measurement Repeatability	+/- 0.5 % or better			
6	Mounting	G 1/4" Male			
7	Mounting Accessories for mounting in pressure line	To be included (Connector & Couplings)			
8	Medium	Compressed air			
9	Nominal Input Supply	24V DC			
10	Pre-assembled connectors with 5m cable	To be included			
11	Dust proof safety cover	To be included			

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Saurabh Soni 17/01/2019

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ANNEXURE-7 (FLOW SENSOR FOR HYDRAULIC OIL)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Flow sensor for measurement of flow of synthetic/ mineral oils along with all accessories and in-built electronics for signals as per requirement				
1	Measuring flow low limit	5 cm/sec or less			
2	Measuring flow High limit	250 cm/sec or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Flow measurement Accuracy	10 cm/sec or better			
5	Flow measurement Repeatability	5 cm/sec or better			
6	Maximum withstanding pressure	200 Bar or more			
7	Mounting	G 1/4" Male			
8	Mounting Accessories for mounting in flow line	To be included			
9	Medium	Mineral or Synthetic Oil			
10	Oil viscosity Low limit	10 centistokes or Less			
11	Oil viscosity High limit	220 centistokes or Higher			
12	Nominal Input Supply	24V DC			
15	Pre-assembled connectors with 5m cable	To be included			
16	Dust proof safety cover	To be included			

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AMENDMENT TO ANNEXURE-8 (INCLINATION SENSOR)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Inclination sensor for measurement of inclination of cross rail along with all accessories and in-built electronics for signals as per requirement				
1	Measuring inclination low limit	-45 degree or beyond			
2	Measuring inclination High limit	+45 degree or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Inclination measurement Accuracy	+/- 1 % or better			
5	Inclination measurement Repeatability	+/- 0.2 % or better			
6	Mounting	On top of the machine surface			
7	Mounting Accessories for mounting on top of tank	To be included			
8	Probe Type	In-built			
9	Probe Material	Vendor to specify			
10	Medium	Cast iron			
11	Nominal Input Supply	24V DC			
12	Pre-assembled connectors with 5m cable	To be included			
13	Dust proof safety cover	To be included			

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Yash G. Joshi

Santosh E. Joshi

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AMENDMENT TO ANNEXURE-9 (VIBRATION VELOCITY SENSOR FOR RIGID MOUNTING)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Vibration velocity sensor for measurement of vibration velocity on metallic body along with all accessories and in-built electronics for signals as per requirement.				
1	Measuring Vibration velocity low limit	0 mm/sec			
2	Measuring Vibration velocity High limit	-25 mm/sec or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Measurement Accuracy	+/- 3 % or better			
5	Measurement Repeatability	+/- 1 % or better			
6	Output measured values (within range): Up to +/- 1% of the measured span is acceptable	Linear w.r.t measured values			
7	Mounting	Screwed/ Threaded and with magnetic base			
8	Mounting Accessories for mounting on top of metallic assembly	To be included			
9	Probe Type	Inbuilt			
10	Medium	Metallic body			
11	Nominal Input Supply	24V DC			
12	Pre-assembled connectors with 5m cable	To be included			
13	Dust proof safety cover	To be included			

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AMENDMENT TO ANNEXURE-10 (VIBRATION ACCELEROMETER FOR RIGID MOUNTING)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Vibration accelerometer for measurement of Vibration acceleration on metallic body along with all accessories and in-built electronics for signals as per requirement				
1	Measuring Vibration acceleration low limit	0 g			
2	Measuring Vibration acceleration High limit	10 g or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Measurement Accuracy	+/- 3 % or better			
5	Measurement Repeatability	+/- 1 % or better			
6	Output measured values (within range): Up to +/- 1% of the measured span is acceptable	Linear w.r.t measured values			
7	Mounting	Screwed/ Threaded and with magnetic base			
8	Mounting Accessories for mounting on top of metallic assembly	To be included			
9	Probe Type	Inbuilt			
10	Medium	Metallic body			
11	Nominal Input Supply	24V DC			
12	Pre-assembled connectors with 5m cable	To be included			
13	Dust proof safety cover	To be included			

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ANNEXURE-11 (DEW POINT SENSOR FOR COMPRESSED AIR)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Dew point sensor for measurement of dew point of compressed air along with all accessories and in-built electronics for signals as per requirement				
1	Measuring Dew point Temperature low limit	-90 deg C or less			
2	Measuring Dew point Temperature High limit	10 deg C or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Sensor operating temperature high range	50 deg C or more			
5	Sensor operating temperature high range	0 deg C or more			
6	Maximum operating air pressure	10 bar or more			
7	Measurement Accuracy (of Full scale value)	+/- 5 % or better			
8	Output measured values (within range)	Linear w.r.t measured values			
9	Mounting	Vertical			
10	Mounting Accessories for mounting	To be included			
11	Probe Type	Straight and rigid			
12	Probe Material	Vendor to inform			
13	Medium	Compressed air			
14	Nominal Input Supply	24V DC			
15	Pre-assembled connectors with 5m cable	To be included			
16	Dust proof safety cover	To be included			

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ANNEXURE-12 (ANALOG PARTICLE COUNTER/ CONTAMINATION SENSOR FOR HYDRAULIC OILS)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/ No)	Remarks
	Analog particle counter/ contamination sensor for measurement of particle count in synthetic/ mineral oils along with all accessories and in-built electronics for signals as per requirement				
1	Measuring Particle count Low limit	Vendor to specify			
2	Measuring Particle count High limit	Vendor to specify			
3	Signal Output	As per Clause 1.1 (b)			
4	Measurement Accuracy (of Full scale value)	Vendor to specify			
5	Temp. measurement Repeatability (of Full scale value)	Vendor to specify			
6	Output measured values (within range)	Linear w.r.t measured values			
7	Mounting	Vertical			
8	Mounting Accessories for mounting on top of tank	To be included			
9	Probe Type	Straight and rigid			
10	Probe Material	Metallic (Stainless steel preferred)			
11	Medium	Mineral or Synthetic Oil			
12	Hydraulic pressure & flow limits along with nominal values	Vendor to specify			
13	Oil viscosity Low limit	10 centistokes or Less			
14	Oil viscosity High limit	220 centistokes or Higher			
15	Nominal Input Supply	24V DC			
16	Pre-assembled connectors with 5m cable	To be included			
17	Dust proof safety cover	To be included			

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**AMENDMENT TO ANNEXURE-13 (ANALOG PARTICLE COUNTER/ CONTAMINATION
SENSOR FOR WATER BASED EMULSIONS)**

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/ No)	Remarks
	Analog particle counter/ contamination sensor for measurement of particle count in water based emulsion along with all accessories and in-built electronics for signals as per requirement				
1	Measuring Particle count Low limit	Vendor to specify			
2	Measuring Particle count High limit	Vendor to specify			
3	Signal Output	As per Clause 1.1 (b)			
4	Measurement Accuracy (of Full scale value)	Vendor to specify			
5	Temp. measurement Repeatability (of Full scale value)	Vendor to specify			
6	Output measured values (within range)	Linear w.r.t measured values			
7	Mounting	Vertical			
8	Mounting Accessories for mounting on top of tank	To be included			
9	Probe Type	Straight and rigid			
10	Probe Material	Metallic (Stainless steel preferred)			
11	Medium	Water based emulsion			
12	Hydraulic pressure & flow limits along with nominal values	Vendor to specify			
13	Oil viscosity Low limit	10 centistokes or Less			
14	Oil viscosity High limit	220 centistokes or Higher			
15	Nominal Input Supply	24V DC			
16	Pre-assembled connectors with 5m cable	To be included			
17	Dust proof safety cover	To be included			

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ANNEXURE-14 (CURRENT SENSOR FOR INDUCTION MOTORS)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Current sensor for measurement of current of induction motor along with all accessories and in-built electronics for signals as per requirement				
1	Measuring three phase RMS Current low limit	0 Amps AC			
2	Measuring three phase RMS Current High limit	10 Amps AC or more			
3	Signal Output	A5 per Clause 1.1 (b)			
4	Current measurement Accuracy (of Full scale value)	+/- 4 % or better			
5	Current measurement Repeatability (of Full scale value)	+/- 2 % or better			
6	Output measured values (within range)	Linear w.r.t measured values			
7	Mounting	Vertical			
8	Mounting Accessories for mounting on top of tank	To be included			
9	Probe Type	Straight and rigid			
10	Probe Material	Metallic (Stainless steel preferred)			
11	Nominal Input Supply	24V DC			
12	Pre-assembled connectors with 5m cable	To be included			
13	Dust proof safety cover	To be included			

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ANNEXURE-15 (VOLTAGE SENSOR FOR INCOMING POWER SUPPLY)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Voltage sensor for measurement of incoming three phase input supply along with all accessories and in-built electronics for signals as per requirement				
1	Measuring three phase RMS Voltage low limit	0 Volts AC			
2	Measuring three phase RMS Voltage High limit	500 Volts AC or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Voltage measurement Accuracy (of Full scale value)	+/- 4 % or better			
5	Voltage measurement Repeatability (of Full scale value)	+/- 2 % or better			
6	Output measured values (within range)	Linear w.r.t measured values			
7	Mounting	Vertical			
8	Mounting Accessories for mounting on top of tank	To be included			
9	Probe Type	Straight and rigid			
10	Probe Material	Metallic (Stainless steel preferred)			
11	Nominal Input Supply	24V DC			
12	Pre-assembled connectors with 5m cable	To be included			
13	Dust proof safety cover	To be included			

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ANNEXURE-16 (ENERGY METER FOR INCOMING POWER SUPPLY)

	Description of specs	BHEL requirement	Vendor's specifications	Complied (Yes/No)	Remarks
	Energy meter for measurement at incoming three phase input supply along with all accessories and in-built electronics for signals as per requirement				
1	Measuring three phase RMS Energy low limit	0 KWh			
2	Measuring three phase RMS Voltage High limit	500 KWh or more			
3	Signal Output	As per Clause 1.1 (b)			
4	Energy measurement Accuracy (of Full scale value)	+/- 4 % or better			
5	Energy measurement Repeatability (of Full scale value)	+/- 2 % or better			
6	Output measured values (within range)	Linear w.r.t measured values			
7	Mounting	Vertical			
8	Mounting Accessories for mounting on top of tank	To be included			
9	Nominal Input Supply	24V DC			
10	Pre-assembled connectors with 5m cable	To be included			
11	Dust proof safety cover	To be included			

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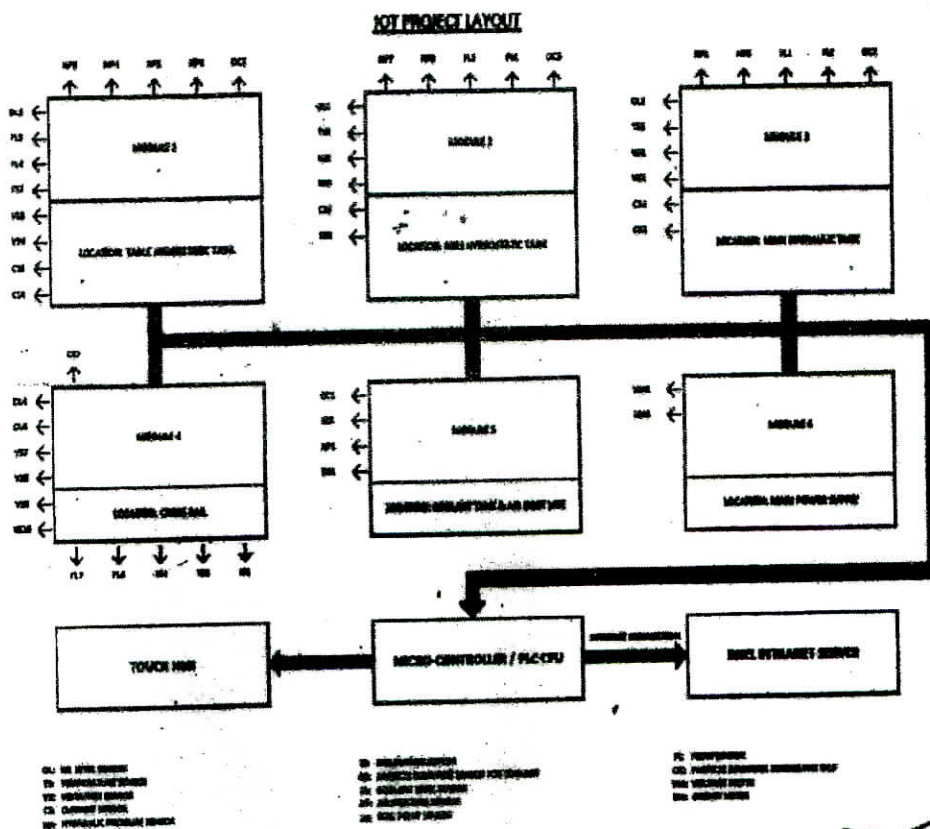
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Annexure -"Location scheme"



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