PQR/EME/TG035/26 **17.01.2023**

Mandatory Pre-Qualification requirements for PRTD as per BHEL specification TG60734 (Material code- W96413508620)

Description:

The four-wire duplex flat platinum resistance temperature detector is used in generators for Measurement of temperature of stator winding bars. The PRTD should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such four-wire duplex flat platinum resistance temperature detector) with minimum following requirements –

Si No.	Parameter	Value
(i)	Suitable Environment	Tropical, humid and dusty atmosphere
(ii)	Minimum dimension	150X10X2 mm
(iii)	Operating Temperature (Range)	0 C to 200 C
(iv)	Leads	The leads shall be of 19/0.16mm stranded copper with poly- tetraflouroethylene Insulation (with min. radial thickness of 0.25mm).
(v)	Resistance element	Resistance value and tolerance class-A as per IS 2848. The wire wound resistance element shall be laid down in glass epoxy sheet in totally strain free manner. Empty space shall be filled with insulated powder.
(vi)	HV Test	2.5 kV AC for 3 Min
(vii)	IR Test	Should not be less than 100M ohms when measured with 100VDC meggar at 20C
(viii)	Routine Test	Resistance Accuracy and IR test
(ix)	Type Test	As per IS:2848
(x)	Pull Test	The leads shall be suitably brazed to the resistance element. Each lead shall withstand Pulling force of 5 kg when applied to each of the leads.
(xi)	Compression load	Construction shall be such that it can bear compression load greater than 1 metric ton without any damage.

PQR/EME/TG035/26 **17.01.2023**

Mandatory Pre-Qualification requirements for PRTD as per BHEL specification TG60734 (Material code- W96413508620)

2.0 In support of above serial number-1, vendor shall furnish technical details of four-wire duplex flat platinum resistance temperature detector in below mentioned format for at least one no. (1) of the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	Flat PRTD Size- 150X10X2 Min			

3.0 Vendor to furnish correlated test certificates against any one of the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from one of the end users of four-wire duplex flat platinum resistance temperature detector against any one of the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of four-wire duplex flat platinum resistance temperature detector Vendor to furnish details of the manufacturing facilities available at their works.

6.0 The vendor should have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) High Voltage Test
3) Resistance Accuracy Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/international measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Routine/Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

8.0 Vendor shall confirm to meet all the technical requirements of Specification TG60734.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

PQR/EME/TG035/27

17.01.2023

Mandatory Pre-Qualification requirements for RTD for PW Header as per BHEL specification TG60732 (Material code-W96413508604)

Description:

The Duplex platinum resistance temperature detector for primary water header is used in generators for Measurement of temperature of water in water header. The RTD for PW Header should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such RTD for PW Header with minimum following requirements –

Sl No.	Parameter	Value
(i)	Suitable Environment	Tropical and humid atmosphere
(ii)	Terminal Block	Ceramic terminal block fixed with the help of spring loaded screw
(iii)	Operating Temperature (Range)	0 C to 200 C
(iv)	Extension Pipe	X10CrNiTi189 or equivalent
(v)	Resistance element	Resistance value and tolerance class-A as per IS 2848. Duplex non- inductive wire wound platinum resistance element.
(vi)	IR Test	Should not be less than 100M ohms at room temperature
(vii)	Routine Test	As per IS:2848
(viii)	Type Test	As per IS:2848
(ix)	Terminal head	Plastic Form-B as per DIN 43729
(x)	Wires	Each of the two RTD elements shall consist of 2 PTFE insulated wires which shall terminate on the terminal block.
(xi)	Connection	Threaded connection for fitting into thermowell.

PQR/EME/TG035/27 **17.01.2023**

Mandatory Pre-Qualification requirements for RTD for PW Header as per BHEL specification TG60732 (Material code-W96413508604)

2.0 In support of above serial number-1, vendor shall furnish technical details RTD for PW Header in below mentioned format for at least one nos. (1) of the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	Type of RTD			

3.0 Vendor to furnish correlated test certificates against any one of the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from one of the end users of RTD for PW Header against any one of the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of RTD for PW Header. Vendor to furnish details of the manufacturing facilities available at their works.

6.0 The vendor should have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) High Voltage Test
3) Resistance Accuracy Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/international measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Routine/Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

8.0 Vendor shall confirm to meet all the technical requirements of Specification TG60732.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

PQR/EME/TG035/25 **17.01.2023**

Mandatory Pre-Qualification requirements for P.T.Sensor for Header Nipple(RTD) as per BHEL specification TG60731 (Material code-W96413508612)

Description:

The P.T.Sensor for Header Nipple(RTD) is used in generators for Measurement of temperature of water which is flowing in the stator winding bars. The P.T.Sensor for Header Nipple(RTD) should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such P.T.Sensor for Header Nipple(RTD) with minimum following requirements –

Si No.	Parameter	Value
(i)	Suitable Environment	Tropical, humid and dusty atmosphere
(ii)	Material of Square plate and enclosure for RTD Element	X6CrNiMoTi17122(1.4571)/SS321
(iii)	Operating Temperature (Range)	0 C to 150 C
(iv)	Leads	The leads shall be of 19/0.16mm stranded copper with poly- tetraflouroethylene Insulation (with min. radial thickness of 0.25mm).
(v)	Resistance element	Resistance value and tolerance as per IS 2848. The elements shall be wire wound type using insulated wire and suitably encapsulated in silicon alumina paste and epoxy resin
(vi)	HV Test	1.5 kV AC for 1 Min
(vii)	IR Test	Should not be less than 100M ohms when measured with 500VDC meggar at 20C
(viii)	Routine Test	Resistance Accuracy and IR test
(ix)	Type Test	As per IS:2848
(x)	Pull Test	The leads shall be suitably brazed to the resistance element. Each lead shall withstand Pulling force of 4 kg when applied to each of the leads.

PQR/EME/TG035/25 17.01.2023

Mandatory Pre-Qualification requirements for P.T.Sensor for Header Nipple(RTD) as per BHEL specification TG60731 (Material code-W96413508612)

2.0 In support of above serial number-1, vendor shall furnish technical details of P.T.Sensor for Header Nipple(RTD) in below mentioned format for at least one nos. (1) of the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	Type of RTD Size of RTD-4X4X30 mm Max.			

3.0 Vendor to furnish correlated test certificates against the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from the end users of P.T.Sensor for Header Nipple(RTD) against the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of P.T.Sensor for Header Nipple(RTD). Vendor to furnish details of the manufacturing facilities available at their works.

6.0 The vendor shculd have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) High Voltage Test
3) Resistance Accuracy Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/international measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Routine/Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

8.0 Vendor shall ccnfirm to meet all the technical requirements of Specification TG60731.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

PQR/EME/TG035/24 **17.01.2023**

Mandatory Pre-Qualification requirements for RTD as per BHEL specification TG60053 (Material code-W96413500778)

Description:

The Duplex platinum resistance temperature detector is used in generators for Measurement of temperature of air, gas and oil. The RTD should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such RTD with minimum following requirements –

Si No.	Parameter	Value
(i)	Suitable Environment	Tropical ,dusty and humid atmosphere
(ii)	Terminal Block	Ceramic terminal block fixed with the help of spring loaded screw
(iii)	Operating Temperature (Range)	0 C to 200 C
(iv)	Protective Sheath and Extension pipe	SS316 or equivalent
(v)	Resistance element	Resistance value and tolerance class-A as per IS 2848. Duplex non- inductive wire wound platinum resistance element.
(vi)	IR Test	Should not be less than 100M ohms at room temperature
(vii)	Routine Test	As per IS:2848
(viii)	Type Test	As per IS:2848
(ix)	Terminal head	Die cast aluminum/light metal alloy with protection class-IP65
(x)	Wires	Each of the two RTD elements shall consist of 2 PTFE insulated wires which shall terminate on the terminal block.
(xi)	Connection	Threaded connection for fitting into thermowell.

PQR/EME/TG035/24 **17.01.2023**

Mandatory Pre-Qualification requirements for RTD as per BHEL specification TG60053 (Material code-W96413500778)

2.0 In support of above serial number-1, vendor shall furnish technical details RTD in below mentioned format for at least one nos. (1) of the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	Type of RTD			

3.0 Vendor to furnish correlated test certificates against the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from the end users of RTD against the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of RTD. Vendor to furnish details of the manufacturing facilities available at their works.

6.0 The vendor should have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) High Voltage Test
3) Resistance Accuracy Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/internationa measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Routine/Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

8.0 Vendor shall confirm to meet all the technical requirements of Specification TG60053.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

PQR/EME/TG035/27

17.01.2023

Mandatory Pre-Qualification requirements for RTD for PW Header as per BHEL specification TG60732 (Material code-W96413508604)

Description:

The Duplex platinum resistance temperature detector for primary water header is used in generators for Measurement of temperature of water in water header. The RTD for PW Header should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such RTD for PW Header with minimum following requirements –

Si No.	Parameter	Value
(i)	Suitable Environment	Tropical and humid atmosphere
(ii)	Terminal Block	Ceramic terminal block fixed with the help of spring loaded screw
(iii)	Operating Temperature (Range)	0 C to 200 C
(iv)	Extension Pipe	X10CrNiTi189 or equivalent
(v)	Resistance element	Resistance value and tolerance class-A as per IS 2848. Duplex non- inductive wire wound platinum resistance element.
(vi)	IR Test	Should not be less than 100M ohms at room temperature
(vii)	Routine Test	As per IS:2848
(viii)	Type Test	As per IS:2848
(ix)	Terminal head	Plastic Form-B as per DIN 43729
(x)	Wires	Each of the two RTD elements shall consist of 2 PTFE insulated wires which shall terminate on the terminal block.
(xi)	Connection	Threaded connection for fitting into thermowell.

PQR/EME/TG035/27 17.01.2023

Mandatory Pre-Qualification requirements for RTD for PW Header as per BHEL specification TG60732 (Material code-W96413508604)

2.0 In support of above serial number-1, vendor shall furnish technical details RTD for PW Header in below mentioned format for at least one nos. (1) of the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	Type of RTD			

3.0 Vendor to furnish correlated test certificates against any one of the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from one of the end users of RTD for PW Header against any one of the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of RTD for PW Header. Vendor to furnish details of the manufacturing facilities available at their works.

6.0 The vendor should have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) High Voltage Test
3) Resistance Accuracy Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/international measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Routine/Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

8.0 Vendor shall confirm to meet all the technical requirements of Specification TG60732.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

PQR/EME/TG035/23 23.08.2022

Mandatory Pre-Qualification requirements for Three wire simplex-PRTD as per BHEL specification TG60468 (Material code- W96413508566)

Description:

The three-wire simplex flat platinum resistance temperature detector is used in generators for Measurement of temperature of stator winding bars. The PRTD should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such three-wire simplex flat platinum resistance temperature detector) with minimum following requirements –

Si No.	Parameter	Value
(i)	Suitable Environment	Tropical, humid and dusty atmosphere
(ii)	Minimum dimension	150X10X2 mm
(iii)	Operating Temperature (Range)	0 C to 150 C
(iv)	Leads	Each conductor shall be twisted from 19 nos strands of bright annealed electrolytic silver plated copper wires of 0.15mm each. Silver plating thickness shall not be less than 1 micron.
(v)	Resistance element	Resistance value and tolerance class-A as per IS 2848. The non-inductive bifilar element shall be wound on thick epoxy former and laid down in glass epoxy sheet in total strain free manner. Empty space shall be filled with alumina paste.
(vi)	HV Test	2.5 kV AC for 1 Min
(vii)	IR Test	Should not be less than 200M ohms when measured with 500VDC meggar at 20C
(viii)	Routine Test	Resistance Accuracy and IR test
(ix)	Type Test	As per IS:2848
(x)	Pull Test	The leads shall be suitably brazed to the resistance element. Each lead shall withstand Pulling force of 2 kg when applied to each of the leads.
(xi)	Compression load	Construction shall be such that it can bear compression load greater than 1 metric ton without any damage.

PQR/EME/TG035/23 23.08.2022

Mandatory Pre-Qualification requirements for Three wire simplex-PRTD as per BHEL specification TG60468 (Material code- W96413508566)

2.0 In support of above serial number-1, vendor shall furnish technical details of three-wire simplex flat platinum resistance temperature detector in below mentioned format for at least one nos. (1) of the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	-Resistance Element -Leads -Routine Test -Type Test			

3.0 Vendor to furnish correlated test certificates against the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from the end users of three-wire simplex flat platinum resistance temperature detector against the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of three-wire simplex flat platinum resistance temperature detector Vendor to furnish details of the manufacturing facilities available at their works along with photographs

6.0 The vendor should have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) High Voltage Test
3) Resistance Accuracy Test
4) Type Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/international measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

PQR/EME/TG035/06 28-05-2021

Mandatory Pre-Qualification requirements for RTD as per BHEL specification TG60753 (Material code-W90415302781)

Description:

The four wire duplex platinum RTD is used in generators auxiliary systems for measurement of temperature of oil and water. PRTD should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such four wire duplex PRTD with minimum following requirements –

Sl No.	Parameter	Value
(i)	Suitable Environment	Tropical, humid and dusty atmosphere
(ii)	Terminal block	Shall be of Ceramic material and fixed inside the connection head with the help of spring loaded fixing screws M4 (SS-304 or Zinc/Nickel plated mild steel).
(iii)	Operating Range, accuracy	0 to 200 °C, accuracy class-A
(iv)	Measuring insert	Shall consist of duplex non- inductive wire wound platinum resistance element
(v)	Wires	Each of the two RTD elements shall consist of 4 PTFE insulated wires which shall terminate on the terminal block.
(vi)	Connection	Threaded connection for fitting into thermowell
(vii)	Terminal head	Shall be of die cast aluminum or light metal alloy with protection class IP65.
(viii)	IR Test	IR shall be not less than 100M ohms at 25±10 °C when measured with 100VDC and 10M ohms at 16±10 °C when measured with 10VDC.
(ix)	Routine Test	Resistance Accuracy test
(x)	Type Test	As per IS:2848/ IEC 60751

2.0 In support of above serial number-1, vendor shall furnish technical details of PRTD in below mentioned format for at least three nos. (3) of the P.O. executed in past 5 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	-Measuring insert -Terminal block			
2	-Connection thread size Routine Test			
3	-Type Test			

PQR/EME/TG035/06 28-05-2021

Mandatory Pre-Qualification requirements for RTD as per BHEL specification TG60753 (Material code-W90415302781)

3.0 Vendor to furnish correlated test certificates (routine & type) against any one of the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from one of the end users of four wire duplex platinum RTD against any one of the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of four wire duplex platinum RTD. Vendor to furnish details of the manufacturing facilities available at their works along with photographs.

6.0 The vendor should have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) Resistance Accuracy Test
3) Type Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/international measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

PQR/EME/TG035/23 23.08.2022

Mandatory Pre-Qualification requirements for Three wire simplex-PRTD as per BHEL specification TG60468 (Material code- W96413508566)

Description:

The three-wire simplex flat platinum resistance temperature detector is used in generators for Measurement of temperature of stator winding bars. The PRTD should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such three-wire simplex flat platinum resistance temperature detector) with minimum following requirements –

Si No.	Parameter	Value
(i)	Suitable Environment	Tropical, humid and dusty atmosphere
(ii)	Minimum dimension	150X10X2 mm
(iii)	Operating Temperature (Range)	0 C to 150 C
(iv)	Leads	Each conductor shall be twisted from 19 nos strands of bright annealed electrolytic silver plated copper wires of 0.15mm each. Silver plating thickness shall not be less than 1 micron.
(v)	Resistance element	Resistance value and tolerance class-A as per IS 2848. The non-inductive bifilar element shall be wound on thick epoxy former and laid down in glass epoxy sheet in total strain free manner. Empty space shall be filled with alumina paste.
(vi)	HV Test	2.5 kV AC for 1 Min
(vii)	IR Test	Should not be less than 200M ohms when measured with 500VDC meggar at 20C
(viii)	Routine Test	Resistance Accuracy and IR test
(ix)	Type Test	As per IS:2848
(x)	Pull Test	The leads shall be suitably brazed to the resistance element. Each lead shall withstand Pulling force of 2 kg when applied to each of the leads.
(xi)	Compression load	Construction shall be such that it can bear compression load greater than 1 metric ton without any damage.

PQR/EME/TG035/23 23.08.2022

Mandatory Pre-Qualification requirements for Three wire simplex-PRTD as per BHEL specification TG60468 (Material code- W96413508566)

2.0 In support of above serial number-1, vendor shall furnish technical details of three-wire simplex flat platinum resistance temperature detector in below mentioned format for at least one nos. (1) of the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	-Resistance Element -Leads -Routine Test -Type Test			

3.0 Vendor to furnish correlated test certificates against the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from the end users of three-wire simplex flat platinum resistance temperature detector against the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of three-wire simplex flat platinum resistance temperature detector Vendor to furnish details of the manufacturing facilities available at their works along with photographs

6.0 The vendor should have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) High Voltage Test
3) Resistance Accuracy Test
4) Type Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/international measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

PQR No.: EME/21-22/ 20212963

Mandatory Pre-Qualification requirements for Thermocouple (W96414200115) as per BHEL specification TG60399

1.0 Experience:

Vendor should confirm that they are Manufacturer of insulated type Triplex NiCr-Ni Thermocouple (K type thermocouple) for bearing temperature monitoring suitable for temperature range of 0-150 °C as per IS:7358, Vendor to furnish supporting documents like Catalogue/ Datasheet etc.

2.0 In support of above, vendor shall furnish technical details of thermocouples in below mentioned format for P.O. executed in last 7 years (from date of enquiry). Vendor shall also furnish at least one PO copy from the list.

Sl. No	PO No.	Quantity Nos.	Name & address of customer	PO. Date

3.0 Vendor to furnish test certificates against P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate or material receipt of Thermocouples against the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 Manufacturing Facilities: Vendor shall confirm that they have manufacturing facilities suitable to manufacture the thermocouples as per enquiry and furnish details of the manufacturing facilities available at their works. If the vendor plans to outsource any activity particulars of the same along with details of the sub-vendor/laboratory are to be furnished to BHEL.

6.0 Testing Facilities: Details of in-house testing facilities (like dimensional measurement, Type tests and Routine tests) as per the requirement of enquiry specification to be submitted with offer. In case of outsourcing of tests, vendor to agree for testing at Government/International agency's accredited labs only.

7.0 Vendor shall confirm to meet all the technical requirements of Spec. TG60399.

Note:

1) All correspondence shall be in English Language. If any document provided by vendor is in any language other than English, it must be supported with its English translation.

PQR/EME/TG035/23 23.08.2022

Mandatory Pre-Qualification requirements for Three wire simplex-PRTD as per BHEL specification TG60468 (Material code- W96413508566)

Description:

The three-wire simplex flat platinum resistance temperature detector is used in generators for Measurement of temperature of stator winding bars. The PRTD should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such three-wire simplex flat platinum resistance temperature detector) with minimum following requirements –

Si No.	Parameter	Value
(i)	Suitable Environment	Tropical, humid and dusty atmosphere
(ii)	Minimum dimension	150X10X2 mm
(iii)	Operating Temperature (Range)	0 C to 150 C
(iv)	Leads	Each conductor shall be twisted from 19 nos strands of bright annealed electrolytic silver plated copper wires of 0.15mm each. Silver plating thickness shall not be less than 1 micron.
(v)	Resistance element	Resistance value and tolerance class-A as per IS 2848. The non-inductive bifilar element shall be wound on thick epoxy former and laid down in glass epoxy sheet in total strain free manner. Empty space shall be filled with alumina paste.
(vi)	HV Test	2.5 kV AC for 1 Min
(vii)	IR Test	Should not be less than 200M ohms when measured with 500VDC meggar at 20C
(viii)	Routine Test	Resistance Accuracy and IR test
(ix)	Type Test	As per IS:2848
(x)	Pull Test	The leads shall be suitably brazed to the resistance element. Each lead shall withstand Pulling force of 2 kg when applied to each of the leads.
(xi)	Compression load	Construction shall be such that it can bear compression load greater than 1 metric ton without any damage.

PQR/EME/TG035/23 23.08.2022

Mandatory Pre-Qualification requirements for Three wire simplex-PRTD as per BHEL specification TG60468 (Material code- W96413508566)

2.0 In support of above serial number-1, vendor shall furnish technical details of three-wire simplex flat platinum resistance temperature detector in below mentioned format for at least one nos. (1) of the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	-Resistance Element -Leads -Routine Test -Type Test			

3.0 Vendor to furnish correlated test certificates against the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from the end users of three-wire simplex flat platinum resistance temperature detector against the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of three-wire simplex flat platinum resistance temperature detector Vendor to furnish details of the manufacturing facilities available at their works along with photographs

6.0 The vendor should have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) High Voltage Test
3) Resistance Accuracy Test
4) Type Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/international measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

PQR/EME/TG035/27

17.01.2023

Mandatory Pre-Qualification requirements for RTD for PW Header as per BHEL specification TG60732 (Material code-W96413508604)

Description:

The Duplex platinum resistance temperature detector for primary water header is used in generators for Measurement of temperature of water in water header. The RTD for PW Header should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such RTD for PW Header with minimum following requirements –

Si No.	Parameter	Value
(i)	Suitable Environment	Tropical and humid atmosphere
(ii)	Terminal Block	Ceramic terminal block fixed with the help of spring loaded screw
(iii)	Operating Temperature (Range)	0 C to 200 C
(iv)	Extension Pipe	X10CrNiTi189 or equivalent
(v)	Resistance element	Resistance value and tolerance class-A as per IS 2848. Duplex non- inductive wire wound platinum resistance element.
(vi)	IR Test	Should not be less than 100M ohms at room temperature
(vii)	Routine Test	As per IS:2848
(viii)	Type Test	As per IS:2848
(ix)	Terminal head	Plastic Form-B as per DIN 43729
(x)	Wires	Each of the two RTD elements shall consist of 2 PTFE insulated wires which shall terminate on the terminal block.
(xi)	Connection	Threaded connection for fitting into thermowell.

PQR/EME/TG035/27 **17.01.2023**

Mandatory Pre-Qualification requirements for RTD for PW Header as per BHEL specification TG60732 (Material code-W96413508604)

2.0 In support of above serial number-1, vendor shall furnish technical details RTD for PW Header in below mentioned format for at least one nos. (1) of the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	Type of RTD			

3.0 Vendor to furnish correlated test certificates against any one of the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from one of the end users of RTD for PW Header against any one of the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of RTD for PW Header. Vendor to furnish details of the manufacturing facilities available at their works.

6.0 The vendor should have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) High Voltage Test
3) Resistance Accuracy Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/international measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Routine/Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

8.0 Vendor shall confirm to meet all the technical requirements of Specification TG60732.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

PQR/EME/TG035/29 **17.01.2023**

Mandatory Pre-Qualification requirements for TRIPLEX NICKEL CHROME NICKEL DETECTOR as per BHEL specification TG60399 (Material code-W96413503211)

Description:

Triplex Ni/Cr-Ni Thermocouple (K type thermocouple), as per IS:7358, is used for bearing temperature monitoring. The Thermocouple should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such Triplex Ni/Cr-Ni Thermocouple with minimum following requirements –

Si No.	Parameter	Value
(i)	Suitable Environment	Tropical atmosphere
(ii)	Range and RH	0 to 150C and 95% maximum
(iii)	Thermo element	Nickel/ Chrome-Nickel, characteristics shall confirm to DIN IEC-584
(iv)	Accuracy	Class-a Type-K as per DIN IEC-584
(v)	Type Test	As per IS:7358

2.0 In support of above serial number-1, vendor shall furnish technical details of Triplex Ni/Cr-Ni Thermocouple in below mentioned format for at least one nos. (1) of the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies.

S. No.	Brief technical details	Application	Name & address of customer	Date of supply
1	-Type of thermocouple -Lead size			

3.0 Vendor to furnish correlated test certificates against the P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate from the end users of Triplex Ni/Cr-Ni Thermocouple against the P.O. submitted as per clause 2. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 The vendor should have in-house manufacturing facilities for manufacturing of Triplex Ni/Cr-Ni Thermocouple. Vendor to furnish details of the manufacturing facilities available at their works.

PQR/EME/TG035/29 **17.01.2023**

Mandatory Pre-Qualification requirements for TRIPLEX NICKEL CHROME NICKEL DETECTOR as per BHEL specification TG60399 (Material code-W96413503211)

6.0 The vendor should have facilities for carrying out the following tests and provide details of test equipment available at their works.

1) Insulation Resistance Test
2) Accuracy Test

7.0 The testing facilities available at vendor's works should be duly calibrated against measurement standards traceable to national/international measurement standards. Vendor to confirm the same. Alternatively, vendor to indicate their tie-up with accredited laboratory for performing Routine/Type tests or agree to carry out at NABL/ILAC/APLAC approved lab and provide the details for the same.

8.0 Vendor shall confirm to meet all the technical requirements of Specification TG60399.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

Indent no. 20222556

Mandatory Pre-Qualification requirements for Duplex Platinum RTD (W96414500224,W96414501557)

Description:

The Duplex platinum RTD with PT100 Sensor is used in generators/exciter for Measurement of temperature of ventilation air/gas/water. The PT 100 Sensor should be of very reliable and proven design for temperature measurement.

1.0 The vendor should be a regular manufacturer of such RTD with Non inductively wound platinum wire-PT100 with following requirements –

S. No.	Parameter	Value
(i)	Suitable Atmosphere	Tropical, humid and dusty atmosphere
(ii)	Material of Protective sheath for RTD Element	Special Brass(SoMs58A12)/SS316/SS321 or equivalent.
(iii)	Operating Temperature	0 °C to 150 °C (minimum)
(iv)	Terminal head	The terminal/connection head should be die cast Aluminum or light metal alloy with protection class IP65 or better.
(v)	Terminal block	Terminal block should be of ceramic material and fixed inside the terminal head with the help of spring loaded fixing screws. The measuring tip of RTD should be pressed inside thermowell in assembled condition with the help of spring loaded fixing screw.
(vi)	Resistance element	Resistance value and tolerance as per IS 2848. Or IEC:60751, Tolerance class A.The Measuring insert should be consist of two resistance elements of non inductively wound platinum wire(PT100). Each resistance element should have nominal resistance of 100 ohms at 0° C. The resistance elements should be embedded with suitable insulating powder/paste in a protective sheath; and connected to PTFE insulated wire by brazing.
(vii)	Routine Test	Resistance Accuracy and IR test
(viii)	Type Test	Thermal response test, Self heating test, Thermo-electric effect test, Drop test, Vibration test, etc.

2.0 In support of above, vendor shall furnish technical details of RTD with PT100 Sensor in below mentioned format for P.O. executed in last 7 years (from date of enquiry). Vendor shall also furnish at least one PO copy from the list.

Sl No	PO No.	Quantity Nos.	Size/Dimension of Sensor Element	Material of Sensor Element	Name & address of customer	Date of supply

3.0 Vendor to furnish test certificates against P.O. submitted as per clause 2.

4.0 Vendor to furnish acceptance certificate or material receipt from one of the customer of RTD with PT100 Sensor against the P.O. submitted as per clause 3. (Original Certificate or through e-mail directly from the customer). Acceptance certificate should contain information like item details and its application or correlation with P.O.

5.0 **Manufacturing Facilities:** Vendor shall confirm that they have manufacturing facilities suitable to manufacture the RTD as per enquiry and furnish details of the manufacturing facilities available at their works. If the vendor plans to outsource any activity particulars of the same along with details of the sub-vendor/laboratory are to be furnished to BHEL.

6.0 **Testing Facilities:** Details of in-house testing facilities (like dimensional measurement, Type tests and Routine tests) as per the requirement of enquiry specification to be submitted with offer. In case of outsourcing of tests, vendor to agree for testing at Government/International agency's accredited labs only.

7.0 Vendor shall confirm to meet all the technical requirements of Mat. codes W96414500224 & W96414501557 per BHEL specification and drawing given in enquiry.

Note:

1) All correspondence shall be in English/Hindi Language.
2) If any document provided by vendor is in any language other than English/Hindi, it must be supported with its English translation.

Annexure- B

Framework Confidentiality Agreement (FCA)

Framework Confidentiality Agreement cum Undertaking

This Agreement made on this the _____ day of (month) _____ 20___ ("Effective Date") by and between
M/s BHARAT HEAVY ELECTRICALS LIMITED, having registered office at "BHEL House", Siri Fort, New Delhi – 110049 (India), acting through its _____ Unit (hereinafter may be referred to as "BHEL" or "the Company").

And

M/s _____ (address) _____ represented by authorized representative Sri _____ (herein after referred to as the "Supplier").

The Supplier and the Company may, unless the context otherwise requires, hereinafter be collectively referred to as "Parties" or singly as the "Party".

RECITALS

Whereas, BHEL is engaged in the design, engineering, manufacturing, construction, testing, commissioning and servicing of a wide range of products, systems and services for the core sectors of the economy, viz. Power, Transmission, Industry, Transportation, Renewable energy, Oil & Gas and Defence and providing associated services to varied customers in relation to which BHEL/its affiliates own valuable information of a secret and confidential nature.

Whereas the Company may, in connection with Contract(s) (as defined hereunder) placed or to be placed upon the Supplier, or otherwise, from time to time, make available, Technical Information as is defined hereunder.

And Whereas BHEL is willing to provide such Technical Information to the Supplier from time to time and the Supplier understands and acknowledges that such Technical Information is valuable for the Company and as such is willing to protect confidentiality of such information, subject to the terms and conditions set out hereunder.

Now therefore, in view of the foregoing premises and in consideration of the mutual covenants and agreements hereinafter set forth, the Parties agree as under:

1. Definitions:

Unless the context so requires, in this Agreement, the following terms will bear the meaning ascribed to the said term in this clause.

A. **"Contract"** means the Contract entered into with a Supplier and includes a Purchase Order, or a Work Order for procurement of any goods or for provision of any services.
B. **"Effective Date"** means the date of this Agreement as mentioned in the preamble of this Agreement.

C. **"Supplier"** includes a Contractor or a Vendor of the Company whether for supplying of goods or for providing any services under a Contract or both.

D. **"Technical Information"** includes Drawings, and/or Product Standards and/or Specifications and/or Corporate / Plant Specifications and/or Technological Process Sheets and/or Technical Data Sheets and/or Jigs & Fixtures and/or Pattern & Dies and/or Special Gauges and/or Tools etc. belonging to or wherein the Company has acquired from a third party a right of user and includes any improvement thereto from time to time whether carried out by the Company or by the Supplier.

E. **"Intended Purpose"** means the purpose for which the Technical Information is provided to the Supplier under or in connection with a Contract.

F. **"Improvement"** includes any modification made to, or adaptation of, the Technical Information which enhances or is calculated to enhance the performance (whether in terms of effectiveness or in terms of efficiency or both) of the product and/or the service to be provided by the Supplier under a Contract.

2. This Agreement shall come into force/deemed to have come into force, as the case may be, on the Effective Date; or, on the first date when the Technical Information or any part thereof is provided by BHEL to the Supplier; whichever is earlier.

3. **Agreement deemed to be incorporated in each Contract:** Unless and to the extent otherwise stipulated in the Contract, the conditions of this Agreement are deemed to be incorporated in all Contracts which may be entered into between the Company and the Supplier. Further, unless otherwise stipulated, the obligations under this Agreement are and will be independent of the obligations under the Contracts and such obligations of the Supplier hereunder will remain of full effect and validity notwithstanding that the period of validity of the Contracts has expired by efflux of time stipulated therein; or, the contract has been discharged by performance or breach; or, the termination of the Contracts for any reason whatsoever.

4. **Ownership:**

4.1 The Company may, from time to time, make available to the Supplier, Technical Information on a non-exclusive basis by way of loan.

4.2 The Supplier acknowledges and agrees that all Technical Information and copies thereof that are or may be provided by the Company to the Supplier, are and shall remain the property of BHEL or that of the concerned entity from whom BHEL has obtained the Technical Information and such Technical Information are and shall constitute trade secrets of the BHEL. Nothing in this Agreement or in any disclosures made hereunder by or on behalf of the Company shall be construed as granting upon the Supplier any patent, copyright or design or any other intellectual property rights of whatsoever description that subsists or may hereinafter exist in the Technical Information. Furthermore, nothing in this Agreement or in any disclosures made hereunder by or on behalf of the Company shall be construed as granting upon the Supplier any license or rights of use of such patent, copyright or design or any other

intellectual property rights of whatsoever description which may now or hereafter exist in the Technical Information except for use of the Technical Information strictly in accordance with this Agreement and the Contract and/or as directed in writing by the Company, solely for the Intended Purpose under the Contract.

4.3 Neither Party is obligated by or under this Agreement to purchase from or provide to the other Party any service or product and that any such purchase/sale of any product and/or service by one Party to the other Party will be governed by the Contract if any, that may be entered into by and between the Company and the Supplier.

4.4 The Supplier is/has been made well aware and acknowledges that the Technical Information being/which may be shared with it by the Company has been either generated by the Company by incurring huge investment and cost or obtained from foreign collaborators under Technical Collaboration Agreement (TCA) with stringent confidentiality conditions.

4.5 The Supplier agrees and undertakes to adhere to confidentiality requirements as applicable to BHEL under a TCA and also ensure that the confidentiality requirements are adhered to by all its concerned employees or sub-contractors/suppliers (where permitted to be engaged by BHEL). Any damages, losses, expenses of any description whatsoever, arising out of or in connection with a breach of the confidentiality requirements under a TCA owing to any act or omission on the part of the Supplier or its employees or sub-contractors/suppliers that is claimed by a foreign collaborator from the Company shall be wholly borne by the Supplier and it shall keep BHEL fully indemnified in this behalf. The demand by the Company shall be conclusive upon the Supplier who shall thereupon forthwith pay to the Company without demur, dispute or delay the amount as demanded without demanding any further proof thereof.

4.6 The Supplier agrees and undertakes that unless so decided and advised by the Company in writing all rights/title to any Improvement to the Technical Information shall vest in the Company. The Supplier undertakes and agrees to inform forthwith to the Company of any such Improvement made to the Technical Information and transfer all drawings/documents or other materials connected with such Improvement to the Company and also agrees to fully cooperate with the Company for protecting the Company's interests in such Improvement in the Technical Information including but not limited to obtaining necessary protection for the intellectual property rights in such improvement, if so desired by the Company. If a question arises whether a modification amounts to Improvement to the Technical Information, the same shall be decided by the Company and such decision shall be final and binding upon the Supplier.

5. <u>Use and Non-Disclosure</u>:

5.1 Unless otherwise stipulated by the Company, all Technical Information made available to the Supplier, by the Company shall be treated as Confidential irrespective of whether the same is marked or otherwise denoted to be Confidential or not.

5.2 The Supplier undertakes and agrees that the Technical Information in its possession shall be held in strict confidence and will be used strictly in accordance with this Agreement and solely for the Intended Purpose under the Contract. Use of the Technical Information for any other purpose other than Intended Purpose is prohibited.

5.3 In particular, the Supplier shall not use Technical Information or any Improvement in its possession for the manufacture or procurement of the Product(s) or components or parts thereof or use the Technical Information or any portion thereof or any modification or adaptation thereof in any form to provide any product and/or service to any third party, without the prior written consent of the Company.

5.4 The Supplier shall not disclose any of such Technical Information to any third party without the prior written consent of the Company. The Supplier agrees that without prior written consent of the Company, the Supplier shall not disclose to a third party about the existence of this Agreement, or of the fact that it is/was in possession of or has experience in the use of any Technical Information nor shall the Supplier share in any manner whatsoever, with a third party, the name or details of any Contract(s) awarded by the Company to it or performed by the Supplier or the scope of work thereof or share any document or correspondence by and between the Company and the Supplier in or in connection with this Agreement or such Contract(s). Notwithstanding what is stated elsewhere, the overall responsibility of any breach of the confidentiality provisions under this Agreement shall rest with the Supplier.

5.5 The Supplier undertakes and agrees not to make copies or extracts of and not to disclose to others any or all of the Technical Information in its possession, except as follows:

(a) The Supplier may disclose the Technical Information to such of its officers and employees strictly to the extent as is necessary for such officer or employee for the Intended Purpose, provided that the Confidential Information (or copies thereof) disclosed shall be marked clearly as the confidential and proprietary information of Company and that such officers and employees shall similarly be bound by undertakings of confidence, restricted use and non-disclosure in respect of the Technical Information. The Supplier shall be responsible for any breach of such confidentiality provisions by such officers and employees.

(b) With the prior written consent of Company, the Supplier may disclose for the Intended Purpose such Technical Information as is provided for in such consent to such of its professional advisers: consultants, insurers and subcontractors who shall be similarly bound by undertakings of confidence, restricted use and non-disclosure in respect of such Technical Information.

(c) The Supplier shall not be prevented to make any disclosure required by (i) order of a court of competent jurisdiction or (ii) any competent regulatory authority or agency where such disclosure is required by law, provided that where the Supplier

intends to make such disclosure, it shall first consult Company and take all reasonable steps requested by it to minimize the extent of the Technical Information disclosed and to make such disclosure in confidence and also shall cooperate with the Company in seeking any protective order or any other remedy from proper authority in this matter.

6. Exceptions:

The obligations of the Supplier pursuant to the provisions of this agreement shall not apply to any Confidential Information that:

a) was/is known to, or in the possession of the Supplier prior to disclosure thereof by the Company;

b) is or becomes publicly known, otherwise than as a result of a breach of this agreement by the Supplier.

c) is developed independently of the Disclosing Party by the Supplier in circumstances that do not amount to a breach of the provisions of this Agreement or the Contract;

d) is received from a third party in circumstances that do not result in a breach of the provisions of this Agreement.

7. The obligation of maintaining confidentiality of the Technical Information on each occasion, shall subsist for the entire duration during which the Technical Information / equipment is in possession of the Supplier and shall thereafter subsist for a further period of ---- years from the date when the complete Technical Information has been returned to the Company and if Technical Information has been returned in portions on different dates then, the period of ---- years will be reckoned from the date when the last portion of the Technical Information has been returned. Notwithstanding the expiry of the confidentiality obligation, the obligation of the Supplier under clause 5.4 shall continue to subsist for a further period of ----- years.

8. Warranties & Undertakings:

a) The Supplier undertakes to ensure the due observance of the undertakings of confidence, restricted use and non-disclosure by its persons to whom it discloses or releases copies or extracts of the Technical Information.

b) The Supplier shall keep the Technical Information or improvement made therein properly segregated and not mix up the same with any other material/documents belonging to him/it or to any other third party.

c) The Supplier further undertakes that he/it shall not hypothecate or give on lease or otherwise alienate or do away with any of the Technical Information and/or equipment of the Company, made available to him/it, and undertakes that he/it shall hold the same as a trustee, in capacity of custodian thereof and use/utilise the same solely for the purpose of executing the Contract awarded by the Company.

d)The Supplier further undertakes that he/it shall return all the equipment and/or Technical Information as far as practicable in the same condition in which the same was made available to him/it by the Company together with any Improvement thereon and the documents connected with such Improvement, to the Company forthwith upon completion of the scope

of work or Contract for which such Technical Information was provided by the Company to it or as directed by the Company together with a confirmation by way of an affidavit or in such manner as directed by the Company that it has not retained any equipment and/or Technical Information/Improvement thereof. In case any such equipment and/or Technical Information or Improvement thereof shall remain in his possession or is not capable of being returned, the retention and use of such Technical Information or Improvement thereto shall continue to be governed by this Agreement.

e) The Supplier undertakes to indemnify the Company for all the direct, indirect and/or consequential losses, damages, expenses whatsoever including any consequential loss of business, profits suffered by the Company owing to breach by the Supplier of its obligations under this Agreement and/or the confidentiality requirements, if any, contained in the Contract and that the Supplier hereby agrees that the decision of the Company in all such or any such matter/s shall be final and binding on the Supplier. On mere written demand of the Company, the Supplier shall forthwith and without demur or delay pay to the Company any such sum as determined by the Company as the amount of loss or damage or expense which has been suffered by the Company. The Supplier agrees that the Company shall be entitled to withhold and appropriate any amount payable to the Supplier under any Contract then existing between the Company and the Supplier, in case the Supplier fails to make payment, in terms of the written demand, within 7 days thereof. Without prejudice to the foregoing actions, in respect to any breach of this Agreement, the Company shall be entitled to take any other action against the Supplier as per applicable laws, the Contract, Company's applicable policies, guidelines rules, procedures, etc.

9. Without prejudice to any other mode of recovery as may be available to the Company for recovery of the amount determined as due as per Clause 8(e) hereinabove, the Company shall have a right to withhold, recover and appropriate the amount due towards such losses, damages, expenses, from any amount due to the Supplier in respect of any other Contract (s) placed on him/it by any department/office/Unit/Division of the said Company.

10. <u>Arbitration & Conciliation:</u>

a) In case amicable settlement is not reached between the Parties, in respect of any dispute or
difference or claim or controversy arising out of the formation, breach, termination, validity or execution of the Contract(or Agreement) or the respective rights and liabilities of the parties or in relation to interpretation of any provision of the Contract or in any manner touching upon the Contract, then, either Party may, by a notice in writing to the other Party refer such dispute or difference or controversy or claim, (except as to any matters, the decision of which is specifically provided for therein) to the sole arbitration by the arbitrator appointed by Head/In-Charge of the Unit/Division/Region.

b) The Arbitrator shall pass a reasoned award and the award of the Arbitrator shall be final and binding upon the parties to the dispute.

c) Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India), or other statutory modifications or re enactments thereof and the rules made thereunder and for

the time being in force shall apply to the arbitration proceedings under this clause. The seat of arbitration shall be at ---------- **(Insert the name of the city/town of the concerned BHEL Unit/Division).**

d) In case of Contract with Public Sector Enterprise (PSE) or a Government Department, the following shall be applicable:
In the event of any dispute or difference relating to the interpretation and application of the provisions of the Contract, such dispute or difference shall be referred to by either party to the arbitration of one of the arbitrators in the department of public enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to arbitration under this clause. The award of the arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such award may make further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary or Additional Secretary when so authorized by the Law Secretary, whose decision shall bind the parties hereto finally and conclusively.

e) Notwithstanding the existence or any dispute or differences and/or reference for the arbitration, the Supplier shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and expedition in a professional manner.

11. Governing Law & Jurisdiction:
This Agreement shall be governed by and be construed as per applicable Indian Laws in force at the relevant time.
Subject to clauses 10(a) and 10(d) hereinabove, all matters in connection with the subject agreement shall be subject to exclusive jurisdiction of Courts situated at ----------**(insert the name of the place where the BHEL Unit/Division is located)**

SIGNATURE

WITNESSES
1.
Name
Address:

2.
Name:
Address:

NON-DISCLOSURE AGREEMENT

All Drawing and Technical Documents relating to the product or it's manufacture submitted by one party to the other, prior or subsequent to the formation of contract, shall remain property of the submitting party. Drawing, technical documents or other technical information received by one party, shall not without the consent of the other party, be used for any other purpose than that, for which they were provided. Such technical information shall not without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to a third party. Patterns supplied by BHEL will remain BHEL's property which shall be returned by the bidder on demand to BHEL. Bidder shall in no way share or use such intellectual property of BHEL to promote his own business with others. BHEL reserves the right to claim damages from the bidder, or take appropriate penal action as deemed fit against the bidder.

Signature with stamp

Quality Requirement will be as follows: -

VENDORS' APPROVAL FROM BHEL NTPC/END CUSTOMER IS REQUIRED.UNAPPROVED VENDORS TO SUBMIT CREDENTIALS IN NTPC SUB VENDOR QUESTIONNAIRE FORMAT TO TAKE UP WITH NTPC FOR APPROVAL VENDORSTO CONFIRM TO FOLLOW NTPC/END CUSTOMER APPROVAL CONDITION (IF ANY).
INSPECTION BY BHEL/BHEL NOMINATED INSPECTION AGENCY (**M/S INTERTEK**) AS PER BHEL APPROVED SQP **"QA/BE/QP/903, REV. 09 FOR THERMOCOUPLE & QA/BE/QP/908, REV. 07 FOR RTD"**. VENDOR HAS TO SUBMIT ENDORSED COPY OF BOTH THE QP.

Item details are as follows –

1. **MATERIAL CODE- W90415302781**
   DUPLEX RTD 4-WIRE
   TEMPRATURE RANGE 0-200C
   AS PER SPECIFICATION TG60753
   QTY-2 Nos.

2. **MATERIAL CODE- W96414200115**
   TRIPLEX NICKEL CHROMIUM NICKEL
   TEMP DETECTOR, NI/CR-NI
   TCTD200L10000(ANNEX-1)
   SPEC: TG60399 REV: 03 SIZE: L=10000
   QTY-2 Nos.

3. **MATERIAL CODE- W96413500778**
   DUPLEX PLATIMEN RTD
   SPEC: TG60053 REV: 04
   QTY- 2 Nos.

4. **MATERIAL CODE- W96413508612**
   CLASS A - PT SENSORS(RTD) FOR HEADER NIPPLE
   SPEC: TG60731 REV: 01
   SIZE: TG60731
   QTY- 9 Nos.

5. **MATERIAL CODE- W96414500224**
   RESISTANCE THERMOMETER DUPLEX
   DRG: 31450801003 REV: 03
   QTY- 2 Nos.

6. **MATERIAL CODE- W96413508620**
   CLASS A- FOUR WIRE
   DUPLEX FLAT PLATINUM
   RESISTANCE TEMPERATURE
   DETECTOR AS PER SPEC TG60734
   SPEC: TG60734 REV: 01
   QTY- 2 Nos.

7. **MATERIAL CODE- W96413508566**
   3-WIRE SIMPLEX FLAT
   BIFILAR WOUND PLATINUM RTD
   SIZE 150X10X2
   SPEC: TG60468 REV: 05
   QTY- 5 Nos.

8. **MATERIAL CODE- W96413508604**
   CLASS A DUPLEX PLATINUM RTD
   FOR PW HEADER.
   SPEC: TG60732 REV: 01
   SIZE: TG60732
   QTY- 2 Nos.

9. **MATERIAL CODE- W96413503211**
   TRIPLEX NICKEL CHROME NICKEL
   DETECTOR, NI/CR-NI TC TD 200L18000(ANNEX-I)
   SPEC: TG60399 REV: 03
   QTY- 2 Nos.

10. **MATERIAL CODE- W96414501557**
    DUPLEX PLATINUM RTD
    SPEC: TG60345 REV: 03
    SIZE: D1
    QTY- 2 Nos.

MANUFACTURER'S NAME AND ADDRESS		STANDARD QUALITY PLAN		TO BE FILLED BY BHEL	TO BE FILLED BY BHEL
BHEL	VENDOR'S NAME	ITEM	**Thermocouple Assemblies with Thermo-well**	QP NO.	**QA/BE/QP/903**
				REV.	09
		DRG. NO.	AS PER PO		
		REV	AS PER PO		
		SPEC.	AS PER PO		
		REV	AS PER PO	Page 1 of 2	

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	D	AGENCY M	AGENCY B	AGENCY N	REMARKS
1	2	3	4	5	6	7	8	9		10			11
1.00	**Raw Material**												
1.01	Thermo Elements	Material Grade, Type & Temperature Millivolt Characteristics	Critical	Visual & Electrical	1 Sample/Lot	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test report/ Internal report	√	P	V	-	
1.02	Cable for Thermocouple	Continuity	Major	Electrical	1 Sample/Lot	Mfg. Spec.	Mfg. Spec	Internal Record	√	P	V	-	If applicable
1.03	Brazing Thermo Element	Brazing Spec & Brazing Procedure Qualification	Major	Review	100%	Appd. STD.	Appd. STD.	Internal Record		P	-	-	
1.04	Protecting Sheath, Extension pipe & Thermo well	Chemical Analysis, visual & Dimensional	Critical	Chemical & Physical	1 Sample/Lot	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Internal Record	√	P	V	-	Whichever is applicable
1.05	Terminal Head	Material, Visual/Aesthetic look, Protection Class	Critical	Visual & physical	1 Sample/Lot	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	V	-	If applicable
2.00	**In-Process Checks**												
2.01	Fitting & Assembly	Soundness of Embedment/Fitting/ Connections & terminal marking	Major	Review	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Internal Records		P	-	-	
3.00	**TYPE TEST**												NOTE-3
4.00	**Routine Tests**	Visual & Dimensions	Critical	Visual & Measurement	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	W	-	
4.01		Insulation Resistance b/w two Thermo Element pairs as well as each Thermo Element Wire and protecting Sheath at RT	Critical	Electrical	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	W	-	
4.02		Accuracy & Calibration	Critical	Electrical	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	W	-	
4.03		Continuity & Polarity	Critical	Electrical	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	W	-	
4.04		Weld Closure Conformity	Critical	Mechanical	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	W	-	Note-2
4.05		Measuring Junction leak Tightness Test	Critical	Electrical	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	W	-	Note-2

MANUFACTURER/SUBCONTRACTOR		LEGEND: ! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE	APPROVED BY Digitally signed by Nishant Kumar Date: 2020.01.09 13:18:19 +05'30'

MANUFACTURER'S NAME AND ADDRESS			STANDARD QUALITY PLAN		TO BE FILLED BY BHEL	TO BE FILLED BY BHEL
BHEL	VENDOR'S NAME	ITEM	**Thermocouple Assemblies with Thermo-well**	QP NO. **QA/BE/QP/903**		
				REV. 09		
		DRG. NO.	AS PER PO			
		REV	AS PER PO			
		SPEC.	AS PER PO			
		REV	AS PER PO	Page 2 of 2		

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS		AGENCY			REMARKS
										M	B	N	
1	2	3	4	5	6	7	8	9	D	10			11
4.06		Bore Concentricity & Dimension of Thermo-well Including Process Connections	Critical	Measurement	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	W	-	NOTE-2
4.07		Hydraulic on Thermo-well	Critical	Hydraulic	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	W	-	NOTE-2.
4.08		Completeness of TCs, COC & Inspection Report	Critical	Physical	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	V	-	
5.00	**Identification / Marking & Packing**												
5.01		Identification marking / Firmness of tagging of each instruments	Major	Visual	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P	V	-	
5.02		Soundness of packing Against Transit Damage	Major	Visual	100%	Ordering Spec./ Appd. Drawing	Ordering Spec./ Appd. Drawing	Test Report	√	P		-	

Note-

1. Records as marked √ shall essentially be submitted by vendor as QA documentation package.
2. If applicable as per ordering specification, BHEL Appd. Drawing/Datasheet.
3. Type Test Clearance from BHEL Engg. to be verified by inspection Engineer during Inspection at vendor's works.
4. Manufacturer to maintain calibrated instruments having better accuracy than the item under the test. Inspection engineer shall check the same.
5. Witness by inspection agency to be random 10% of each material code (minimum 1 pieces per material code) from each lot. However vendor to carry out 100% tests internally and tests report shall be reviewed by inspection engineer during inspection at Vendor's works.

MANUFACTURER/SUBCONTRACTOR		LEGEND: ! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE	Digitally signed by Nishant Kumar Date: 2020.01.09 13:19:03 +05'30'

STANDARD QUALITY PLAN

QPNO : QA/BE/QP/908 REV.NO. : 07 DESCRIPTION: (MATERIAL, CLASS, GRADE, RATING, SIZE ETC): PLATINUM RESISTANCE TEMPERATURE DETECTORS & ASSEMBLIES WITH THERMOWELL

SPECNO: As Per PO REV.NO. : --

DRG : As Per PO REV.NO. : --

LEGENDS:
P-PERFORMED BY 1-BHEL REP.
W-WITNESS BY 2-VENDOR
V-VERIFIED BY 3-SUB-VENDOR

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY P	AGENCY W	AGENCY V	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12	13
1.00	Raw Material											
1.01	Resistance Element	Material Grade, Type & Resistance Characteristics.	Major	Visual / Electrical	1 Sample / Lot	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Test Report* / Internal Records*	2	-	1	
1.02	Cable for RTD	Continuity	Major	Electrical	1 Sample / Lot	Mfg. Specn	Mfg. Specn	Internal Record	2	-	1	If Applicable
1.03	Protecting Sheath, Terminal Head & Spring	Material Type / Grade	Major	Chemical / Physical	1 Sample / Lot	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Test Report* / Internal Records*	2	-	1	
1.04	Extension Pipe & Thermowell	Chemical Analysis & Physical Properties	Major	Chemical / Physical	1 Sample / Lot	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Test Report* / Internal Records*	2	-	1	
2.00	Fitting & Assembly	Soundness of Embedment / Fitting / Connections & Terminal Marking	Major	Physical	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Internal Records	2	-	-	
3.00	Type Tests											Note: 3
4.00	Routine Tests											Note: 5
4.01		Visual and Dimensions	Major	Visual / Measurement	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Inspection Report*	2	1	-	
4.02		Resistance Accuracy	Major	Electrical	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Test Report*	2	1	-	
4.03		Pull out	Major	Physical	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Test Report*	2	1	-	Note: 2
4.04		Continuity	Major	Electrical	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Test Report*	2	1	-	
4.05		Insulation Resistance	Major	Electrical	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Test Report*	2	1	-	

Digitally signed by Sachin Jain
Date: 2020.06.08 08:46:26 +05'30'

STANDARD QUALITY PLAN

QPNO : QA/BE/QP/908 REV.NO. : 07 DESCRIPTION: (MATERIAL, CLASS, GRADE, RATING, SIZE ETC): PLATINUM RESISTANCE TEMPERATURE DETECTORS & ASSEMBLIES WITH THERMOWELL

SPECNO: As Per PO REV.NO. : --

DRG : As Per PO REV.NO. : --

LEGENDS:
P-PERFORMED BY 1-BHEL REP.
W-WITNESS BY 2-VENDOR
V-VERIFIED BY 3-SUB-VENDOR

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY P	AGENCY W	AGENCY V	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12	13
4.06		High Voltage	Major	Electrical	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Test Report*	2	1	-	Note: 2
4.07		Weld closure confirmity	Major	Mechanical	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Inspection Report*	2	1	-	If Applicable
4.08		Bore Concentricity & Dimensions of Thermowell incluncluding process connections.	Major	Measurement	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Inspection Report*	2	1	-	Note: 2 & BHEL Check Critical Dimensions
4.09		Easy Opening / Closing of Terminal Head Cover & Operating of Spring Loaded Insert (Applicable for Terminal Head Type RTDs).	Major	Physical	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Inspection Report*	2	1	-	Note: 2
4.10		Hydraulic on Thermowell	Major	Hydraulic	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	Test Report*	2	1	-	Note: 2
4.11		Compliance of Technical Requirements	Major	--	100%	Ordering Specn / BHEL Appd Drawing.	Ordering Specn / BHEL Appd Drawing.	COC*	2	-	-	
4.12		Completeness of TCs, COCs, & Inspection Reports	Major	Physical	100%	Ordering Specn./ BHEL Appd Drawing / QP/ PO	Ordering Specn./ BHEL Appd Drawing / QP/ PO	Documents*	2	-	1	
5.00	Identification / Marking & Packing											
5.01		Identification Marking / Firmness of Tagging of Each Instrument	Major	Visual	100%	Ordering Specn.	Ordering Specn.	Internal Records	2	-	1	
5.02		Soundness of Packing Against Transit Damage	Major	Physical	100%	Ordering Specn./ Vendor's STD	Ordering Specn./ Vendor's STD	Internal Records	2	-	-	

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STANDARD QUALITY PLAN

QPNO : QA/BE/QP/908 REV.NO. : 07 DESCRIPTION: (MATERIAL, CLASS, GRADE, RATING, SIZE ETC): PLATINUM RESISTANCE TEMPERATURE DETECTORS & ASSEMBLIES WITH THERMOWELL

SPECNO: As Per PO REV.NO. : --

DRG : As Per PO REV.NO. : --

LEGENDS:

P-PERFORMED BY 1-BHEL REP.

W-WITNESS BY 2-VENDOR

V-VERIFIED BY 3-SUB-VENDOR

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY P	AGENCY W	AGENCY V	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12	13

NOTE:-

1. Records as marked * shall essentially be submitted by vendor as QA documentation package.
2. If applicable as per ordering specification, BHEL approved Drawing / BHEL Appd Data Sheet.
3. Type tests clearance from BHEL Engineering to be verified by inspection engineer during inspection at vendor's works.
4. Manufacturer to maintain calibrated instruments having better accuracy than the item under the test. Inspection engineer shall check the same.
5. Witness by inspection agency to be random 10% of each material code (minimum 1 pieces per material code) from each lot. However vendor to carry out 100% tests internally and tests report shall be reviewed by inspection engineer during inspection at Vendor's works.

Digitally signed by Sachin Jain
Date: 2020.06.08 08:47:13 +05'30'