

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)

Revision No. : 04  
 Dt of Revision : 27.08.2020  
 Page No. : 1 of 8  
 Section : Formats  
 Topic : Technical Specifications format

Issue No : 2  
 Issue Dt : 30.06.2003  
 Issued by : P A  
 Documents : PPM

FORMAT NO.:CPRI/PUR/C/TBID/GTP

Section IV T -Technical Specification

CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI

Tender Enquiry No : CPRI/BLR21ERED23M761

Description of the Equipment/Goods/Services : Equipment for fire test

Note : 1) The technical bid submitted in other than this format is liable to be rejected.

2) All blue fields are mandatorily to be filled in.

Name and address of the bidder				
Quotation Number and Date				
Sl.No.	Technical Specifications/Parameters	Qty	To be completed by the Bidder	
			Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)
<b>1</b>	<b>Place where equipment /service to be supplied /provided</b>			
1.1	CPRI,Bangalore			
<b>2</b>	<b>Scope</b>			
2.1	Supply, installation, commisioning and training	1 Unit		
<b>3</b>	<b>Purpose</b>			
3.1	To test PV module as per Cl. 10.17 of IEC 61730-2:2016			
<b>4</b>	<b>Applicable standards</b>			
4.1	Fire Test Systems must confirm to IEC 61730:2016 (Part 1&2) as per Fire Test (MST23). Reference standards: UL 1703:2015, UL790 and ASTM E108-04, ENV 1187-1-4 , ISO 13501-5:2005, ISO 5657, ISO 834-3, ISO 834-1, Annex B of IEC 61730-2 , NBC -BIS: 2016			

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)

Revision No. : 04  
 Dt of Revision : 27.08.2020  
 Page No. : 2 of 8  
 Section : Formats  
 Topic : Technical Specifications format

Issue No : 2  
 Issue Dt : 30.06.2003  
 Issued by : P A  
 Documents : PPM

FORMAT NO.:CPRI/PUR/C/TBID/GTP

Section IV T -Technical Specification

CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI

Sl.No.	Technical Specifications/Parameters	Qty	To be completed by the Bidder		
			Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
5	<b>Testing Methodology for Roof Covering Material</b>				
5.1	UL 790 standard & UL 1703:2015				
6	<b>Test description</b>				
6.1	Fire test consists of two different test on the sample (Solar PV module). Maximum size of a module is 2 m x 1 m. Working ambient temperature: 15°C to 40°C. 1. Spread of flame test 2. Burning brand test				
7	<b>Equipment description</b>				
7.1	A test deck to which sample to be tested are applied, mounted on a framework. The incline of the framework is to be adjustable.				
7.2	A construction of noncombustible boards, mounted on the front of the framework to simulate eaves and cornices				
7.3	A gas burner				
7.4	A blower				
7.5	Adjustable fins mounted inside the air duct to straighten the air stream and reduce turbulence.				
7.6	A baffle mounted on the back edge of the test deck to prevent backfiring under the deck.				
7.7	Refer Annexure 1				
8	<b>Gas burner / Nozzle burner</b>				
8.1	Purpose of the nozzle is for spread test to produce flame.				
8.2	Nozzle burner should be made of fire resistance material Heat resistant 1200 °C and having good strength.				
8.3	Length of nozzle burner should be 1,120mm ± 0.1 mm.				
8.4	Diameter of nozzle should be nominal 50.9 mm± 0.1 mm (60.3 ± 0.1 mm OD).				
8.5	Burner slot: (0.5 ± 0.05) inch X (36.0 ± 0.05) inch (Length X Wide), slot opening toward the test deck; (12.7 ± 0.1) mm X (910.0 ± 1.5) mm (Length X Wide) in SI unit.				
8.6	The burner is to be supplied with gas at both ends through nominal 25± 0.13 mm (33.4 ± 0.13 mm OD) pipe to provide uniform gas pressure at the burner assembly				

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)

Revision No. : 04  
 Dt of Revision : 27.08.2020  
 Page No. : 3 of 8  
 Section : Formats  
 Topic : Technical Specifications format

Issue No : 2  
 Issue Dt : 30.06.2003  
 Issued by : P A  
 Documents : PPM

FORMAT NO.:CPRI/PUR/C/TBID/GTP

Section IV T -Technical Specification

CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI

Sl.No.	Technical Specifications/Parameters	Qty	To be completed by the Bidder		
			Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
8.7	Flame of nozzle burner should have spread capacity as per standard requirement. Class A - 1.82m (6 feet) Class B - 2.40m (8 feet) Class C - 3.90m (13 feet) Temperature and Flame Length Specs: (Control of flame length is to be provided)				
8.8	Auto ignition Burner specs: Refer IEC 61730-2:2016, Annexure B				
<b>9</b>	<b>Oven Burner</b>				
9.1	Burning brands: refer Annexure 2				
9.2	Oven burner container: Container size: 50 cm X 50 cm X 50 cm (Length X Wide X Height).				
9.3	Container material: steel, temperature resistance up to 1,000 °C.				
9.4	Brand holder: 3 kg minimum weight allowance; brands shall be enveloped in the flame.				
9.5	Burning temperature: (888 ± 28) °C @ 58.7 mm above the top of the burner. Temperature shall be measured with an accuracy of 1% of m.v or better and displayed				
9.6	Thermal resistance heater: control flame temperature.				
9.7	Brand clip: rotate and remove burning brands				

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)

Revision No. : 04  
 Dt of Revision : 27.08.2020  
 Page No. : 4 of 8  
 Section : Formats  
 Topic : Technical Specifications format

Issue No : 2  
 Issue Dt : 30.06.2003  
 Issued by : P A  
 Documents : PPM

FORMAT NO.:CPRI/PUR/C/TBID/GTP

Section IV T -Technical Specification

CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI

Sl.No.	Technical Specifications/Parameters	Qty	To be completed by the Bidder		
			Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
10	<b>Wind Tunnel Specifications</b>				
10.1	Wind speed with 3 points: 1 min average: (5.3 ± 0.2) m/s Wind speed adjustment: 0 ~ 6 m/s Wind speed measurement conforms to ASTM E108-04 Should generate a uniform wind speed Wind tunnel hole diameter: 2133.6 ± 100 mm X 762 ± 0.2 m/s Wind tunnel height from ground: 1111 ± 100 mm Wind tunnel length: To make wind speed with 3point at 5.3 ± 0.2 m/s at the center and at each of two locations measured 76 mm from each edge of the deck, with each measurement being 94 mm above the surface of the deck Wind tunnel material: Steel Wind tunnel should be equipped with fins that can speed up wind and reduce turbulent flow Air is taken from outside of the chamber/room. Wind tunnel spec refer Annexure 1				
11	<b>Fuel supply system</b>				
11.1	Gas flow meter: gas flow meter must be in suitable scale for fuel burning in the range of 387 kWh ~ 316 kWh. Gas flow rate is adjusted to achieve below mentioned temperatures. Fuel : Propane or any suitable gas				
11.2	according to burning heat calculation, 2 sets of gas flow rate are subjected. i. 21,000 Btu/min ~ 22,000 Btu/min (369 kWh ~387 kWh) with respect to (760 ± 28) °C. ii. 18,000 Btu/min ~ 19,000 Btu/min (316 kWh ~334 kWh) with respect to (704 ± 28) °C.				
11.3	Burning temperature: above flame temperatures are measured according to ASTM E108-04, 5.5.2, flame measuring point, to meet the requirement of (760 ± 28) °C and (704 ± 28) °C.				
11.4	Thermocouple: NO.14 B & S gage (1.63 mm) Type K, response time < 1 second with protective casing, typical accuracy is 2.2°C or 0.75 % (whichever is greater); thermocouple wire is connected to control room Oven gas supply: gas supply is connected to oven, allowing (888± 28) °C @ 58.7 mm above the top of the burner, please refer to oven specification."				

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)

Revision No. : 04  
 Dt of Revision : 27.08.2020  
 Page No. : 5 of 8  
 Section : Formats  
 Topic : Technical Specifications format

Issue No : 2  
 Issue Dt : 30.06.2003  
 Issued by : P A  
 Documents : PPM

FORMAT NO.:CPRI/PUR/C/TBID/GTP

Section IV T -Technical Specification

CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI

Sl.No.	Technical Specifications/Parameters	Qty	To be completed by the Bidder		
			Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
12	<b>Blower and air duct</b>				
12.1	Air use to gas flame exposes over PV module with an adjustable wind speed.				
12.2	It shall have an arrangement to not effect on fire resistance test				
12.3	A blower and air duct for providing the required wind conditions. The air introduced by the blower is to be taken from outside the test room.				
12.4	Adjustable fins mounted inside the air duct to straighten the air stream and reduce turbulence.				
12.5	Air flow is to be adjusted automatically so that velocity of air current measured at the center and at each of two locations measured 76 mm from each edge of the deck, with each measurement being 94 mm above the surface of the deck to be $5.3 \pm 0.2$ m/s."				
13	<b>Test mounting Rack/deck</b> <b>Test Platform Specs:</b> <b>Approx. Size:</b>				
13.1	Test mounting Rack should be made of fire resistant material				
13.2	Test mounting Rack can adjust angle of module for $\pm 30$ Degree from horizontal, with minimum inclined scale of 0.1 degree, where 22.5 degree is marked. Manual adjustment shall be allowable.				
13.3	Platform Angle adjustment: 30° Max. Resolution 0.1 °. By gear change or manual				
13.4	Platform with side mark 1.82 m and 2.4 m location on both side of edges.				
13.5	Platform should be equipped with a steel tray to collect burning waste				
13.6	Steel support shall be constructed under the test deck to collect burning residual				
13.7	Safety switch emergency stop shall be controlled by program or operator to shut down power & air supply immediately				
13.8	Tilting frame shall be assembled and removable on test deck				
13.9	A baffle shall be mounted on the back edge of the test deck to prevent backfiring and test subject sliding				
13.10	# Refer ASTM E108-04 for platform slot and drawing				

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)

Revision No. : 04  
 Dt of Revision : 27.08.2020  
 Page No. : 6 of 8  
 Section : Formats  
 Topic : Technical Specifications format

Issue No : 2  
 Issue Dt : 30.06.2003  
 Issued by : P A  
 Documents : PPM

FORMAT NO.:CPRI/PUR/CTBID/GTP

Section IV T -Technical Specification

CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI

Sl.No.	Technical Specifications/Parameters	Qty	To be completed by the Bidder		
			Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
14	<b>Angle Indicator</b>				
14.1	a. Angle marking: within 22 ~ 23°, resolution .1° b. Material: Heat resistant 800 °C without deformation and non-flammable material Refer ASTM E108-04, detail of tilting frame to hole test roof deck Moveable Eyes				
15	<b>Safety device</b>				
15.1	a. Equipped with an emergency stop switch which can cut wind and gas supply in case of emergency. b. Provide necessary arrangement to stop the fire in device under test. c. Back flash arrestor.				
16	<b>Monitor &amp; Controls Systems</b>				
16.1	A provision should be for monitoring and controlling of following Parameters				
16.2	Gas flow monitor & control.Measurement accuracy: 1% or better.				
16.3	Gas pressure monitor & valve control. Measurement accuracy: 1% or better.				
16.4	Burning heat calculator: real time calculation of burning heat while burning in process.				
16.5	Burning temperature monitor: temperature data are collected every 10 second, average latest 2 minutes data to obtain required temperature [(760 ± 28) °C for Class A and B and (704 ± 28) °C] for Class C test.Temperature is to be measured with an accuracy of 0.75 % or better(burning heat is then calculated to meet the requirement). Gas flow tuned automatically to retain burning heat.				
16.6	Air velocity monitor and control: air flow is tuned automatically to retain velocity at (5.3 ± 0.2) m/s (1 minute average). Air velocity shall be measured with an accuracy of 1 % or better. Recommended range of measurement is 0- 10 m/s.				
16.7	Air duct temperature monitor: collect air duct temperature every 10 seconds after ignition.				
16.8	Temperature of flame				
16.9	Time of test start and Test finish.				
16.10	Wind speed ( m/s)				
16.11	Auto / manual injection facility for burner and fire				

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)

Revision No. : 04  
 Dt of Revision : 27.08.2020  
 Page No. : 7 of 8  
 Section : Formats  
 Topic : Technical Specifications format

Issue No : 2  
 Issue Dt : 30.06.2003  
 Issued by : P A  
 Documents : PPM

FORMAT NO.:CPRI/PUR/CTBID/GTP

Section IV T -Technical Specification

CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI

Sl.No.	Technical Specifications/Parameters	Qty	To be completed by the Bidder		
			Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
16.12	Auto stop of burner in programming in a required				
16.13	Emergency stop button for shut down power and air supply.				
16.14	Gas leakage interlock.				
16.15	Monitoring and display of Temperature, wind speed, gas pressure, gas flow, etc.				
16.16	Air duct temperature monitor: collect air duct temperature every 10 seconds after ignition				
<b>17</b>	<b>Accessories</b>				
17.1	a. All required accessories are to be provided. b. Cable, duct and pipe material must be fire-resistance. c. Motoring accessories (ex: thermocouple wire...) must be fire-resistance.				
<b>18</b>	<b>Size and construction of brands supplied with storage facility</b>				
18.1	Wooden brands with a mass of 10 g to 2,000 gram as the incendiary composition.				
18.2	Calibrated brands: A (12" x 12"), B (6" x 6") and C (1 1/2" x 1 1/2"). The brands are stored in a cabinet with controlled temperature and humidity. Humidity has a significant impact on how a brand will burn.				
18.3	Brand type: kilndried Douglas fir lumber Brand type kiln dried Douglas fir lumber free from knots and pitch pockets.				
18.4	Brand Size (mm): 300X300X57 for Class A, 150X150X57 for Class B, 38.1X38.1X19.8 for Class C				
18.5	Number of Brands: 1 for A, 2 for Class B, 20 for Class C.				
18.6	As per cl.8 of UL790				
<b>19</b>	<b>Staircase</b>				
19.1	Movable staircase with wheels shall to be provided for mounting PV module on test deck. Height of the staircase should be sufficient to make mounting easy				
<b>20</b>	<b>Electrical Power:</b>				
20.1	Inlet Blower: 415V, Φ3, 8.5kW / As required Control Parts: 220V, Φ1, 6kW / As required Extraction Blower: 415V, Φ3, 7.5kW / As required				

**PROCUREMENT PROCEDURE OF CPRI (NON WORKS)**

Revision No. : 04  
 Dt of Revision : 27.08.2020  
 Page No. : 8 of 8  
 Section : Formats  
 Topic : Technical Specifications format

Issue No : 2  
 Issue Dt. : 30.06.2003  
 Issued by : P A  
 Documents : PPM  
 FORMAT NO.:CPRI/PUR/C/TBID/GTP

**Section IV T -Technical Specification**

**CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI**

Sl.No.	Technical Specifications/Parameters	Qty	To be completed by the Bidder		
			Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
<b>21</b>	<b>Documentation</b>				
21.1	Operating manuals containing schematic diagram, service details, etc. to be provided with the equipment.				
<b>22</b>	<b>Calibration</b>				
22.1	Calibration of instruments used should be carried out at an independent test laboratory traceable to National or International standards. Calibration certificates must be from NABL accredited lab only.				
<b>23</b>	<b>Training</b>				
23.1	Training shall be provided by expert people to concerned officials of CPRI, Bangalore				
<b>24</b>	<b>Inspection</b>				
24.1	Pre-despatch inspection of the instrument will be carried out by CPRI officials at factory . Any deviation if observed shall be rectified before shipping the instrument to CPRI				
<b>25</b>	<b>Guarantee</b>				
25.1	Equipment shall be guaranteed for at least 1 year from the date of commissioning of the equipment at CPRI.				

PN: 1) Mere statement of "Complied" do not suffice the requirement. The details of technical parameters in proof of CPRI requirements shall be furnished along with technical write-up, catalogues, brochures, literatures, phamplates, or any other documents shall be submitted in hard copy along with technical bid.  
 2) Calibration reports/certificates, factory test reports/certificates from an accredited agencies/facilites shall be submitted wherever applicable.  
 3) CPRI reserves the right to conduct "predispatch inspection" prior to dispatch at the works of the supplier and the expenditure towards PDI shall be borne by CPRI. However information regarding the rediness of the equipment/machinery for the PDI shall be communicated in writing at lease 70 days in advance.