

REQUEST FOR QUOTATION (RFQ)
for selection of Training Institute for Online Training on
Solar Mini-Grids and Solar Rooftops
RE-ADVERTISED

RFQ Reference:002/01/RFQ/ISA

Date: 25 February 2022

SECTION 1: REQUEST FOR QUOTATION (RFQ)

ISA kindly requests your quotation for the provision of goods, works and/or services as detailed in Annex 1 of this RFQ.

This Request for Quotation comprises the following documents:

Section 1: This request letter

Section 2: RFQ Instructions and Data

Annex 1: Schedule of Requirements

Annex 2: Quotation Submission Form

Annex 3: Technical and Financial Offer

When preparing your quotation, please be guided by the RFQ Instructions and Data. Please note that quotations must be submitted using Annex 2: Quotation Submission Form and Annex 3 Technical and Financial Offer, by the method and by the date and time indicated in Section 2. It is your responsibility to ensure that your quotation is submitted on or before the deadline. Quotations received after the submission deadline, for whatever reason, will not be considered for evaluation.

Thank you and we look forward to receiving your quotations.

Issued by:



Signature: _____

Name: Vineet Mathur

Title: Admin. & Procurement Analyst

Date: 25 February 2022

SECTION 2: RFQ INSTRUCTIONS AND DATA

Introduction	<p>Bidders shall adhere to all the requirements of this RFQ, including any amendments made in writing by ISA.</p> <p>Any Bid submitted will be regarded as an offer by the Bidder and does not constitute or imply the acceptance of the Bid by ISA. ISA is under no obligation to award a contract to any Bidder as a result of this RFQ.</p> <p>ISA reserves the right to cancel the procurement process at any stage without any liability of any kind for ISA, upon notice to the bidders or publication of cancellation notice on ISA website.</p>
Deadline for the Submission of Quotation	<p>13 March 2022 by 6.00 PM (IST)</p> <p>If any doubt exists as to the time zone in which the quotation should be submitted, refer to http://www.timeanddate.com/worldclock/.</p>
Method of Submission	<p>Quotations must be submitted as follows:</p> <p><input type="checkbox"/> E-tendering</p> <p><input checked="" type="checkbox"/> Dedicated Email Address</p> <p><input type="checkbox"/> Courier / Hand delivery</p> <p><input type="checkbox"/> Other Click or tap here to enter text.</p> <p>Bid submission address: procurement@isolaralliance.org</p> <ul style="list-style-type: none"> ▪ File Format: pdf, jpeg, zip ▪ File names must be maximum 60 characters long and must not contain any letter or special character other than from Latin alphabet/keyboard. ▪ All files must be free of viruses and not corrupted. ▪ Max. File Size per transmission: 35 MB ▪ Mandatory subject of email: RFQ for selection of Training Institute for Online Training on Solar Mini-Grids and Solar Rooftops ▪ Multiple emails must be clearly identified by indicating in the subject line “email no. X of Y”, and the final “email no. Y of Y”. ▪ It is recommended that the entire Quotation be consolidated into as few attachments as possible. ▪ The bidder should receive an email acknowledging email receipt. • Insert BU Code and Event ID number
Cost of preparation of quotation	<p>ISA shall not be responsible for any costs associated with a Supplier’s preparation and submission of a quotation, regardless of the outcome or the manner of conducting the selection process.</p>
Supplier Code of Conduct, Fraud, Corruption,	<p>All prospective suppliers must read the United Nations Supplier Code of Conduct and acknowledge that it provides the minimum standards expected of suppliers to the UN. The Code of Conduct, which includes principles on labour, human rights, environment and ethical conduct may be found at: https://www.un.org/Depts/ptd/about-us/un-supplier-code-conduct</p> <p>Moreover, ISA strictly enforces a policy of zero tolerance on proscribed practices, including fraud, corruption, collusion, unethical or unprofessional practices, and obstruction of ISA vendors and requires all bidders/vendors to observe the highest standard of ethics during the procurement process and contract implementation.</p>
Gifts and Hospitality	<p>Bidders/vendors shall not offer gifts or hospitality of any kind to ISA staff members including recreational trips to sporting or cultural events, theme parks or offers of holidays, transportation, or invitations to extravagant lunches, dinners or similar. In pursuance of this policy, ISA: (a) Shall reject a bid if it determines that the selected bidder has engaged in any corrupt or fraudulent practices in competing for the contract in question; (b) Shall declare a vendor ineligible, either</p>

	indefinitely or for a stated period, to be awarded a contract if at any time it determines that the vendor has engaged in any corrupt or fraudulent practices in competing for, or in executing a ISA contract.
Conflict of Interest	<p>ISA requires every prospective Supplier to avoid and prevent conflicts of interest, by disclosing to ISA if you, or any of your affiliates or personnel, were involved in the preparation of the requirements, design, specifications, cost estimates, and other information used in this RFQ. Bidders shall strictly avoid conflicts with other assignments or their own interests, and act without consideration for future work. Bidders found to have a conflict of interest shall be disqualified.</p> <p>Bidders must disclose in their Bid their knowledge of the following: a) If the owners, part-owners, officers, directors, controlling shareholders, of the bidding entity or key personnel who are family members of ISA staff involved in the procurement functions and/or the Government of the country or any Implementing Partner receiving goods and/or services under this RFQ.</p> <p>The eligibility of Bidders that are wholly or partly owned by the Government shall be subject to ISA's further evaluation and review of various factors such as being registered, operated and managed as an independent business entity, the extent of Government ownership/share, receipt of subsidies, mandate and access to information in relation to this RFQ, among others. Conditions that may lead to undue advantage against other Bidders may result in the eventual rejection of the Bid.</p>
General Conditions of Contract	<p>Any Purchase Order or contract that will be issued as a result of this RFQ shall be subject to the General Conditions of Contract</p> <p>Select the applicable GTC:</p> <p><input checked="" type="checkbox"/> General Terms and Conditions / Special Conditions for Contract.</p> <p><input type="checkbox"/> General Terms and Conditions for de minimis contracts (services only, less than \$50,000)</p> <p><input type="checkbox"/> General Terms and Conditions for Works</p>
Special Conditions of Contract	<p><input checked="" type="checkbox"/> Cancellation of PO/Contract if the delivery/completion is delayed by [indicate number of days]</p> <p><input type="checkbox"/> Others [pls. specify]</p>
Eligibility	<p>A vendor who will be engaged by ISA may not be suspended, debarred, or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other national / international Organization. Vendors are therefore required to disclose to ISA whether they are subject to any sanction or temporary suspension imposed by these organizations. Failure to do so may result in termination of any contract or PO subsequently issued to the vendor by ISA.</p> <p>It is the Bidder's responsibility to ensure that its employees, joint venture members, sub-contractors, service providers, suppliers and/or their employees meet the eligibility requirements as established by ISA.</p> <p>Bidders must have the legal capacity to enter a binding contract with ISA and to deliver in the country, or through an authorized representative</p> <ul style="list-style-type: none"> • Training Institute should be in the business of imparting training Offline/Online for at least 5 years • They should have imparted training in Renewable Energy (Solar in particular) • They should have a pool of Master Trainer and expert trainers (minimum 3 and maximum 5), dedicated for the proposed training. Master Trainer and the expert trainers should have minimum qualification of engineering graduation or post-graduation in science with at least 6 years of experience in the Renewable Energy Sector and 3 years of experience in Solar Training

	<p>✓ The Training Institute should preferably be affiliated to or recognized by the Ministry/relevant Government department/statutory body of the country. Please attach relevant documents.</p>
Currency of Quotation	Quotations shall be quoted in Indian Rupees or USD. Exchange rate variation to be taken care of.
Joint Venture, Consortium or Association	If the Bidder is a group of legal entities that will form or have formed a Joint Venture (JV), Consortium or Association for the Bid, they shall confirm in their Bid that : (i) they have designated one party to act as a lead entity, duly vested with authority to legally bind the members of the JV, Consortium or Association jointly and severally, which shall be evidenced by a duly notarized Agreement among the legal entities, and submitted with the Bid; and (ii) if they are awarded the contract, the contract shall be entered into, by and between ISA and the designated lead entity, who shall be acting for and on behalf of all the member entities comprising the joint venture, Consortium or Association.
Only one Bid	<p>The Bidder (including the Lead Entity on behalf of the individual members of any Joint Venture, Consortium or Association) shall submit only one Bid, either in its own name or, if a joint venture, Consortium or Association, as the lead entity of such Joint Venture, Consortium or Association. Bids submitted by two (2) or more Bidders shall all be rejected if they are found to have any of the following:</p> <p>a) they have at least one controlling partner, director or shareholder in common; or b) any one of them receive or have received any direct or indirect subsidy from the other/s; or</p> <p>b) they have the same legal representative for purposes of this RFQ; or</p> <p>c) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about, or influence on the Bid of, another Bidder regarding this RFQ process;</p> <p>d) they are subcontractors to each other's Bid, or a subcontractor to one Bid also submits another Bid under its name as lead Bidder; or</p> <p>e) some key personnel proposed to be in the team of one Bidder participates in more than one Bid received for this RFQ process. This condition relating to the personnel, does not apply to subcontractors being included in more than one Bid.</p>
Duties and taxes	<p>Article II, Section 7, of the Convention on the Privileges and Immunities provides, inter alia, that the United Nations, including ISA as a subsidiary organ of the General Assembly of the United Nations, is exempt from all direct taxes, except charges for public utility services, and is exempt from customs restrictions, duties, and charges of a similar nature in respect of articles imported or exported for its official use. All quotations shall be submitted net of any direct taxes and any other taxes and duties, unless otherwise specified below:</p> <p>All prices must:</p> <p><input type="checkbox"/> be inclusive of VAT and other applicable indirect taxes</p> <p><input checked="" type="checkbox"/> be exclusive of VAT and other applicable indirect taxes</p>
Language of quotation	ENGLISH
Documents to be submitted	<p>Bidders shall include the following documents in their quotation:</p> <p><input checked="" type="checkbox"/> Annex 2: Quotation Submission Form duly completed and signed</p> <p><input checked="" type="checkbox"/> Annex 3: Technical and Financial Offer duly completed and signed and in accordance with the Schedule of Requirements in Annex 1</p> <p><input checked="" type="checkbox"/> Company Profile.</p> <p><input checked="" type="checkbox"/> Registration certificate;</p> <p><input checked="" type="checkbox"/> List and value of projects performed for the last 3 years plus client's contact details who may be contacted for further information on those contracts;</p> <p><input checked="" type="checkbox"/> List and value of ongoing Projects with ISA and other national/multi-national organization with contact details of clients and current completion ratio of each ongoing project;</p> <p><input checked="" type="checkbox"/> Statement of satisfactory Performance (Certificates) from the top 3 clients in terms of Contract value in similar field;</p> <p><input checked="" type="checkbox"/> Completed and signed CVs for the proposed key Personnel;</p>

Quotation validity period	Quotations shall remain valid for 90 days from the deadline for the Submission of Quotation.
Price variation	No price variation due to escalation, inflation, fluctuation in exchange rates, or any other market factors shall be accepted at any time during the validity of the quotation after the quotation has been received.
Scope Variation	The number of online training batches under this contract will be twelve, however there may be variation of \pm four batches.
Partial Quotes	<input checked="" type="checkbox"/> Not permitted <input type="checkbox"/> Permitted Insert conditions for partial quotes and ensure that the requirements are properly listed in lots to allow partial quotes
Alternative Quotes	<input checked="" type="checkbox"/> Not permitted <input type="checkbox"/> Permitted
Payment Terms	<input checked="" type="checkbox"/> 100% within 30 days after receipt of services and submission of payment documentation. <input checked="" type="checkbox"/> Price quotation should be submitted on per Batch basis of online trainings. (in USD or INR/ Batch)
Conditions for Release of Payment	<input checked="" type="checkbox"/> <input type="checkbox"/> The payment will be released on receipt of completion certificate from the training coordinator of ISA after completion of each training module.
Contact Person for correspondence, notifications and clarifications	E-mail address: procurement@isolaralliance.org Mr. Vineet Mathur Attention: Quotations shall not be submitted to this address but to the address for quotation submission above. Otherwise, offer shall be disqualified. Any delay in ISA's response shall be not used as a reason for extending the deadline for submission, unless ISA determines that such an extension is necessary and communicates a new deadline to the Proposers.
Clarifications	Requests for clarification from bidders will not be accepted any later than 5 days before the submission deadline. Responses to request for clarification will be communicated procurement@isolaralliance.org by Mr. Vineet Mathur
Evaluation method	<input checked="" type="checkbox"/> The Contract or Purchase Order will be awarded to the lowest price substantially compliant offer
Evaluation criteria	<input checked="" type="checkbox"/> Full compliance with all requirements as specified in Annex 1 <input checked="" type="checkbox"/> Full acceptance of the General Conditions of Contract
Right not to accept any quotation	ISA is not bound to accept any quotation, nor award a contract or Purchase Order
Right to vary requirement at time of award	At the time of award of Contract or Purchase Order, ISA reserves the right to vary (increase or decrease) the quantity of services, by up to a maximum 2 (two) batches, without any change in the unit price or other terms and conditions.
Type of Contract to be awarded	<input checked="" type="checkbox"/> Contract for Works
Expected date for contract award.	1 April 2022
Publication of Contract Award	
Policies and procedures	This RFQ is conducted in accordance with ISA Programme and Operations Policies and Procedures

UNGM registration	Any Contract resulting from this RFQ exercise will be subject to the supplier being registered at the appropriate level on the United Nations Global Marketplace (UNGM) website at www.ungm.org . The Bidder may still submit a quotation even if not registered with the UNGM, however, if the Bidder is selected for Contract award, the Bidder must register on the UNGM prior to contract signature.
Duration of the contract	The duration of the contract will be for 12 Months from the issue of the LOA. The contract can be renewed for another year on same terms and conditions based mutual consent of the parties.
Dispute resolution	

ANNEX 1: SCHEDULE OF REQUIREMENTS

ANNEX 2: QUOTATION SUBMISSION FORM

Bidders are requested to complete this form, including the Company Profile and Bidder's Declaration, sign it and return it as part of their quotation along with Annex 3: Technical and Financial Offer. The Bidder shall fill in this form in accordance with the instructions indicated. No alterations to its format shall be permitted and no substitutions shall be accepted.

Name of Bidder:	Click or tap here to enter text.	
RFQ reference:	Click or tap here to enter text.	Date: Click or tap to enter a date.

Company Profile

Item Description	Detail
Legal name of bidder or Lead entity for JVs	Click or tap here to enter text.
Legal Address, City, Country	Click or tap here to enter text.
Website	Click or tap here to enter text.
Year of Registration	Click or tap here to enter text.
Legal structure	Choose an item.
Are you a UNGM registered vendor?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, insert UNGM Vendor Number
Quality Assurance Certification (e.g. ISO 9000 or Equivalent) (If yes, provide a Copy of the valid Certificate):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Does your Company hold any accreditation such as ISO 14001 or ISO 14064 or equivalent related to the environment? (If yes, provide a Copy of the valid Certificate):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Does your Company have a written Statement of its Environmental Policy? <i>(If yes, provide a Copy)</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Does your organization demonstrate significant commitment to sustainability through some other means, for example internal company policy documents on women empowerment, renewable energies or membership of trade institutions promoting such issues <i>(If yes, provide a Copy)</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Is your company a member of the UN Global Compact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Bank Information	Bank Name: Click or tap here to enter text. Bank Address: Click or tap here to enter text. IBAN: Click or tap here to enter text. SWIFT/BIC: Click or tap here to enter text. Account Currency: Click or tap here to enter text. Bank Account Number: Click or tap here to enter text.			
Previous relevant experience: 3 contracts				
Name of previous contracts	Client & Reference Contact Details including e-mail	Contract Value	Period of activity	Types of activities undertaken

Bidder's Declaration

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Requirements and Terms and Conditions: I/We have read and fully understand the RFQ, including the RFQ Information and Data, Schedule of Requirements, the General Conditions of Contract, and any Special Conditions of Contract. I/we confirm that the Bidder agrees to be bound by them.
<input type="checkbox"/>	<input type="checkbox"/>	I/We confirm that the Bidder has the necessary capacity, capability, and necessary licenses to fully meet or exceed the Requirements and will be available to deliver throughout the relevant Contract period.
<input type="checkbox"/>	<input type="checkbox"/>	Ethics: In submitting this Quote I/we warrant that the bidder: has not entered into any improper, illegal, collusive or anti-competitive arrangements with any Competitor; has not directly or indirectly approached any representative of the Buyer (other than the Point of Contact) to lobby or solicit information in relation to the RFQ ;has not attempted to influence, or provide any form of personal inducement, reward or benefit to any representative of the Buyer.
<input type="checkbox"/>	<input type="checkbox"/>	I/We confirm to undertake not to engage in proscribed practices, , or any other unethical practice, with the UN or any other party, and to conduct business in a manner that averts any financial, operational, reputational or other undue risk to the UN and we have read the United Nations Supplier Code of

Yes	No	
		Conduct : https://www.un.org/Depts/ptd/about-us/un-supplier-code-conduct and acknowledge that it provides the minimum standards expected of suppliers to the UN.
<input type="checkbox"/>	<input type="checkbox"/>	Conflict of interest: I/We warrant that the bidder has no actual, potential, or perceived Conflict of Interest in submitting this Quote or entering a Contract to deliver the Requirements. Where a Conflict of Interest arises during the RFQ process the bidder will report it immediately to the Procuring Organisation's Point of Contact.
<input type="checkbox"/>	<input type="checkbox"/>	Prohibitions, Sanctions: I/We hereby declare that our firm, its affiliates or subsidiaries or employees, including any JV/Consortium members or subcontractors or suppliers for any part of the contract is not under procurement prohibition by the United Nations, including but not limited to prohibitions derived from the Compendium of United Nations Security Council Sanctions Lists and have not been suspended, debarred, sanctioned or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization.
<input type="checkbox"/>	<input type="checkbox"/>	Bankruptcy: I/We have not declared bankruptcy, are not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against them that could impair their operations in the foreseeable future.
<input type="checkbox"/>	<input type="checkbox"/>	Offer Validity Period: I/We confirm that this Quote, including the price, remains open for acceptance for the Offer Validity.
<input type="checkbox"/>	<input type="checkbox"/>	I/We understand and recognize that you are not bound to accept any Quotation you receive, and we certify that the goods offered in our Quotation are new and unused.
<input type="checkbox"/>	<input type="checkbox"/>	By signing this declaration, the signatory below represents, warrants and agrees that he/she has been authorised by the Organization/s to make this declaration on its/their behalf.

Signature: _____

Name: Click or tap here to enter text.

Title: Click or tap here to enter text.

Date:

ANNEX 3: TECHNICAL AND FINANCIAL OFFER - SERVICES

Bidders are requested to complete this form, sign it and return it as part of their quotation along with Annex 2 Quotation Submission Form. The Bidder shall fill in this form in accordance with the instructions indicated. No alterations to its format shall be permitted and no substitutions shall be accepted.

Name of Bidder:	Click or tap here to enter text.	
RFQ reference:	Click or tap here to enter text.	Date: Click or tap to enter a date.

Technical Offer

Provide the following:

- a brief description of your qualification, capacity and expertise that is relevant to the Terms of Reference.
- a brief methodology, approach and implementation plan;
- team composition and CVs of key personnel

Financial Offer

Quotation shall be submitted in USD or INR/Batch basis. (Each batch of training shall be for 5 days duration. Every day there would be 2 sessions. Each session will be of 2 hours' duration, with a total of 4 hours every day and total 20 hours during 5 days period)

Currency of Quotation: USD or Indian Rupees

Ref	Description of Deliverables	Price
1.		
2.		
3.		
4.		
5.		
Total Price		

Breakdown of Fees

Personnel / other elements	UOM	Qty	Unit Price	Total Price
Personnel				
e.g. Master Trainer	day			
Other expenses				

Other Costs: (please specify)				
Total				

Compliance with Requirements

	You Responses		
	Yes, we will comply	No, we cannot comply	If you cannot comply, pls. indicate counter - offer
Delivery Lead Time	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Validity of Quotation	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Payment terms	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Other requirements [pls. specify]	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.

I, the undersigned, certify that I am duly authorized to sign this quotation and bind the company below in event that the quotation is accepted.	
<i>Exact name and address of company</i> Company Name: Click or tap here to enter text. Address: Click or tap here to enter text. Click or tap here to enter text. Phone No.: Click or tap here to enter text. Email Address: Click or tap here to enter text.	Authorized Signature: Date: Click or tap here to enter text. Name: Click or tap here to enter text. Functional Title of Authorised Signatory: Click or tap here to enter text. Email Address: Click or tap here to enter text.

TOR FOR PROGRAMME 3 & 4 – SOLAR MINI-GRID & SOLAR ROOFTOP

1. Introduction

International Solar Alliance is looking to engage a Training Institute to conduct training on Solar Rooftops & Solar Mini-grids for officials from member countries in English language.

The training will be provided on virtual mode (Zoom/MS Team/ any other virtual platform) with simultaneous translation facility from English to French or Spanish.

2. Background

The International Solar Alliance (ISA) is an action-oriented, member-driven, collaborative platform for increased deployment of solar energy technologies as a means for bringing energy access, ensuring energy security, and driving energy transition in its member countries.

The ISA is guided by its 'Towards 1000' mission which aims to mobilise USD 1,000 billion of investments in solar energy solutions by 2030, while delivering energy access to 1,000 million people using clean energy solutions and resulting in installation of 1,000 GW of solar energy capacity. The training programme is one of the steps towards achieving ISA mission.

The objective of this training is to update knowledge of officials from energy/renewable energy department/electric utility/regulator and others with similar background on the latest development of Solar Rooftops & Solar Mini-grids. The training program would enable them to assess technical feasibility and financial viability of setting up Solar Rooftops & Solar Mini-grid projects, as well as analyse various financial instruments, government schemes and policies, tools, business models and risk mitigation mechanisms that are being adopted for deployment of Solar Rooftops & Solar Mini-grids.

3. Methodology and scope of work

Under this section, the proposed methods for organizing the trainings on solar roof top will be identified. Under the supervision and in close co-operation with the ISA the training institute / organization will implement the following tasks:

- Total number of batches under this contract will be twelve (12) for the period of 1 year. Each batch of the training module is expected to be of 30 participants approx.
- Each batch of training shall be for five days duration (from Monday to Friday). Every day there would be two sessions. Each session will be of 2 hours duration, with a total of 4 hours every day and total 20 hours during 5 days period.

- Date and time of training batches will be informed by ISA from time to time for the one-year period.
- The medium of the training program will be in ENGLISH language and there will be facility for French and / or Spanish Interpretation, which shall be arranged by ISA.
- The mode of the training shall be virtual and online platform shall be Zoom or MS Teams which shall be provided by ISA.
- The tentative agenda and topics of the proposed online training program is placed at Annexure-I.
- Participants shall be arranged and informed by ISA Secretariat to the selected training institute / organization.
- The presentations of the training course shall be submitted by the Training Institute / Organization for approval of ISA.
- The course content has to be customized according to the Region of the participants.
- Videos and Graphical presentations of scientific principles, engineering, specialized activities and installation practices should also be included in Training Course.
- A report of each training programme has to be submitted to ISA within two days after the completion of the Training Programme.
- Presentations made during the Training Program will be shared with the participants by the training institute / organization every day.
- Evaluation and feedback will be carried out after the last session (sheet to be filled by the participants).
- The training institute / organization shall also provide certificate to the participants.

4. Consultancy Competencies, Experience and Skill Requirements:

- The training shall be imparted by 1 Master trainer and a pool of expert trainers (minimum 2 and maximum 3), dedicated for the proposed training. Master Trainer and the expert trainers should have minimum qualification of engineering graduation or post-graduation in science with at least 6 years of experience in the Renewable Energy Sector and 3 years of experience in online solar training.
- Training Institute / organization should have in-house infrastructure for conducting on-line trainings with seamless internet facilities with audio video provision and uninterrupted power supply.
- Training Institute / organization should have their Moodle platform.

The Online training programme will be coordinated by Mr RK Jain, on behalf of ISA Secretariat.

Five days Training Program on Solar Mini Grid & Solar Rooftop

Training Agenda

Date:

Duration: 5 days / 20 hrs.

Mode of training: Online

Batch Size: --- Participants

Day-1		
Time	Topic	Session Outline
1.5 hrs	Session-1 : Introduction	<ul style="list-style-type: none"> • Introduction of ISA • Overview of Solar Energy Technologies, World Energy scenario and Energy Markets • Advantages of Solar Energy technologies • Solar PV Applications & typical systems • Overview of world deployment of Solar PV Mini-Grids and Solar Rooftops • Overview of components and Sub-systems of Solar PV Mini-Grids and Solar Rooftops
30 mins	Q & A Session	
1.5 hrs	Session-2 : Properties of Light & Solar Radiation Basics of Semiconductors & Solar Cells	<ul style="list-style-type: none"> • Basics of Light • Solar Radiation • Terrestrial Solar Radiation • Solar Irradiance & Radiation Data • Relative movements of Earth & Sun • Semiconductor Materials & Properties • P-N Junction and Characteristics • Solar Cell Structure & Operation
30 Mins.	Q & A Session	

Day-2		
Time	Topic	Session Outline
1.5 hrs	Session-3 : Solar Module Characterization	<ul style="list-style-type: none"> • Design of Solar Modules • Basic Current-Voltage (I-V) Curves • Standard Test Conditions (STC) • Module Output Curves • Environmental Effects on module Output potential • Module Interconnection Effects • Interaction of modules with Battery/Motor/Resistive Load • Standard Test Conditions (STC) • Diodes in PV Systems • Different PV Technologies and their comparison • Monitoring and regular maintenance of Solar Modules
30 Mins.	Q & A Session	
1.5 hrs	Session-4 : Battery Storage in PV Systems	<ul style="list-style-type: none"> • Purpose of Batteries in PV • Battery Basics • Battery Design & Construction • Battery Types and Classification • Battery Characteristics • Monitoring of battery status • Safety measures for Battery Operation • Regular maintenance of batteries and its importance • Lead -Acid Batteries & Their Types • Lithium-Ion batteries & Their Types • Introduction to other types of Batteries
30 mins	Discussion	

Day-3		
Time	Topic	Session Outline
1.5 hrs	Session-5 : Electronics in PV Systems	<ul style="list-style-type: none"> • Purpose of Charge Controllers • Functions of Charge Controllers • Types of Charge Controllers • Maximum Power-point Tracking (MPPT) • Specifications of Charge Controllers • Basics of Solar Inverters • Types of Solar Inverters • Specifications of Solar Inverters • Concept of Power Conditioners (PCUs)

		<ul style="list-style-type: none"> • Grid connected Vs Standalone Inverters • Inverter Protections • Various International Standards of Inverters • Monitoring of readiness and accuracy of electronic of PV systems • Maintenance of Electronics of PV Systems
30 mins	Q & A Session	
1.5 hrs	Session- 6 : Mounting Systems & BOS	<ul style="list-style-type: none"> • Introduction of MMS • Types of Mounting Systems: Fixed, Adjustable and Tracking types • Wind Load Calculations for Solar arrays • Roof Mounted Systems • PV Array Row Spacing, and tilting • Ground Mount Systems • Maintenance of MMS • Introduction of BOS • Array Junction Boxes • PV Main Disconnection Devices • Cabling • Array String protection and disconnection switches. • Lightening Protections • Earthing • Metering • Overall System Protections • System Monitoring
30 mins	Q & A Session	

Day-4		
Time	Topic	Session Outline
1.5 hrs	Session-7 : System Sizing & Pre-installation Activities	<ul style="list-style-type: none"> • Introduction • Sizing of Solar Array • Sizing of Battery • Sizing of Charge Controller • Sizing of Inverter • Sizing of DC and AC cables • Design of DC and AC distribution Boxes • Software based system sizing. • Estimating System Yield and Performance • Designing of Power Distribution Network System • Site Assessment • Choosing a Site-specific Module Mounting Structure • Planning distribution of output AC Power

30 min	Q & A Session	
1.5 hrs	Session-8 : Installation, Commissioning , Operation & Maintenance of Mini- grids & Solar Rooftops	<ul style="list-style-type: none"> • Applicable International/local Standards • Equipment Selection – Warranties • Installation Preparation • Equipment Installation • Monitoring Equipment • Power Distribution Network • Pre-commissioning Checks • Step-by -step Commissioning of Sub-systems • Commissioning of Complete system • Performance Measurement Calculations (PR, CUF etc) • Commissioning test sheets & Documentation • Do's and Don'ts of O&M • System Maintenance and its importance for sustenance of the Mini Grids & Rooftops • Troubleshooting
30 mins	Q & A Session	

Day-5		
1.5 hrs	Session-9: Smart Grids Occupational Health &Safety	<ul style="list-style-type: none"> • Introduction to Smart Grids • Smart meters • Net and Gross Metering • On-site Risk assessment • Safety related to individual PV components • Safety Hazards • Safety Equipment's • Site Safety • First Aid • Capacity building of Operators and Consumers
30 mins	Q & A Session	
1.5 hrs	Session – 10 Overview of Business Models in Solar Mini-grids and Solar Rooftops	<ul style="list-style-type: none"> • Business Models in Solar Mini-Grids • Case Studies in Solar Mini-Grids • Business Models in Solar Rooftops • Case Studies in Solar Rooftops • Life Cycle costing of Solar Minigrids and Solar Rooftop Systems
30 mins	Evaluation & Feedback	