

Request for Quotation for the service provision of piloting laboratory testing on walk-in cold rooms

CLASP is seeking a test laboratory partner to conduct pilot laboratory testing on a walk-in cold room (WICR) and to provide feedback on the lab-testing procedures. The main objective is to pilot laboratory testing on a WICR with the test method that VeraSol is developing as a step to verify and improve the test procedure. The test results would inform development of WICR baseline performance values and enable suppliers to conduct self-assessment against the baseline.

With this Request for Quotation (RFQ), CLASP is seeking cost estimates from interested laboratories to conduct the pilot testing.

DUE: 16 December 2024 at 23:59 CET QUESTIONS: vnkooyio@clasp.ngo

About CLASP

CLASP serves at the epicenter of collaborative, ambitious efforts to mitigate climate change and in the global movement for clean energy access, through appliance efficiency. Our mission is to improve the energy and environmental performance of the appliances & equipment we use every day, accelerating our transition to a more sustainable world. We work hand-in-hand with governments, experts, industry, consumers, donor organizations and others to propel policies and markets toward the highest quality, lowest resource-intensive appliances possible.

CLASP has worked in more than 100 countries since inception in 1999. CLASP is headquartered in Washington, DC, with teams in China, Europe and the United Kingdom, India, Indonesia, and Kenya. We are [mission-driven](#) and committed to a culture of diversity, transparency, collaboration, and impactful work. See our [Team Page](#) to learn more about us.

[VeraSol](#) is a quality assurance program operating in the off-grid solar sector aiming at prioritizing the accessibility and affordability of durable, good-quality products. Managed by CLASP in partnership with the Schatz Energy Research Center, the program oversees standards development, product testing, quality verification, and technical assistance.

Introduction and Background

Walk-in cold rooms (WICR) are an important part of cold supply chains used in different sectors, maintaining product quality from source to market. Agricultural value chains in particular utilise WICR to store produce, dairy, meat, fish, and flowers, and reduce post-harvest loss of high-value crops. Recently, deployment of WICR to support agriculture in weak- or off-grid and rural environments has accelerated. However, commercial markets remain nascent and information about the performance and capabilities of WICR products tends to be limited and non-comparable. A consistent approach is needed to help WICR procurers assess whether cold rooms are appropriate or adequate for the use case, but no quality system yet exists to cover such equipment.

To ensure that better WICR products suitable for these markets are encouraged, developed, and promoted, a WICR quality assurance framework is under development by CLASP, working through the VeraSol program, and World Bank ESMAP. This will define a standardized testing process, develop a standardized specification reporting system, set recommended standards for WICR product quality, and thus support the deployment of good quality cold storage equipment that is

appropriate for the target markets.

A key piece of this framework is a defined method for laboratory testing. VeraSol, in cooperation with an expert group of advisors, has drafted a test method for WICR in the Global South to measure key performance parameters. Now, pilot testing in a lab setting is valuable to verify and refine the draft test method.

CLASP is seeking a contractor to carry out the lab testing pilot, results reporting and analysis, and subsequently provide recommendations for improvement of the test method. This Request for Quotation provides an assumed approach to the pilot lab testing for the purposes of estimating a price with the test lab. Final details of the tests will be agreed upon between CLASP, the awarded contractor, and the expert group of advisors, with results to be discussed afterwards to further develop the test method.

The primary objectives of the lab testing pilot are:

1. To verify and improve the draft test method for WICR;
2. (For VeraSol) To set benchmarks for cooling capacity and insulation efficacy;
3. To help calibrate the mathematical model, which will be used for future ongoing evaluation of WICR;
4. To inform any future certification program that may opt for laboratory evaluation of WICR; and
5. To use data generated from laboratory testing to inform subsequent field testing.

With the RFQ, CLASP is seeking cost estimates from interested laboratories to carry out the pilot lab testing for one WICR using the draft test method developed by the VeraSol team, and to provide recommendations on improving the draft test method.

Timeline

Expected Timeframe: Jan-March 2025 (negotiable)

Deadline for Application: 16 December 2024 at 23:59 CET

Application includes submitting the quotation per the instructions below.

Deadline for Questions: 03 December 2024 at 23:59 CET

All questions must be addressed in English to Veronica Nkooyio at ynkooyio@clasp.ngo We request all inquiries be made to this e-mail address and not by phone.

Scope of Work

VeraSol is seeking a laboratory partner to conduct pilot tests in a thermal chamber on a WICR using the test method that the VeraSol team developed. The assignment is estimated to require between 9 and 12 days of testing in a thermal chamber, plus preparatory work not involving the test chamber, and post-testing reporting.

Test method

The quotation should assume that the test equipment and testing process will be as specified in

the relevant parts of document “Walk in cold rooms for horticultural and agricultural produce in tropical climates: temperature, cooling capacity and energy performance tests (V3 of 17 November 2024)”. The tests described in the test method in sections 8.1, 8.2, 8.3 and 8.4 are to be carried out in the pilot tests – see ‘Assumed test sequence’ section below.

WICR to be tested

The quotation should assume the following:

- Only one WICR will be tested at this stage.
- The WICR will be a prefabricated kit (‘assemble on site’) WICR of volume around 12-40 cubic metres with a vapour compression refrigeration unit. The WICR will match closely the types of WICR used in development projects in the tropical belt (noting that these are often powered by solar photovoltaics or hybrid power sources).
- The WICR will be specified, leased, and delivered to the lab by the VeraSol team for two weeks (extendable) at no cost to the lab and collected afterwards. The WICR will not have thermal storage equipment included. However, some experimentation of temperature measurement with thermal storage cells is anticipated. The rated ambient temperature(s) and storage temperature(s) as per test method section 4.1 will be communicated to the lab, along with the temperature pull-down (design purpose) rating(s) as per section 4.2.
- Optional test: If prioritised tests proceed rapidly enough, access to the thermal chamber remains open and budget of the agreed contract allows it, the same WICR unit may be tested at more than one combination of rated ambient and rated storage temperatures for one or more of the tests.

Resources provided by VeraSol

1. Complete prefabricated WICR as above including refrigeration unit, delivered as a kit to the lab
2. Technician staff to assemble the WICR and disassemble afterwards, responsible for ensuring that the WICR is running satisfactorily before testing begins (CLASP’s aim is for the staff to be from the WICR provider)
3. Objectives, plan, and timeline for the testing process as agreed with the expert group of advisors – with flexibility for the lab team to adjust as needed depending on what is found
4. Definition of the assumed rated ambient temperature, storage temperature, and temperature pull-down rating (design purpose) of the WICR to be tested.

Resources to be provided by the test lab

Hardware and logistics services:

- (a) Safe storage of the WICR kit (and possibly a flatbed trailer) from a few days before assembly begins
- (b) Use of ATP test chamber and the instrumentation, fans, heaters and sensors as specified in section 5 and 6 of the draft test method (similar to those typically used for ATP testing, plus some additions)
- (c) A structure – for example by use of a flatbed trailer and/or base plate – on which to assemble the WICR and transport it into and out of the test chamber
- (d) Level covered space in which the WICR can be assembled and later disassembled
- (e) Means to move any support structure and WICR into and out of the chamber
- (f) Bottles, crates, and set up of the dummy test load as per section 5.3, including M-bottles
- (g) Safe storage of the WICR until collected a few days after testing ends
- (h) Facility to hold a meeting of the expert group of advisors during a half day of the testing programme to discuss findings and problems. This would be offered online, but it is possible that one to three members may wish to attend in person for the day. Lab to provide a meeting room with video link, tour of the test chamber, presentation of findings, and key issues to date.

Staff resources:

- (i) One day staff effort of planning and preparation of the testing plan in the 3 or 4 weeks prior to testing, working with VeraSol and the expert group of advisors
- (j) Technician for 4 hours during assembly of the WICR to liaise with staff provided by VeraSol and/or the WICR supplier and advise on lab/location related issues, and help troubleshoot any problems
- (k) Set-up of the WICR and its test equipment in the test chamber and removal after testing
- (l) Preparation of the dummy load and its sensors
- (m) Supervisory and technician staff as needed for carrying out the testing sequence during 9 to 12 full days of set up and testing in the thermal chamber (assumed basic 8 hours per day, some tests running after hours)
- (n) Patience, flexibility, and resourcefulness to deal with problems during tests to get maximum test method learning out of the process
- (o) Staff time to prepare test reports and other deliverables at the end of the testing and to participate in the Test Method Expert Group meeting.

Assumed timeline of the test (overview)

Activity in the test chamber will cover 9 to 12 working days, with work before and after that does not require the chamber (preparation before and dismantling of the equipment afterwards). Time in the chamber is assumed as one day for set up, then 7.5 to 10.5 clear working days of testing inside the chamber before removal and disassembly on the afternoon of the final day of chamber use.

Day -2: Delivery of WICR and equipment above (will happen a few days before start).

Day -1: Technicians working for the WICR supplier or CLASP carry out assembly of the WICR on the base plate and/or trailer and test run the refrigeration unit. Lab contractor may set in place some sensors or other test equipment if/as possible in the WICR. Ensure WICR is running properly before starting Day 1 (allow spare days).

At any time before (or shortly after) the WICR is installed in the chamber:

- i) Measure the gross volume of the WICR according to section 3.1.1.
- ii) Estimate the heat leakage rate for the WICR enclosure according to section 4.3
- iii) Calculate the representative heat load according to section 4.4
- iv) Prepare the WICR for test as per section 6.1
- v) Prepare a bill of materials for the WICR as per section 7
- vi) Prepare dummy load including M-bottles according to section 5.3 stabilising temperature of the dummy load and M-bottles, including the loading plan.

Day 1: Move WICR into the test chamber, set it and up and check that the WICR is fully functioning. Allow the WICR to stabilise at the required ambient temperature in the chamber. Prepare representative produce (dummy) load and stabilise it at rated ambient temperature.

Day 2: Carry out substantially empty pull-down test according to section 8.1 and air temperature achievement test.

Day 3 and day 4: Add representative produce (dummy) load and carry out dummy load pull-down test (8.2).

Day 5 and day 6: Remove dummy load. Install heaters. Carry out steady state effectiveness test with heat load (8.3).

Day 7 and day 8: Carry out the autonomy test as per section 8.4.

Day 9: Spare time for overrun and remove WICR from test chamber.

(Days 10 to 12 are non-planned buffer days in case of problems or for additional experimentation by agreement, for example at different ambient or storage temperatures)

Day +1: (Outside of the thermal chamber) Disassembly and removal of test equipment from the WICR.

Day +2: Technicians working for the WICR supplier or CLASP disassemble WICR; collection of WICR kit from lab (may occur a few days after finish).

Deliverables

1. Conduct the tests as per the methodology provided
 - Adapt ATP test report and collaborate with VeraSol to develop a standard test report template to document product testing results
2. Participation in a webinar with the test method expert group
 - Develop a presentation of key findings to date

- Deliver a one-hour presentation and participate in a discussion with the expert group at an online meeting to be held in the month following the test period.
3. A summary report on key findings and recommendations for further improvement of the test method
- Document how the testing process went, results and discussions held from the lab testing process
 - Develop at least 5 pages of discussion and recommendations, plus photos and diagrams as useful to explain points made.

Eligibility Criteria

Interested laboratories should meet the following minimum criteria:

- Able to provide availability during the specified timeframe of a thermal chamber suitable for testing of refrigerated containers according to the UN ATP agreement test methodology¹, or WICR of equivalent size, along with experienced technical staff to carry out such testing.
- Experience of developing and optimising testing methodologies for insulated enclosures with vapour compression cooling systems equivalent in size and nature to typical WICR.
- Either accredited by the relevant national/international accreditation board for testing and calibration laboratories to closely relevant test standard(s) which must be specified in the proposal, or recognised by UN ECE as a competent testing station for ATP testing, or both.

Quote Submission

Submit via email

Interested parties should submit their proposals electronically, in English, via this [form link](#) (preferably in PDF format); by **16 December, 2024** as specified below.

The files should be named as per the following example:

[CONTRACTOR_NAME] _ RFQ YYYY-MM-DD

Request for Quotation

CLASP is asking that interested laboratories prepare and submit a quotation for delivery of the work as specified in the RFQ assuming 12 days of testing in the thermal chamber and provide some supporting information:

- Test laboratory profile, including relevant accreditation and/or UNECE recognition and a summary of experience with testing refrigerated containers and/or WICR or similar products (and the test methods used).
- A summary of the qualifications and relevant experience of key personnel that will be engaged in the assignment, along with a description of each person's role.
- An indication of when your laboratory would be available to conduct this testing

¹ Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for Such Carriage. See <https://unece.org/text-and-status-agreement>.

- Total fee (in USD), outlining testing cost and duration for one WICR sample as per the RFQ.
- Day rate and timeline for any additional desk-based consultative activities over and above what is specified in this RFQ, if necessary for development of deliverables and maximizing learning for the proposed test method.
- An estimate of the total staff days as required for the RFQ work, broken down by staff type if appropriate. This is to assist CLASP with understanding and comparability of quotations.
- If applicable, an indicative thermal chamber rental fee per day including technical support and test equipment. This is to form the basis for discussion and agreement if the number of days of chamber use has to be adjusted (could be fewer or additional days, depending upon budget, progress, and difficulties encountered).
- Please indicate any logistical challenges or constraints relevant to the anticipated tasks and timeline, and how these could best be managed by agreement.

Please provide a break-down of the fees based on the tables below.

Lab Testing Cost			
Item	Services	Estimated Personnel Time (person-days ²)	Cost in USD (\$)
1	Pre-testing preparation		
2	Empty pull-down test		
3	Dummy load pull-down test		
4	Steady state effectiveness test with heat load		
5	Autonomy test		
6	(Additional Testing if time allows) Different ambient or storage temperatures		
7	Disassembly of WICR		
8	(If applicable) Thermal chamber and test equipment rental fee		
Lab Testing Cost Total (\$)			

² Assuming 8 hours per work day

Consultation Costs: A breakdown of total anticipated staff days to generate deliverables for this project

Name	Title/Position	Person-Days	\$/day
Consultation Cost Total (\$)			

Project Cost Summary

Category	\$USD
Lab Testing Cost	
Consultation Cost	
Project Total	

Please respond by **16 December, 2024** with your quote, relevant documentation, and links to your accreditation certificates on your website.

CLASP will share the full draft test method document alongside the RFQ.

CLASP looks forward to reviewing your responses and would like to thank you in advance for your participation in this Request for Quotation. CLASP will notify all respondents who submit quotations when a decision has been made.

CLASP is an equal opportunity employer that celebrates diversity and are committed to creating an inclusive environment for all employees. CLASP's goal is to be a diverse workforce that is representative, at all job levels, of the citizens we serve. CLASP complies with all federal, state and local employment law in the countries we operate and is committed to providing equal opportunity for all employees and applicants without regard to race, color, religion, national origin, sex, age, marital status, sexual orientation, gender identity or expression, pregnancy, disability, political affiliation, personal appearance, family responsibilities, matriculation, genetic information, military or protected veteran status, credit information or any other characteristic protected under federal, state or local law.

Each person is evaluated based on personal skill and merit. CLASP's policy regarding equal employment opportunity applies to all aspects of employment, including recruitment, hiring, job assignments, promotions, working conditions, scheduling, benefits, wage and salary administration, disciplinary action, termination, and social, educational and recreational programs.