



Guillermo Barrios del Valle <gbv@ier.unam.mx>

Reviewer Invitation for A filling rig for liquid and gas working fluids for two-phase thermal management systems

1 message

HardwareX <em@editorialmanager.com>

Tue, Apr 30, 2024 at 9:10 AM

Reply-To: HardwareX <support@elsevier.com>

To: Guillermo Barrios del Valle <gbv@ier.unam.mx>

Ref.: Ms. No. **OHX-D-24-00002**

A filling rig for liquid and gas working fluids for two-phase thermal management systems

HardwareX

Dear Dr. Barrios del Valle,

I would like to invite you to review the above referenced manuscript for HardwareX. To maintain our journal's high standards we need the best reviewers, and given your expertise in this area I would greatly appreciate your contribution.

I kindly ask you to give this review invitation the same consideration that you would want one of your own manuscripts to receive. Please note: Reviews are subject to a confidentiality policy, for more information please visit:

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If possible, I would appreciate receiving your review in **14** days. You may submit your comments online at the above URL. There you will find spaces for confidential comments to the editor, comments for the author and a report form to be completed.

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With kind regards

Tobias Redlich
Associate Editor

Please also note that authors have been invited to convert their supplementary material into a Data in Brief article (a data description article). You may notice this change alongside the revised manuscript. You do not need to review this but may need to look at the files in order to confirm that any supporting information you requested is present there.

The abstract is:

Two-phase cooling devices are used to remove and dissipate heat from high power-density electronic systems to maintain

them within their operating temperature limits. The manufacture of these devices, such as heat pipes, thermosyphons or vapour chambers, involves firstly removing any internal air or non-condensable gases before charging with the required volume of working fluid. This paper presents detailed designs and operating instructions for a single bench-top station for use in a laboratory environment for the vacuum evacuation, degassing and charging of these devices. Two configurations allow for the filling of fluids which are either liquids or gases at standard temperature and pressure conditions. For liquids, the dispensed volume can be measured directly on an integrated burette, while the method of vapour transfer is used for gases.

The hardware was demonstrated by filling multiple thermosyphon devices with a number of common working fluids used in two-phase systems, including water, acetone and ammonia. It was shown to deliver precise and repeatable filling volumes with average differences compared to target volumes of 1.7% and 10.5% for liquids and gases respectively. The design is intended to be highly customisable where its size can be modified to accommodate filling volume requirements for different applications.

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