

Mississippi State University
Notice of Proposed Sole Source Purchase
223-14

Mississippi State University anticipates purchasing the item(s) listed below as a sole source purchase. Anyone objecting to this purchase shall follow the procedures outlined below.

1. Commodity or commodities to be purchased (make, model, description):

A particle-to-supercritical carbon dioxide (sCO₂) heat exchanger is to be fabricated for high pressure and high temperature testing environment under the DOE project at MSU. This heat exchanger involves additively manufactured lattice frame materials (to be provided by MSU), which will be connected to stacks of etched minichannels and diffusion bonded. Heat exchanger is to be designed as per ASME BPV Code VIII, Div. 1. This is a highly customized heat exchanger designed from the research project at MSU, and there are no existing items that can be purchased from the existing company.

2. Explanation of the need to be fulfilled by this item(s), how is it unique from all other options, and why it is the only one that can meet the specific needs of the department:

This is a critical component to complete the DOE project. The project in its final phase is required to demonstrate the enhanced heat exchanger effectiveness between particle-to-sCO₂ heat exchanger.

The fabrication of this product requires knowledge of high-pressure vessel design, etching process, diffusion bonding process, and heat exchanger design expertise to fulfil the design and operating conditions. We have communicated many companies to has expertise to complete the fabrication work within the budget constraints. ComPrex, LLC is the only company who has the required expertise and is willing to work with us to provide their service.

3. Name of company/individual selling the item and why that source is the only possible source that can provide the required item(s):

We want to fabricate a highly customized heat exchanger with a specific design which results from the research activities carried so far in this project. The customized heat exchanger is intended for Concentrating Solar Power (CSP) application where the heat exchanger plays a vital role and enhancement in its performance is imperative to meet the US Department of Energy's goal of Levelized Cost of Electricity to be lower than \$0.05/kwh. The only company who can currently fabricate this heat exchanger is ComPrex, LLC.

4. Estimated cost of item(s) and an explanation why the amount to be expended is considered reasonable:

The estimated cost of heat exchanger (product) fabrication and shipment is expected to be \$30,000 with a lead time of 14 weeks. This cost covers engineering analysis and design, materials required at different stages of fabrication, etching & diffusion bonding, hydrostatic or pneumatic testing as per ASME codes, headers for particle channel and sCO₂ channel (both inlet and outlets), packaging for shipment.

5. Explanation of the efforts taken by the department to determine this is the only source and the efforts used to obtain the best possible price:

We have made substantial efforts in determining a suitable vendor which can provide us our designed heat exchanger. We worked with different vendors such as Vacuum Process Engineering, PVA Industrial Vacuum Furnaces and Conard corporation, CompRex, and figured that only CompRex's approach and expertise could provide us the heat exchanger we need.

Any person or entity that objects and proposes that the commodity listed is not sole source and can be provided by another person or entity shall submit a written notice to:

Don Buffum, CPPO
Director of Procurement & Contracts
dbuffum@procurement.msstate.edu
Subject Line must read "Sole Source Objection"

The notice shall contain a detailed explanation of why the commodity is not a sole source procurement. Appropriate documentation shall also be submitted if applicable.

If after a review of the submitted notice and documents, MSU determines that the commodity in the proposed sole source request can be provided by another person or entity, then MSU will withdraw the sole source request publication from the procurement portal website and submit the procurement of the commodity to an advertised competitive bid or selection process.

If MSU determines after review that there is only one (1) source for the required commodity, then MSU will appeal to the Public Procurement Review Board. MSU will have the burden of proving that the commodity is only provided by one (1) source.