

Invitation of quotations

Ref: AE/SaM/2016/02

Department of Aerospace Engineering
Indian Institute of Technology Kanpur

February 15, 2016

Quotations are invited for the following items in the *Advanced combustion & acoustics laboratory*, affiliated to the Department of Aerospace Engineering, Indian Institute of Technology Kanpur.

1 Subject: Scientific camera along with the accessories to be employed to perform particle image velocimetry technique

With reference to the subject mentioned above, you are invited to submit the quotation in a sealed cover (technical and financial bid should be in separate sealed envelope) in order to reach us on or before **2 PM 01/03/2016** in the form of a hard copy to the address mentioned below. The following are the technical details of the required item.

2 Technical specification

The technical details for the required scientific camera and its accessories are as follows. Further all the items should be able to operate in the power supply available in India (single or three phase). Any additional unit, if required should also be indicated.

2.1 Camera

- Minimum resolution: 5 Mega pixel
- Color: gray scale, minimum 12 bit
- Should be able to operate in particle image velocimetry (PIV) mode with minimum exposure time interval of 500 ns
- Maximum recording speed should be above 16 fps for normal mode and 8 fps for PIV mode
- Should have provisions for
 - external trigger signal through TTL pulse
 - camera link base interface
 - electronic shutter control through software
- Power adapters

2.2 Accessories

2.2.1 Camera link frame grabber

- This unit should provide interface between the camera and computer
- This unit should be able to be mounted in a conventional computer
- This unit should contain all the cables necessary for connections/cables
- Necessary software/library should be included for image capture, enhancement, analysis etc.

2.2.2 Lens

- 90 mm f/2.8 professional optical lens
- Variable aperture is required
- Should fit with the above described camera
- Should include appropriate mount adapters, if required

2.2.3 Synchronization unit

- This unit is required to synchronize the camera, laser for capturing images and operating the laser in PIV mode
- This unit should contain the following provisions
 - Control from computer
 - At least 7 independent output channels
 - At least 1 input channel
 - Minimum resolution of 250 picoseconds or less
 - Communication preferably through USB
 - Delay 0-5000 s
 - Pulse width 10 ns to 1000 s
 - Resolution 0.25 ns (at least)
 - RMS jitter ≤ 50 pico seconds
 - Output TTL: 0-5 V
 - External trigger: DC to 5 MHz

2.2.4 PIV image capture module

- This module should be able to control and synchronize camera, laser and the synchronization units
- Further provisions for external trigger signal and phase locked measurements should be available
- The module should be able to process the following variety of images
 - Image type: B/W, Grey, 8-16 bit
 - File formats: BMP/JPG/TIFF/AVI
- Should be able to store the capture images in RAM (random access memory) and then transfer to hard disk.
- Should be able to capture PIV image pairs
- Should work with *Windows* computer systems

3 Quantity

One quantity is required in each of above described items.

4 Terms and conditions

- All the above items should be successfully installed, commissioned and integrated with the existing PIV laser.
- Basic training must be provided to the students in IITKanpur for all the above items
- Warranty of at least 2 years must be provided
- Prices should include other additional charges, i.e. freight, insurance etc.
- Maximum educational discount should be shown explicitly in the quotation.

5 Contact

Please send the applications to the following address:

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