

All-India Institute of Medical Sciences
Ansari Nagar, New Delhi-29
(RESEARCH SECTION)

Ref. No. 07/Prop/Peadiatric/SKK/2019-20/RS

Dated: 10.06.2019

Subject: Purchase of High Speed Video Microscopy (HSVM), for the Deptt. of Pediatrics, AIIMS, New Delhi-29 on proprietary basis- Inviting comments thereon.

The request has been received from Dr. S.K. Kabra, Deptt. of Pediatrics, AIIMS to purchase the subject item from M/s Ammons Engineering, Michigan USA on proprietary basis. The proposal submitted by M/s Ammons Engineering, Michigan USA and Performa Invoice and Departmental PAC certifications are attached.

The above documents are being uploaded for open information to submit objections, comments, if any, from any manufacturer regarding proprietary nature of the equipment/item within issue of 15 days giving reference **No. 07/Prop/Peadiatric/SKK/2019-20/RS**. The comments should be received by office of Stores Officer (RS), Research Section at AIIMS on or before **25/06/2019 upto 12:00 p.m.**, failing which it will be presumed that any other vendor is having no comment to offer and case will be decided on merits.

STORES OFFICER (RS)

Encl: Related documents enclosed.

- 1. PAC Certificate enclosed.**
- 2. Performa Invoice**

Specifications for High Speed Video Microscopy (HSVM)

Use: It will be used to perform High Speed Video Microscopy to see frequency and pattern of cilia movements in children with suspected Primary Ciliary Dyskinesia.

Quantity required: One set consist of one each of (1) Inverted phase contrast microscope, (2) High speed video camera, (3) Software for video recording and analysis of cilia beat frequency and pattern, (4) Laptop, and (5) Uninterrupted power supply (UPS)

Total cost of all five components: approximate 22 lacs.

General specifications for all components:

- 1) The system should work in 5-35⁰C temperature and relative humidity of 20-90%.
- 2) It should operate on 230-250 Volts and 50 Hz AC power.
- 3) The manufacturer should have CE (European Conformity) OR US FDA certification.
- 4) It should have warranty of five years and CMC for 5 years after warranty.
- 5) All components should be compatible with each other to function smoothly.
- 6) It should be supplied with all accessories to run the system at installation.
- 7) Necessary consumables should be provided along with system to run at least 200 tests.
- 8) The supplier will provide inhouse training to use the system as intended.

Technical specifications for each component are as follows:

1. Inverted phase contrast microscope

- 1) Inverted Microscope should have bright field, darkfield and phase contrast option
- 2) It should have binocular, 45⁰ inclined tube, exchangeable and adjustable eyepieces withfield of view (FOV) 20 with trinocular head.

- 3) Should have rectangular stage with universal stage holder to accommodate all types of specimen like TERASAKI etc.
- 4) It should have integrated C-mount/optical mount for camera attachment.
- 5) Microscope should be compatible with provided camera.
- 6) It should have infinity corrected optical system with coarse and fine focus.
- 7) Manual 4 or more position nose piece with 10X, 20X, 40X, and 60X (dry) objectives.
- 8) Illuminated light source should be a 5W or better LED with controls for brightness, aperture.
- 9) It should have light intensity control for brightfield and phase-contrast.
- 10) It should have phase contrast slider (Linear/circular) for 2 or more position.
- 11) It should have provision for SD card for image storing as well as ports for connecting an external HDMI display without requiring a PC
- 12) It should have easily removable/interchangeable condenser and low stage height.
- 13) It should have full metal body and heavy base for stability and have superior rust free coating.

2. High speed video camera

- 1) It should have USB 3 interface.
- 2) It should have CMOS or better technology.
- 3) Resolution: 1280x1024 pixels or better.
- 4) Frame rate: 200 or more frames per second for full field
- 5) Should have C-mount for attaching to inverted microscope.
- 6) Should be compatible with supplied microscope, software and laptop.

3. Software for video recording and analysis of cilia beat frequency and pattern

- 1) Provision to enter patient details (name, id no., serial no. etc) and sample details.
- 2) It should have designed for video analysis of cilia beat frequencies and pattern.
- 3) Should be compatible with inverted microscope and laptop provided.
- 4) The video recording screen displays a live image from the video camera continuously.
- 5) The operator should be able to change the settings for the video camera, and immediately view the results of the changes on the screen.
- 6) A live video image should be updated continuously to allow for focusing and location of active cilia.
- 7) There should be option so that operator can select points or regions for analysis.
- 8) Displays the time of video recording.
- 9) Analysis should be possible in previously recorded videos.
- 10) It should be possible to pause the video display and step forward or backward in single frame mode. The frame rate and frame number should be displayed, along with the elapsed time from the start of the test.
- 11) In single frame mode, there should be option to export the image in a variety of formats (at least JPG, TIFF).
- 12) During analysis, the operator should be able to select a point, a rectangle, or a line for analysis.
- 13) It should be able to perform whole field analysis also.
- 14) Statistical quantities should be calculated for the frequencies of the selected points, including mean, standard deviation, and standard error.
- 15) All analysis results should automatically be exported to a spreadsheet compatible file (PDF and excel) for giving print reports or other analysis.

16) There should be provision to upgrade the software free of cost if new version available during warranty and CMC.

4. Laptop/Desktop

- 1) 2.0 or more GHz intel core i5 or higher processor
- 2) 8 GM RAM
- 3) 1TB or more hard drive
- 4) USB3 interface
- 5) Windows 7 or later
- 6) Screen size 17 inch or more
- 7) Screen resolution 1440x900 or more
- 8) It should be compatible with video recording software.

5. Uninterrupted power supply (UPS)

- 1) It should provide power supply for at 1 hour for above system.
- 2) It should have two or more output power plugs.

**All India Institute of Medical Sciences
Ansari Nagar, New Delhi - 110 029**

RESEARCH SECTION

PROPRIETARY/SPECIFIC BRAND GOODS CERTIFICATE

- | | |
|--|--|
| 1. Item/Type/Model No. required along with specification. | High Speed Video Microscopy (HSVM) System |
| 2. Is the item a spare parts attachment or accessory for existing equipment? | NA |
| 3. Name of the manufacturers/supplier of the item proposed by the Indenter. | M/s Ammons Engineering, Michigan USA |
| 4. Are they sole manufacturers/sold distributors of the item. | Yes |
| 5. Is there any other item with similar/ equivalent specification available in the market to meet the job requirement envisaged? If the answer is yes, why the same can't be procured. Demanding "officer should bring out comparative functional advantages/cost effectiveness of the recommended item from these offered by other. | No |
| 6. What were the efforts made to locate alternative source of supply or use other substitutes. | Internet Search |
| 7. Why open/limited tender can't be resorted to, for locating alter native source. | Certified by propriety certificate |
| 8. Are the proprietary items certifying that the rates are reasonable or not. | Yes rate are reasonable |
| 9. Any other justification for procuring item from single source. | Research purpose |

**Signature of Indentor
Demanding Officer**

**COUNTERSIGNER
Head of the Department
Dr. S. K. KABRA, MD**

I certify that the item at Sr. No. 1 above is required to be procured on single tender basis as the source of supply is definitely known/the specified brand proposed was advantageous in meeting our functional requirements and limited tender system could be dispensed with as they would serve no useful purpose in this particular case.

Strike out whichever is not applicable

Dr. Anant J...
MD, PhD, MANS, FRCP, FRCR
Professor & Head
Department of Pulmonary Medicine & Sleep Disorders

Dr. Ranjeet Lodha
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Assistant Professor
Department of Radiatics

Dr. Jitender Sodhi
Dr. Jitender Sodhi
Assistant Professor
Department of Hospital Administration
All India Institute of Medical Sciences
Ansari Nagar, New Delhi-110029

Quotation

AMMONS ENGINEERING

11375 NORTH WEBSTER ROAD
CLIO, MI 48420
(810) 687-4288 PHONE / FAX

May 9, 2019

Dr. Kana Ram Jat, MD, FCCP, MAMS
Assistant Professor,
Pediatric Pulmonology Division,
Department of Pediatrics,
All India Institute of Medical Sciences
New Delhi, India - 110029

Dear Dr. Jat:

Here is the quote for the Complete SAVA system. This quote includes a five year warranty.

SAVA System Description

The Sisson-Ammons Video Analysis (SAVA) system is specifically designed for video analysis of cilia beat frequencies. The system uses a high-speed video camera to record the motion of the cilia directly into the computer's memory. The system provides immediate analysis of the beat frequencies at user selected locations, during both recording and post-analysis. A very powerful feature of the system is whole field analysis, which analyzes every location within an image and provides statistical analysis of the frequencies over the entire field of view.

System Hardware

The following hardware is included with the SAVA system:

- Basler acA1300-200um USB3 video camera with 1280x1024 resolution and full frame rates up to 200 fps.
- USB3 cable to connect camera to computer. Computer must have USB3 port.
- Run-time license for NI Vision Development Module, which includes a license for NI Vision Acquisition Software.

Software Features

The Complete SAVA system software provides the following features:

Experiment Configuration

To set up an experiment, the operator can enter a description for each type of culture being examined, and the number of samples of each. These are combined to create a master list of samples to be recorded, which is used during video recording. The operator can also set a timer that records the amount of time elapsed since the start of the experiment.

If a different method of organizing experiments is preferred, minor modifications to the experiment setup will be made at no additional cost.

Video Recording

The video recording screen displays a live image from the video camera continuously. The operator can use pop-up menus to change the settings for the video camera, and immediately view the results of the changes on the screen. The video camera parameters that can be set by the operator are:

- Frame rate, up to 200 frames per second full field and 400 frames per second half field.
- Gain

Q1450R0



Dr. S. K. KABRA, MD
Professor
Department of Pediatrics

Dr. Anant Mohan
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Dr. Jitender Sodhi
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AMMONS ENGINEERING

- Number of frames acquired for analysis, up to 1024 frames.

Based on the video parameters selected by the operator, the following parameters are calculated and displayed:

- Video length in seconds.
- Maximum frequency that can be measured.
- Frequency resolution of the spectrum.

A live video image is updated continuously to allow for focusing and location of active cilia. The operator can select points or regions for analysis. Results for the current region are updated continuously. Once the operator locates a suitable area of cells, they press the record button, which stores several seconds of video to the hard drive, along with a date and time stamp and any operator comments.

Other features of the recording screen include:

- Plot of pixel intensity over time for the selected region.
- Plot of power spectrum of the pixel intensity for the selected region.
- Display of elapsed time since the experiment was started.
- List of samples that can be selected for recording.
- Histogram of the video image for selecting optimum light levels.
- Ability to auto-save at regular intervals.

Point Analysis

The operator is able to select any previously recorded video segment for analysis.

A portion of the video analysis screen is used to display the acquired video in a continuous loop. It is possible to pause the video display and step forward or backward in single frame mode. The frame rate and frame number is displayed, along with the elapsed time from the start of the test. In single frame mode, the option to export the image in a variety of formats is available.

During analysis, the operator can select a point, a rectangle, or a line for analysis. These regions are selected by clicking on the video display. A frequency display will immediately show the dominant frequency in this region. Once a region for analysis has been selected, it can be added to a list of stored measurement regions. The measurement regions can be selected for review and/or change later. Statistical quantities are calculated for the frequencies of the selected points, including mean, standard deviation, and standard error.

Whole Field Analysis

A powerful feature of the SAVA system is whole field analysis. The video image is divided into 4x4 pixel regions, and every region is analyzed automatically. The results of the analysis are displayed in several forms. Several intensity plots display the frequency distribution over the image and the relative magnitude of the intensity variations. The results can be limited to exclude frequencies and amplitudes outside range of reliable results. A histogram of the distribution of the frequencies is displayed, and statistical quantities are calculated, including the mean, standard deviation, and standard error.

An added advantage of whole field analysis is that the analysis process is entirely automated. When the operator selects to analyze all samples, each sample is loaded, analyzed, and the results are stored for quick retrieval and viewing.

All analysis results are automatically exported to a spreadsheet compatible file for convenient use in reports or other analysis. Minor modifications to the format of this file will be made at no additional charge.

Signature

Q1450R0

Dr. S. K. KABRA, MD
Professor
Department of Pediatrics



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Signature

डॉ. जितेंद्र सोधी / Dr. Jitender Sothi
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अखिल भारतीय आयुर्विज्ञान संस्थान, नई दिल्ली-110029
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Senior & Head ...



Customer Requirements

The following hardware will need to be provided by the customer:

- Computer requirements, minimum: 1.0 GHz dual core CPU, 4 GB RAM, 250 GB hard drive, USB3 interface, and Windows 7.
- Computer requirements, preferred: 2.0+ GHz dual core CPU, 8 GB RAM, 500+ GB hard drive, USB3 interface, and Windows 7 or later.
- Monitor resolution of 1440x900 or larger is required for proper operation. A 19" monitor or larger is recommended for clear viewing.
- An uninterruptable power supply (UPS) is also recommended to protect the computer from power surges and outages.
- Microscope with capability to attach a standard C-mount camera. A 0.5x camera mount is recommended for the camera image to match the microscope view.

Any publications based on data collected using this system should refer to the system within the text as "the Sisson-Ammons Video Analysis (SAVA) system" and reference the following paper:

Sisson JH, Stoner JA, Ammons BA, Wyatt TA. All digital image capture and whole field analysis of ciliary beat frequency. J Microscopy. 211:103-111.2003.

Startup

The software and hardware will be shipped to the customer. The customer is responsible for any customs expenses incurred. Assistance will be provided with the installation of the hardware and software via email or phone.

Project Cost

The cost for the Complete SAVA system will be \$10,500 USD. Any changes requested during the project that are not specifically mentioned in this quote will be considered a scope change, which may change the cost of the project.

Terms

An invoice for the entire cost of the software will be sent when the software is delivered. In your purchase order, please refer to quote Q1450R0.

Warranty

Any bugs or errors in the software will be fixed at no cost for five years, starting from the delivery date. The five year warranty also includes repairing or replacing the camera if it fails. The camera would need to be shipped to us for warranty repair/replacement.

Thank you for the opportunity to quote this project for you. If you have any questions, please contact me.

Sincerely,

Bee A. Ammons

Bruce A. Ammons, Ph.D.

Oh

[Signature]

[Signature]

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**AMMONS
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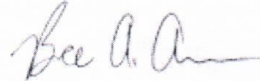
May 9, 2019

Dr. Kana Ram Jat, MD, FCCP, MAMS
Assistant Professor,
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To whom it may concern:


The SAVA system is a proprietary item to access ciliary beat patterns and ciliary beat frequency for high speed videomicroscopy for diagnosis of Primary Ciliary Dyskinesia.

Sincerely,



Bruce A. Ammons, Ph.D.




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