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Government of India  
Bhabha Atomic Research Centre  
Radiological Physics and Advisory Division

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October 03, 2017

05

**Invitation of Tender**

**Design, fabrication and supply of Online Aerosol Mass Analyzer (OAMA)**

Quotations are invited for design, fabrication and supply of Online Aerosol Mass Analyzer (OAMA) as per attached specifications.

Your quotation in sealed cover, super scribed with "Quotation for design, fabrication and supply of Online Aerosol Mass Analyzer (OAMA)" should be addressed to:

**Sh Manish Joshi  
1-194-H, Mod Labs, RPAD  
BARC Trombay  
Mumbai - 400 085**

**PAN and GST No. of the party, in the quotation are mandatory. Quotation should be sent through registered post/ speed post of Indian Postal Service.**

The last date of receiving the tender is: **November 3<sup>rd</sup> 2017 (up to 1400 hrs.)**

*B. K. Sapra*

(B. K. Sapra)

3/10/2017  
Radiological Physics & Advisory Division  
Bhabha Atomic Research Centre  
RPAD Building, Trombay, Mumbai-400 085

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## **Specifications for the ONLINE AEROSOL MASS ANALYSER (OAMA)**

### **General:**

'Online aerosol mass analyser' works on the principle of detection of aerosol load by beta attenuation technique. The filter paper is kept in this unit in leak tight arrangement for sampling. On one side of it, a beta source is kept while a radiation detector is placed on the other side recording beta counts by attenuated blank filter/loaded filter. The unit can be calibrated by studying change in intensity of beta particles with increasing aerosol load. The change in detector counts can be linked with aerosol mass concentration. This unit can measure mass concentration continuously (real-time) or at fixed time intervals.

Following are the components of OAMA:

a) Counting system: The counting system to be used for this unit is GM tube based radiation detector. It is to be mounted on an acrylic planchet holder.

b) Sampler assembly: A cassette type filter paper holder is to be used for placing a filter paper connected to a pump in leak tight arrangement (compatibility up to 20 Lmin<sup>-1</sup>).

c) Beta source: A beta source (preferably of low energy) is required to be mounted in this unit for attenuation measurements. A 100 µCi C14 source (available in our laboratory) is to be used for this purpose.

d) Differential pressure sensors: An auto switching differential pressure sensor network (0-2, 4, 10, 100 kP) is to be coupled in this unit for alternative load calibration and to detect onset of overloading.

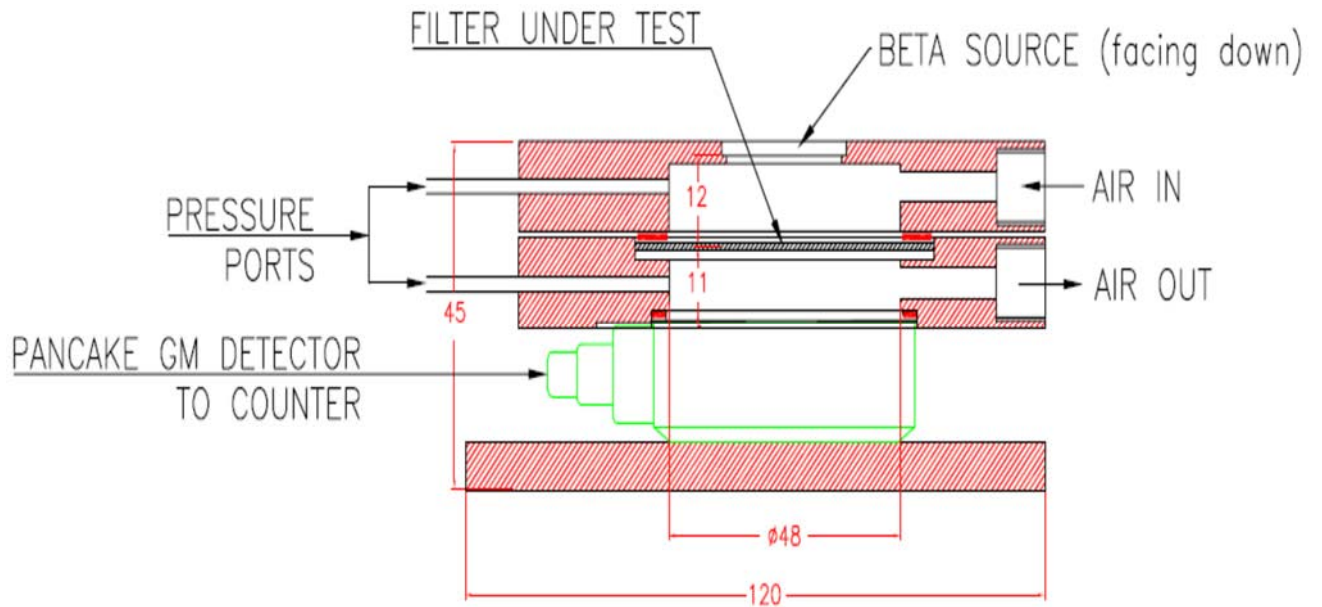
e) Display: The front display to consist of LCD panel displaying detector counts and/or differential pressure across the filter paper. Alphanumeric logic is to be used for display signs.

f) Necessary electronics & high voltage supply is to be housed in the equipment. Specifications for the other parts are as follows:

Electronics	Solid state, micro-controller based design
HV supply	Adjustable to 1500V (±5V)
Data Storage	Store and recall facility for counts data up to 1000 readings
User Interface	4 keys keypad with 16x2 line LCD for displaying Key function
Data Transfer	To PC USB Port
Program	Open source for any future modifications

The schematic diagram for OAMA is as shown below:

## Schematic diagram: Online Aerosol Mass Analyzer



1. Filter chamber volume: 22 cm<sup>3</sup>
2. Pressure ports to differential pressure sensor (pressure range 0-2, 4, 10, 100 kPa auto ranging)
3. Counter LCD display: Counts, Counting time, Differential pressure