

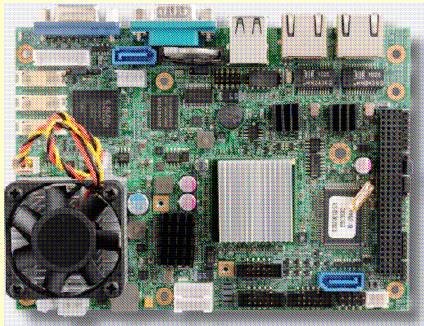
Implementing Agencies:  
**C-DAC, Kolkata & SENSOR HUB, KOLKATA**

## OBJECTIVES

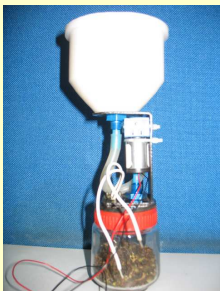
- Assessment of finished tea quality.
- Determination of optimum fermentation time for tea during manufacturing.
- Additional test beds such as cheese ripening or fruit ripening will also be targeted at trial stages.

## DELIVERABLES

- A simple 16-bit Microcontroller platform with low-power sniffing unit.
- System is equipped with 4.3" TFT (480 X 272) display with touch screen for HMI.
- Miniature, low power, battery operated, portable, ease to use.
- Embedded Intel® Atom™ Dual Core D525 platform.
- SD Memory card (>8GB) interfaced to the system for on-line and off-line data storage.
- Rechargeable Li-ion Battery (7.2V).



EBC-352  
ATOM  
Board



Low-power  
Sniffing unit using  
miniature Pump



Portable Electronic Nose (PEN)

## DEVELOPMENT PLATFORM

### HARDWARE:

- PIC24FJ256DA210
- TFT Touch Screen
- SD Card Interface
- In-Circuit Debugger for PIC

### SOFTWARE:

- MPLAB IDE v8.0x
- Microchip C compiler for PIC24
- Graphics Display Designer
- Microchip Application Library

## DESIGN IS BASED ON:

- The PIC 24FJ256DA210 (100pin) processor interfaced to a 4.3" (480\*272) Display with touch screen support.
- Sensors developed by Sensor Hub, Kolkata.
- 16 bit RGB interface.
- Processor is clocked from an 8MHz crystal with a secondary oscillator of 32 KHz.
- A rechargeable Li-ion Battery (3.7 V).

## FEATURES

- User friendly and easy to operate.
- Instant Data Acquisition.
- Simple Statistical Correlation Algorithm for Embedded Platforms in absence of OS, the event-driven structure of the application is designed using a carefully devised State Machine.
- Interfacing of Graphics, Touch-screen, SD-Card, Memory, etc.
- Data entry - display being small and in absence of keyboard.
- Data management –in absence of any DBMS / RDBMS.
- Limited Program and Data Memory.

## APPLICATIONS

Reliable prediction of Tea-Taster like Score of Finished Tea.

Online Plot of Fermentation profile for end-point detection.

## AWARD RECEIVED

C-DAC, Kolkata was among the 31 finalists to showcase their projects at the Intel® India Embedded Challenge 2011 Contest held at Intel Technology India Private Ltd., Bangalore during August 18-19, 2011.

Portable Electronic Nose (PEN) for Tea was presented in the contest by a team of C-DAC, Kolkata and was adjudged the Winner in the "Rural IT, e-Governance and Citizen Services" category.



C-DAC, Kolkata team receiving Winner Award of the Intel India Embedded Challenge – 2011.