



FACULTY OF ENGINEERING
DEPARTMENT OF MECHANICAL ENGINEERING

REPORT ON
GUEST LECTURE BY Mr. M P RAMAKUMAR

ECO FRIENDLY HOUSE WASTE MANAGEMENT

Date: 29th August, 2015

Venue: Auditorium, Block III, Faculty of Engineering, Kengeri Campus

Profile of the Guest: Mr. M P Ramakumar completed his Master of Science in Physics (Electronics) from Osmania Hyderabad, and worked as Scientist at DRDL, Hyderabad from 1981 November to 1992 January. He was a Freelance Embedded Consultant for some time, a Technical Assistant at Alfatah University at Libyan Arab Jamahiriya from 1992 to 1999, Project Manager at Tektronix Software Development Center, Bangalore from 2000 to 2002, General Manager and Head R&D with Enercon India Daman and Enercon GmbH R&D Center, Aurich Germany from 2002 to 2007, and is working as senior VP and head of R&D with ReGen power tech (A wind / Solar company) since 2007. ReGen is the only company in India to demonstrate a true wind solar hybrid (with a common inverter) recently at Tamil Nadu and his team did the main HW and SW development. He is planning to retire in 2016 to become a natural /organic farmer, teach in engineering colleges on embedded systems & renewable energy, assist builders in Eco friendly houses and contribute as much as possible on Swatcha Bharat. He can speak five languages fluently; Telugu, Tamil, Kannada, English and Hindi. He is also familiar with German language.

Time: 11:00 AM- 01:00 PM

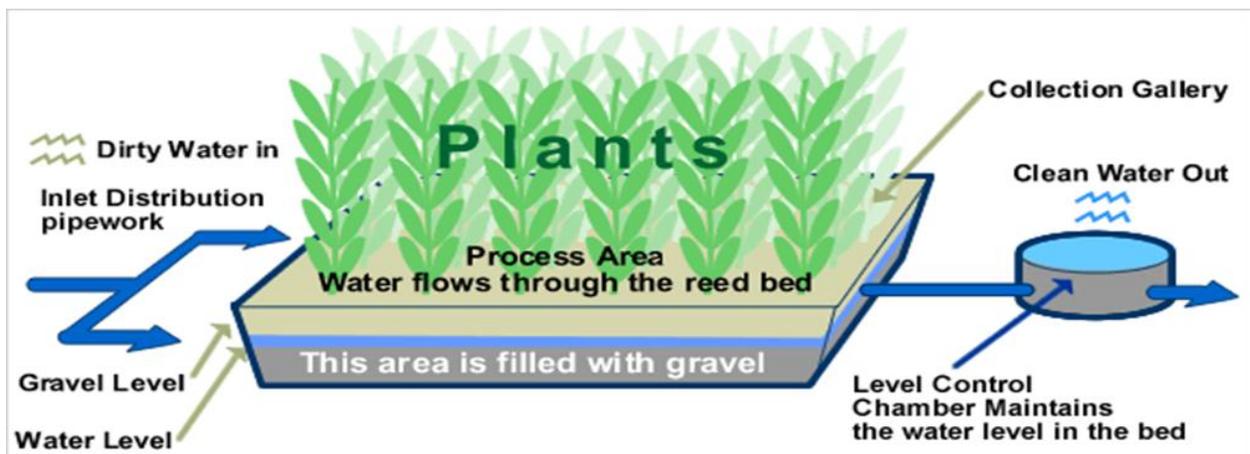
The Master of Ceremony of the Guest Lecture was Prof Jennifer Rasquinha and Dr. Shankar welcomed and introduced the guest to the audience.

Mr. M P Ramakumar started his lecture with an introduction on the importance of waste management at a household level. Most local governments and urban agencies have, time and again, identified solid waste as a major problem that has reached proportions requiring drastic measures. It can be observed that there are three key trends with respect to solid waste - increase in sheer volume of waste generated by urban residents; change in the quality or make-up of waste generated; and the disposal method of waste collected that needs to be focused on.

Mr. M P Ramakumar focused on the recycling of two types of water that is generated in average household; Black and Grey Water. Blackwater is any waste water that is contaminated with water discharged from a toilet. He devised a simple solution to reuse Blackwater by simply letting it flow into a

septic tank teeming with bacteria named actizyme. Actizyme feeds on the waste in the Blackwater where it decomposes it and essentially converts into comparatively cleaner water which can be used for gardening purpose.

Greywater on the other hand, is gently used water from bathroom sinks, showers, tubs, and washing machines. It has not come in contact with human waste, or is from the toilet. Greywater may contain traces of dirt, food, grease, hair, and certain household cleaning products. Greywater can be easily treated using a process called as Reed Bed System. Wetlands, which are basically artificial swamps (sometimes called reed fields), are constructed using reed or other marshland plants to form part of small-scale sewage treatment systems. Water trickling through the reed bed is cleaned by microorganisms living on the root system and in the litter. These organisms utilize the sewage for growth nutrients, resulting in a clean effluent. The process is very similar to aerobic conventional sewage treatment, as the same organisms are used, except that conventional treatment systems require artificial aeration. To put it in simple terms, an area has to be created wherein, people can gather to wash their clothes, toilets etc. (sources of grey water). Water from these activities is collected and made to pass through a system of reeds which filter out the impurities from the water. Fresh clean water is then made to collect in an artificial pond where people can use it for their respective purposes.



Reed Bed System

Mr. M P Ramakumar also discussed bringing small architectural changes in homes to create an ecofriendly environment. He emphasized on boring minuscule holes on the rooftops of the houses so that warm air, which is lighter than cooler air, moves up and can be dispensed out of the house. He also suggested on providing air pockets between fire-clay bricks, used for the construction of the houses to create much cooler and livable houses.

He next focused his attention on renewable sources of energy and in particular on biodiesel and solar panels. Biodiesel refers to a vegetable oil - or animal fat-based diesel fuel consisting of long-chain alkyl (methyl, ethyl, or propyl) esters. Biodiesel is typically made by chemically reacting lipids (e.g., vegetable oil, soybean oil, animal fat (tallow) with an alcohol producing fatty acid esters.

Biodiesel is meant to be used in standard diesel engines and is thus distinct from the vegetable and waste oils used to fuel converted diesel engines. Biodiesel can be used alone, or blended with petrodiesel in any proportions. Biodiesel blends can also be used as heating oil. The surge of interest in biodiesels has highlighted a number of environmental effects associated with its use. These potentially include reductions in greenhouse gas emissions, deforestation, pollution and the rate of biodegradation.

Solar panels refer to a panel designed to absorb the sun's rays as a source of energy for generating electricity or heating. Solar energy is a resource that is not only sustainable for energy consumption; it is indefinitely renewable. Solar power can be used to generate electricity; it is also used in relatively simple technology to heat water (solar water heaters).

Lastly, Mr. M P Ramakumar enlightened the students about Rain Water Harvesting. He explained that the simplest method for a rainwater harvesting system is storage tanks. In this, a catchment area for the water is directly linked to cisterns, tanks and reservoirs. Water can be stored here until needed or used on a daily basis. The roofs our homes are the best catchment areas, provided they are large enough to harvest daily water needs. Other than that, large bowls and tarps can also fulfill the function.

The guest lecture ended with a round of questionnaire between the students and the speaker and Vote of Thanks from Dr. Shankar V. The lecture ended at 01:00 PM.



Mr. M P Ramakumar in conversation with students



Dr.Shankar giving memento to Mr. P M Ramakumar.



3rd and 5th Semester students and faculty

Present:

Students:

3rd and 5th Semester Students from Department of Mechanical Engineering

Faculty:

Dr. Shankar V

Dr. Rathnakar G

Prof. Niranjana SJ

Prof. Umesh V

Prof. Darshan SM

Prof. Ram Kumar N

Prof. Arun Raj S

Prof. Kiran K