

## **PRODUCT GALLERY – 2008**

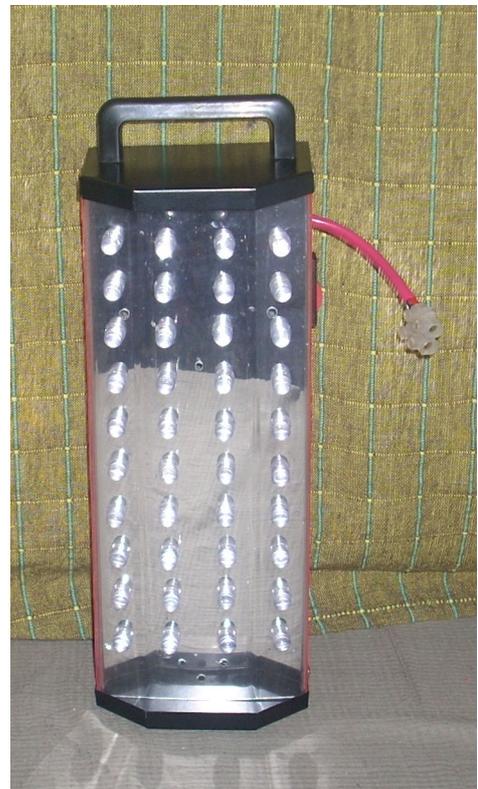
This year the students have designed many energy-saving products. Also, their interaction with the local industry and commercial establishments was close and far more productive.

### **White LED Solar Emergency/ Multi-purpose Lamp:**

This portable lamp uses white LEDs instead of the conventional CFL. This increases the power efficiency and the lifetime of the lamp.



**Brightness of the white LED solar lamp in comparison to a candle**



Moreover due to the lesser power consumption, the storage battery used inside can be smaller and the recharge interval can be longer.

The lamp uses a solar photo-voltaic array to recharge itself during the day. Hence it can be used in remote places where there is no electricity. Cost of the lamp is Rs. 1000/-



**The team that developed this White LED solar lamp is showing off their product in front of the NIT-Trichy entrance at night.**

The team members are

<b>Maitrhreyi, V.</b>	-	<b>IC10531</b>
<b>Nandini Ganesan</b>	-	<b>IC10533</b>
<b>Ritesh Kumar</b>	-	<b>IC10548</b>
<b>Saurabh Bafna</b>	-	<b>IC10553</b>
<b>Shruti Mittal</b>	-	<b>IC10555</b>

## **Methane Filter:**

Biogas contains 53% – 70% methane, 30% - 47% carbon di-oxide and 0-10,000 p.p.m. hydrogen sulphide. The biogas from night soil (human excreta) based bio-digester contains a larger percentage of methane. But it also contains a larger percentage of hydrogen sulphide. This hydrogen sulphide gives an obnoxious smell to the night soil based biogas and hence people do not want to use it for cooking.

There are more than a billion people in India and they generate a lot of night soil. Presently, this a root cause of serious problems such as urban sewerage and sanitation, disease propagation, and national pollution. Instead this night soil can be used to produce a huge quantity of methane as in Sweden and used as fuel for cars, buses and trains. It can also be used as cooking fuel.



**The team testing the methane filter at the biogas plant in the Periyar Maniammai University, Vallam, Tanjavur.**

This methane filter removes the hydrogen sulphide present in the biogas and reduces the percentage of carbon di-oxide present in the biogas from the bio-digester. It upgrades the biogas and removes the bad smell. This makes the night soil based biogas an attractive alternative to other cooking fuels. Even though such filters have been available on industrial scale, the team decided to build a small filter suitable for a small night soil based bio-digester.

The Periyar Maniammai University, Vallam, Tanjavur, provided a running bio-digester. The developed filter was fitted to this digester and then tested. Cost of the filter is Rs. 2500/-



**The team with the methane filter.**

The team members are:

<b>A. Shravan Kumar</b>	-	<b>IC10505</b>
<b>A. Ananthi</b>	-	<b>IC10507</b>
<b>Nityashree, T.K.</b>	-	<b>IC10540</b>
<b>Umesh Khaperdey</b>	-	<b>IC10560</b>
<b>Sapna Shukla</b>	-	<b>IC10565</b>

## **Swimming Pool Water Quality Monitoring Device:**

Water quality at any public (as well as private) swimming pool is never properly monitored on day-to-day basis. This is due to the fact that no inexpensive device is available to check all the water quality parameters. These quality parameters are, pH, chlorine level, and turbidity level. In the absence of such a device, managers of the swimming pools generally rely on only pH level indicating papers to approximately measure the quality of water.



### **Swimming Pool Water Quality Monitoring Device**

The team found all this information from their customer requirements survey of the pools in Tiruchirapalli. Then they went ahead and developed a compact, inexpensive, and fairly advanced embedded system based water quality monitoring device. This device measures all the water quality parameters without any use of expensive reagents or sophisticated chemical laboratory techniques. Cost of this device is Rs. 2500/-



The team members who developed this device are

<b>Jency Varghese</b>	-	<b>IC10522</b>
<b>L. Ramamoorthy</b>	-	<b>IC10526</b>
<b>M.K.P. Karthik</b>	-	<b>IC10527</b>
<b>Naveen Shamsudhin</b>	-	<b>IC10534</b>
<b>Vinod, S.</b>	-	<b>IC10551</b>

## **Food warmer using waste heat recovery:**

Hotels and catering establishments are expected to provide warm, if not hot, food for their customers at all time. But, today running a food warmer to keep the food warm after the cooking is over is a costly proposition to these establishments because of the rising fuel and electricity costs.



**Food warmer using waste heat recovery implemented in Sri Krishna Hotel in Tiruverumbur.**

Hence, many such establishments face increasing losses even when their customer base increases.

The team found out about this predicament when they enquired about this during their customer needs survey. They brainstormed about this problem and they came out with a novel method of keeping the food warm by harvesting the waste heat lost by these establishments.

The team then validated their design in the laboratory and implemented on a small scale in a small road-side eatery in Tiruverumbur. The idea was well appreciated by the eatery owner who found that the existing wood-burning stove can be used without using any additional fuel to keep the food warm. Total cost of this pilot implementation is Rs. 1100/-



The team members who implemented this waste heat recovery concept for the food warmer are:

<b>Aditya Avinash</b>	-	<b>IC10504</b>
<b>J. Vishnu</b>	-	<b>IC10521</b>
<b>Malathy, R.</b>	-	<b>IC10532</b>
<b>R. Adith</b>	-	<b>IC10546</b>
<b>S. Sameerajan</b>	-	<b>IC10550</b>

## **Spray gun with air curtain:**

Large scale spray painting of wind mill towers is undertaken in the vicinity of the campus in the Thuvakudy Industrial Estate.



**The paint spray is confined to a cone by the air curtain around it.**

The team, during their customer needs survey, found out that as much as 30% of the sprayed paint is lost due to the divergent spray coming out of the spray nozzle. This lost paint is a source of serious pollution and health hazard for the workers; not to mention the gross cash loss to the company.

The team developed a simple device that can be fitted to the spray gun which can reduce the loss of sprayed paint by confining the paint spray in to a cone of air. The paint company that implemented this device reported an immediate saving of 5% in the consumption of paint.

They appreciated the contribution of the students in such a short time and said that the concept need to be further investigated and improved to realize more saving in the paint consumption. The cost of the product is Rs. 650/-



**The team and the air-curtain nozzle with the Mr. Balasundaram (third from the left), NACE Coating Inspector, who helped them in testing the product under actual field conditions.**

The team members are:

<b>Anish Deepak Sattur</b>	-	<b>IC10509</b>
<b>Arun, A.</b>	-	<b>IC10511</b>
<b>Christina Grace Charlet, C.</b>	-	<b>IC10517</b>
<b>Vinayakk, M.</b>	-	<b>IC10528</b>
<b>Mehar Chaitanya Yelati</b>	-	<b>IC10561</b>

## **Potter's wheel with speed control:**

The team had a mission of improving the lot of earthen pot makers who are increasingly becoming an endangered species. They had a larger environmental agenda also. Presently, rural potter's wheels are generally hand operated.



**A foot-pedal for speed control of the potter's wheel frees both hands for pot making**

They met a community of pot makers in a remote village called Veerapatti near Tiruchirapalli. They did a customer needs survey and decided to make motor speed controller that is inexpensive to make as well as to run. Additionally, it should suit the unique needs of the potters, like hands-free operation.

The team modified a domestic wet grinder which is widely available in the market. Its cost is less and it takes less power to run. Also, it takes less space.



**A potter at Veerapatti tries his hand on the new speed controlled Potter's wheel**

The team developed their unique potter's wheel and took it to Veerapatti. The potters were overjoyed after using the new potter's wheel and they made an offer to purchase it then and there.

The cost of this speed controlled potter's wheel is Rs. 2000/-



**Some of the members of the team and their speed controlled potter's wheel with potters at Veerapatti**

The team members are:

<b>Akilesh</b>	-	<b>IC10514</b>
<b>Bargavi</b>	-	<b>IC10515</b>
<b>Devarshi</b>	-	<b>IC10518</b>
<b>Shavneet</b>	-	<b>IC10554</b>
<b>Kameswarie</b>	-	<b>IC10567</b>