



## Company Profile & Presentation



A Sine-IITB Company

*Customising Technologies  
Creating Value*



A SINE-IITB Enterprise

*Innovation  
Development  
Company*

**C Tech Labs Pvt. Ltd.**

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Mumbai – 400076

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[www.ctechlab.com](http://www.ctechlab.com)

*Customising Technologies  
Creating Value*



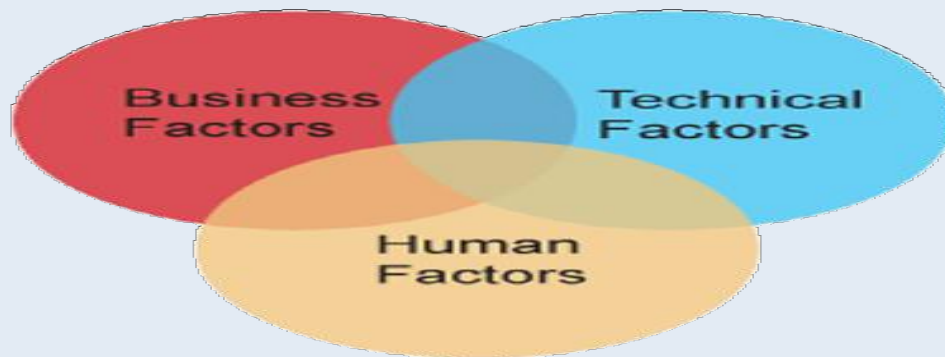
A Sine-IITB Company

***Innovation  
Development  
Company***

## **CTech LABS PVT LTD**

### *Mission*

*Partner research institutions, inventors, thinkers, and to blend their ideas, technologies with Humanology (the science of human potential & limitations) for developing market-worthy and customized solutions through creativity, experience and professionalism, creating value for our partners, industry & benefiting society.*



CTech with the expertise at its command **customizes technologies and makes them market-worthy by integrating business factors, technical factors, human factors, creativity & innovation methodologies.**

*Opportunities..... &  
also Challenges.....*

Design Integration

TECHNOLOGY

*DESIGN  
INTEGRATION*  
Technical Design  
+  
Humanistic Design

MARKETABILITY

Current Partnerships:

CAIR / ANURAG – DRDO  
CIMFR – CSIR  
R&D – TATA STEEL

INMAS / DIPAS – DRDO

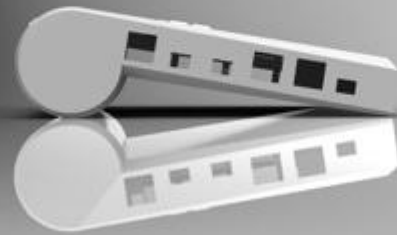
IIT BOMBAY

# CAIR / ANURAG - DRDO

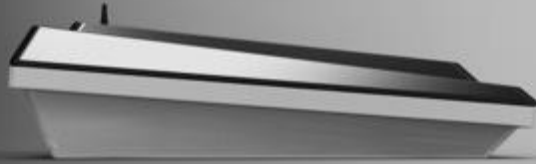
Hand-held  
Communication  
Encryption  
Devices



**SUCCESSFULLY DELIVERED**



# CAIR / ANURAG - DRDO



SUCCESSFULLY DELIVERED

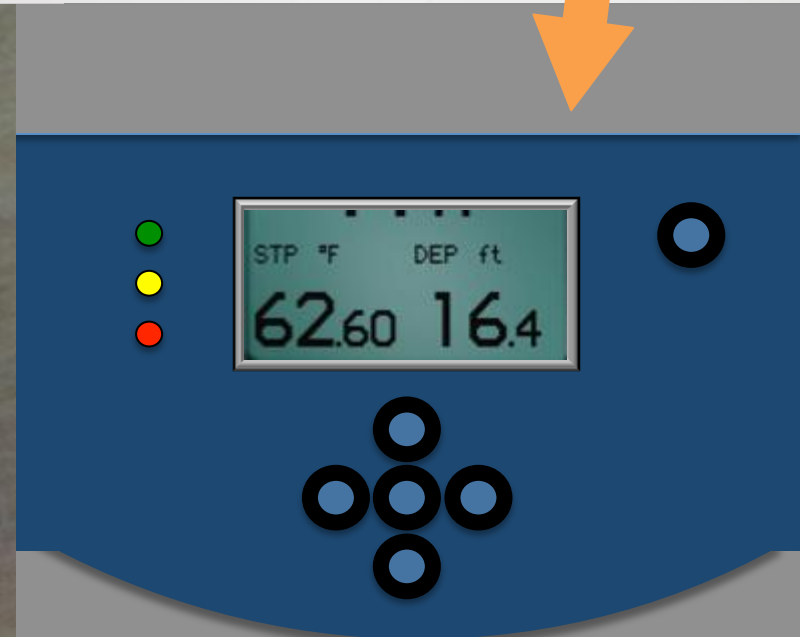
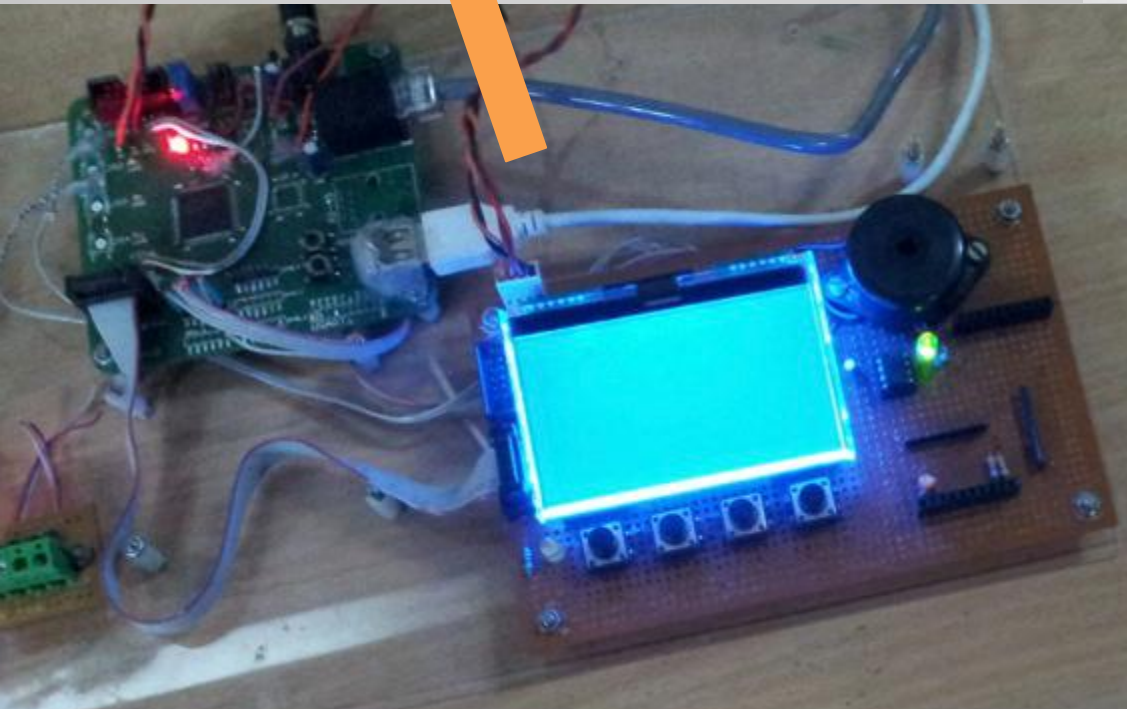
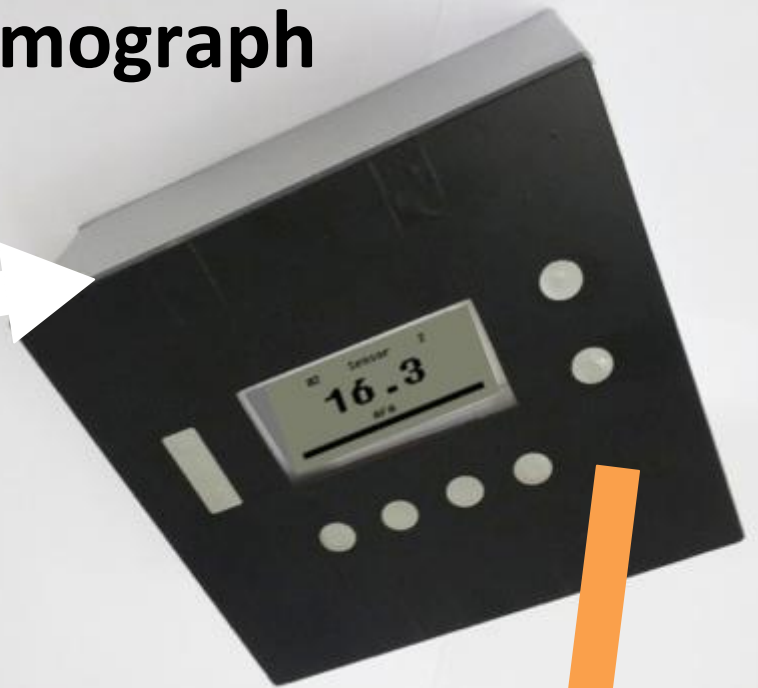


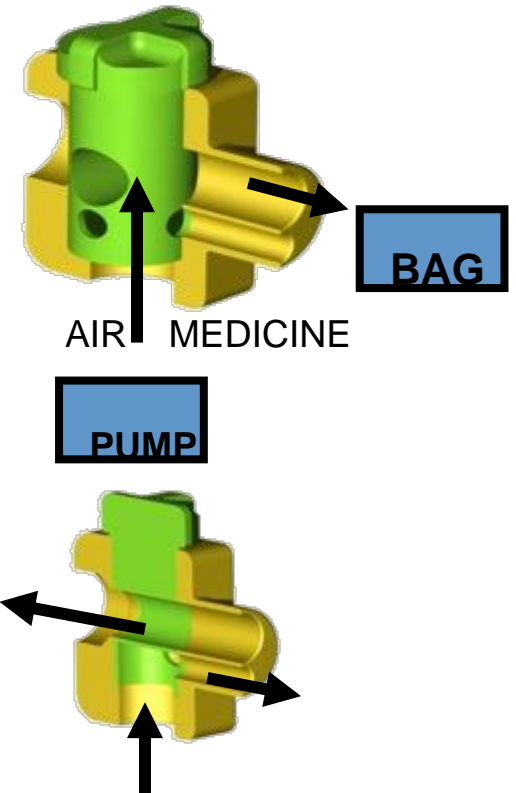
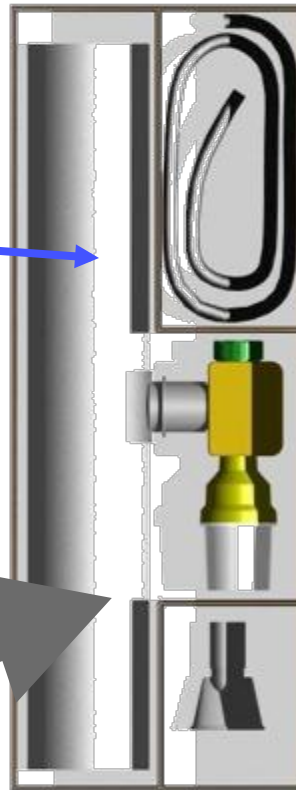
## CAIR

Communication  
Encryption  
Devices



# CMFRI Blasting / Mining Seismograph





**SUCCESSFULLY DELIVERED**

Drug Delivery System for  
HAPE- (High Altitude Pulmonary Edema)

**INMAS - DRDO**



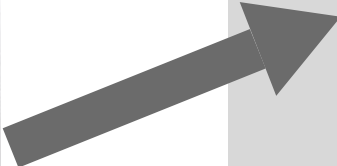


**SUCCESSFULLY DELIVERED**





## Patent

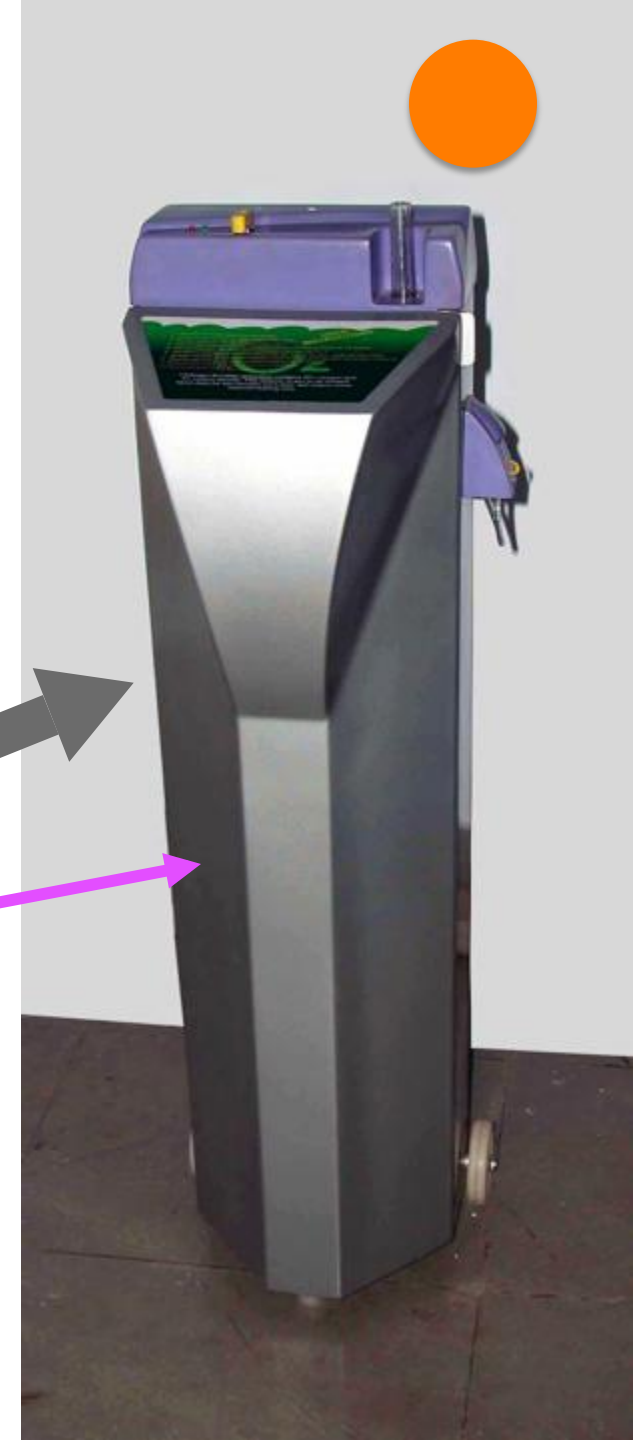


COOLER

CONTROL VALVE

FLOW METER

FLOW METER BRACKET



Principle ..... to Product

Bio Principle....

A mixture of oxygen and Carbon Dioxide in a certain percentage if inhaled for 5 minutes, 2-3 times a day can eliminate the ill effects of working in severe noise environments, or noise stress –

Defence Institute for  
Physiology & Allied  
Sciences  
DRDO Delhi

SUCCESSFULLY DELIVERED

© K.Munshi



10 Lit. Unit

Carbogen  
Delivery  
Systems





10 station  
Multi-user Unit  
300 Lit.

.....Product

It delivers Carbogen gas for breathing in 5 min. doses as recommended by DIPAS, DRDO. It has been extensively tested by DIPAS and has been approved by Indian Navy for use in high noise environments.

**SUCCESSFULLY DELIVERED**

Use:

Defense - Firing ranges, aircraft hangers , Ship engine rooms....

Civil –Oxygen bars, Traffic islands, Fitness Centres, Workshops, Factories.....



50 Lit. Unit





## PAN INDIA TEMPERATURE GRID

Design, development and deployment of a real time temperature data capture and analysis system called “Pan India Temperature Grid”.

The portable sensor-transmitter unit will be developed with the technology flexibility, so that it could connect to the grid with verity of communication technologies.

The data is fed to the grid, which is deployed on the cloud-based solution to support the web application.



**TATA STEEL**



## SPEED ALARM for Motor bikes

Road safety inside plant

Two-wheelers are most prone to accidents.

Keeping the 35kmph speed limit in mind, monitoring of speed and indicating the limit, while riding.

In rain it is tough to visualize indicator.

## The rural portable HUT

This idea was inspired from the work done at IDC Labs IIT M regarding the rural kioks for banking, telemedicine, vaccination etc. And also the ultrasmall units (SLEEPBOX) available at We are interested to use a combination of steel (light gauge sections) and other non-steel material without using any screwing or welding at site to develop a concept. Features:

- (a) Optimise the weight so that it can be easily carried in sections, at component levels on ab bullock cart, a boat etc.
- (b) Has adequate lighting during the day and provision of integrated solar lights at night.



# Business Verticals

## *Products & Systems*

Energy saving **LED lighting products** (*0.3 Watts to 30 Watts*) for rural, automobiles, institutional applications

Eco- friendly energy saving **electrical vehicles** – 2 wheelers, 3 wheelers etc. for interior use (*airports, shopping malls, IT campuses*)

**Modular Housing Systems** in FRP eg., Frangible Cabins for airports, Railway coach interior, Tourist huts

## *Management Advisory Services*

**Mentoring** for new product development, leading teams of developers.

**Methodologies &** product development strategies, creativity tools

**Motivating &** Challenging for higher levels of creativity, building product development teams

**Monitoring** product development process to create products with high certainty of success

## *Product Design Advisory Services*

**DELIVERING INNOVATIONS** – Converting technologies into marketable products.

Judicious integration of technology & humanology + market intelligence,

Ergonomic, environment & aesthetic fit, product engineering

**Delivering innovative 'Concept to Market package', in shortest possible time**



# Products & Systems

## LED Lighting Systems

### Rural

LED Lanterns (3 models)  
Solar / Mains charging  
(*through Mobile charger*)

Home Lighting system  
(*Solar / Mains charging*)

Hawker Lights

Wall Lights

Solar Street Light

### Institutional

Ceiling Lights  
Emergency light, Hand  
rail light, Foot / Path  
light, Garden Light,  
Miner Hat light etc.

## Micro Electric Vehicles

Eco- friendly energy  
saving **electrical Two-  
wheeler**, single-  
seater, very light  
weight with wheel  
mounted 250W motor  
& 30 Km range

**Electric 3 wheeler** for  
interior use (*airports,  
shopping malls, IT  
campuses*) for cleaning,  
hauling

**Electric 3W rickshaw**  
2 Parallel wheel  
Electric vehicle prime  
mover module (*under  
development*)

## Modular Housing Systems

**Modular Housing  
Systems** in FRP for  
temporary shelters for  
disaster housing,  
Project on-site  
housing, seasonal  
tourist beach huts

**Frangible Cabins** that  
collapse when struck  
by aircraft for airports  
at Bangalore,  
Hyderabad & Delhi

**Rural Bank Module** for  
ICICI Bank– Light weight  
for easy transport &  
quick erection

**Railway coach** interior  
and modular WCs

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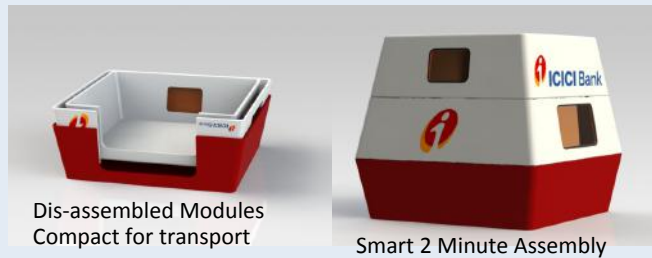
**CTECH**

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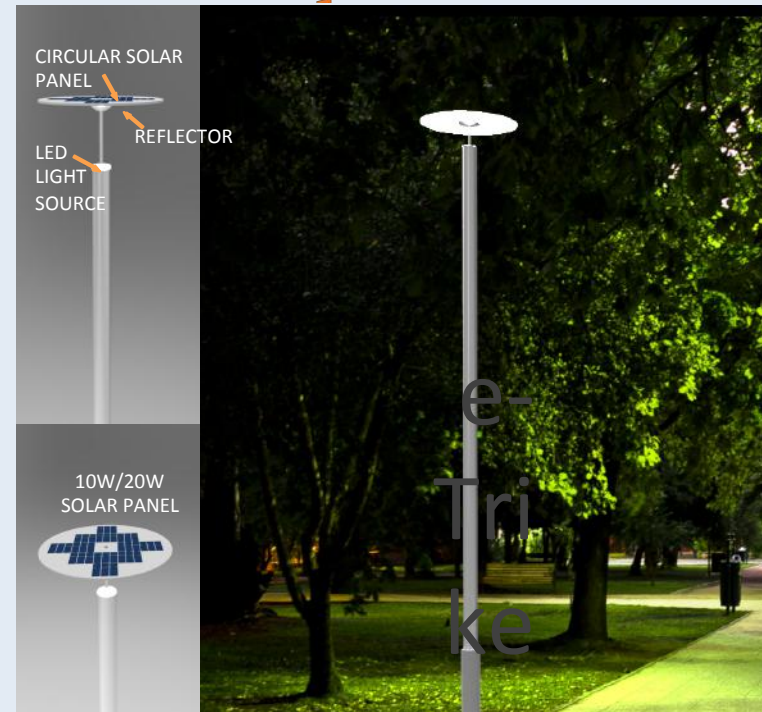
## MODULAR HOUSING SYSTEMS

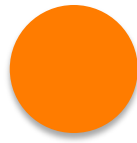
### Hygienic Rural Toilet (dry sanitation system)



**जुगनू**  
**JUGNOO**

## LED LIGHTING SYSTEMS

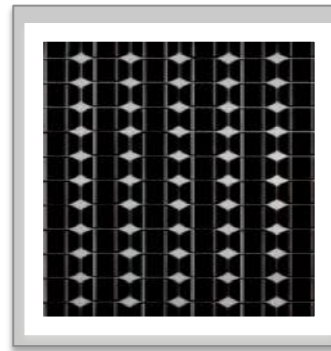




## 3W Solar Panel For charging



## Mobile Charger with adaptor



## e-Lantern

Rechargeable lighting device runs for 5-8 hours on one charge

**Hassle-free charging** – by Nokia charger or 3W Solar Panel

**Almost Zero running cost- 5 Paise per day** compared to more than Rs.1/- for kerosene

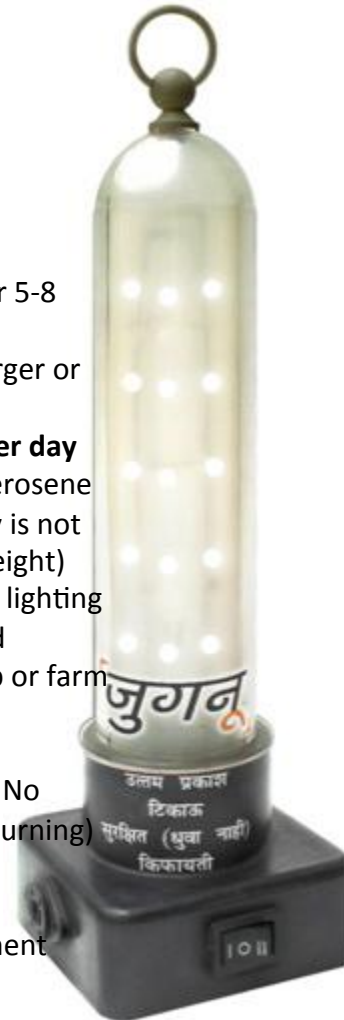
**Very Useful** - Handy when electricity is not available. Easy to carry (very light weight)  
Used for cooking, reading or general lighting  
Can be hung from a ceiling or carried outdoors for path lighting, workshop or farm work

Zero maintenance

**Absolutely Safe** -No accidental fire - No burns /No blackening soot (No eye burning)

No poisonous kerosene fumes - No respiration problems (No cough)

Pure white soothing light / Environment friendly



**जुगन**  
**JUGNOO**



## e- Candle



## Hawker Light



जुगन  
JUGNOO

MODULAR  
LED STREET LIGHT  
COLUMN

CTECH

A Sine-IITB Company

PATENT PENDING No.  
4011-MUM-2013

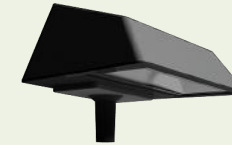


जुगन  
JUGNOO

LED SOLAR STREETLIGHT

PATENT PENDING App No-4011-MUM-2013

150 % more light per watt  
(Patented technology)  
Uniform lighting  
No dark spots  
High visibility index  
Safe for traffic  
Aesthetic design

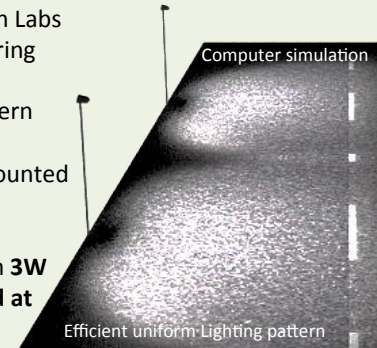


Patent

Jugnoo LED Solar streetlights from CTech Labs are very suitable for street lighting, offering highest economy in power, high colour rendition and a unique illumination pattern most suitable for street lighting through patented technology. Can be directly mounted on the pole without extended arm.

These are offered in various ranges from **3W to 12W LED power** and can be operated at **12V DC / 24V DC / 110V AC / 230V AC**

*Jugnoo street light deployed at a location in central India*



CTECH

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## ***Speciality Lights***

Tunnel Light

Industrial Hand Light

Red Therapy Light

Miner Cap Light

Ceiling Tile Light

Concealed Lighting

Wall Washer

Lamps & Tubes

Garden Light - Solar

Pathway Light

Plant Growth Light



Miner Cap Light



Industrial Hand Light



Red Therapy Light



Plant Growth  
Light

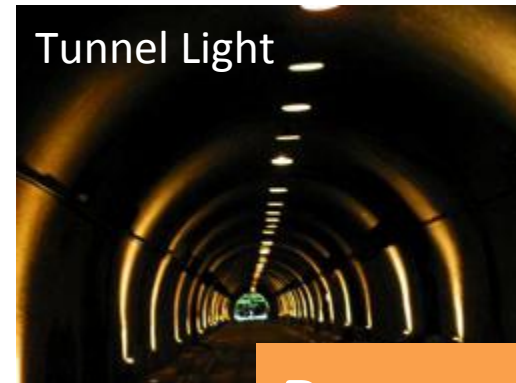


SAFETY FLASHER

**JUGNoo**  
जुगनू



Lamps & Tubes



Tunnel Light

**Patent**



Pathway Light





# Electric TRIKE

3-Wheeler

Power: 650W

Speed: 30Kmph

Range: 30 Km

Weight: < 55Kg

Battery: 48V / 20Ah



*Patent*

**ECO**  
ELECTRIC  
VEHICLES







**Electric TRIKE**

POST WOMAN  
DELIVERING MAIL IN  
IITB CAMPUS



**Case 5**



# Electric Scooter



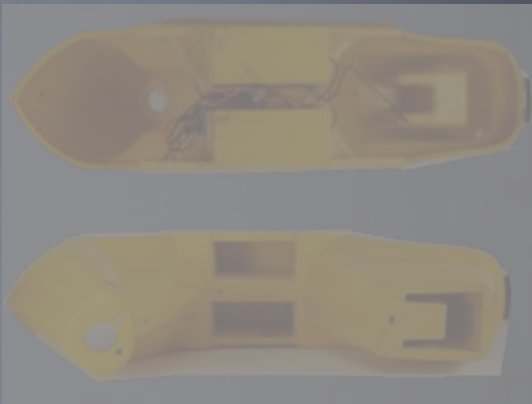
**ELECTRIC  
VEHICLES**

Single unified  
Body design in FRP  
integrating Styling,  
Ergonomics, Engineering

All the components are  
mounted on the load-  
bearing FRP body

**Electric 2-Wheeler**

Power: 250W  
Speed: 20Kmph  
Range: 30 Km  
Weight: < 40 Kg  
Battery: 48V / 20Ah



*Design Patent*

No metal chassis  
Light weight  
Vibration & Fatigue  
resistance  
Registered Design



# e-Rickshaw

## Electric 3- Wheeler / 3 Seater

Power: 1000W

Speed: 30Kmph

Range: 60 Km

Battery: 48V / 40Ah



ELECTRIC  
VEHICLES



C TECH

A Sine-IITB Company

*Innovation  
Development  
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PROTOTYPE UNDER DEVELOPMENT

3



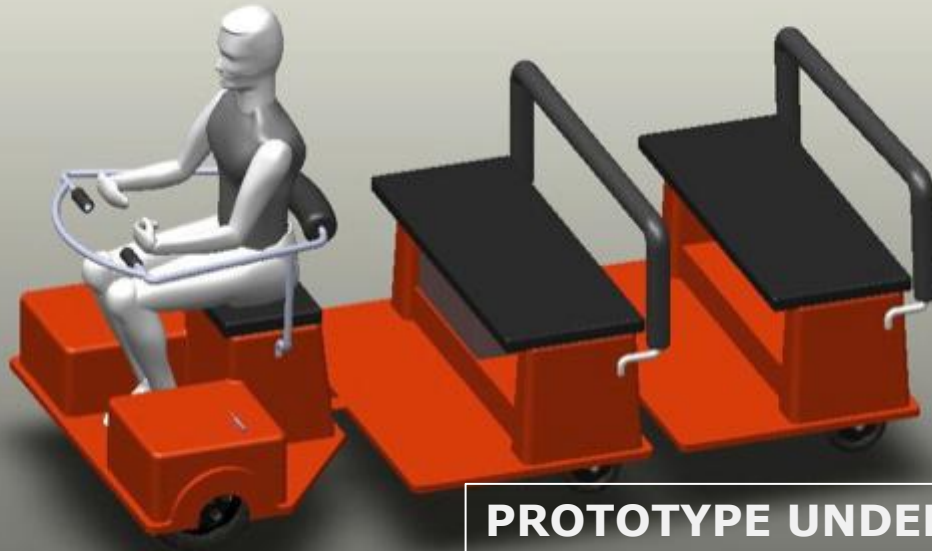
## e-Train

For Passengers / Goods  
Front Wheel Drive  
Differential Steering  
Independent Drive & Suspension



## e-Platform

For Passengers / Goods  
Front Wheel Drive  
Differential Steering  
Independent Drive & Suspension



**PROTOTYPE UNDER DEVELOPMENT**



Only EV to use **DRIVE BY WIRE**  
**STEER BY WIRE** technology

Single Hand Joystick Control

Highly Maneuverable & *fun to drive*

Maintenance Free

Environment Friendly - User Friendly

Zero noise

Zero emission

LED lights - front & rear indicators



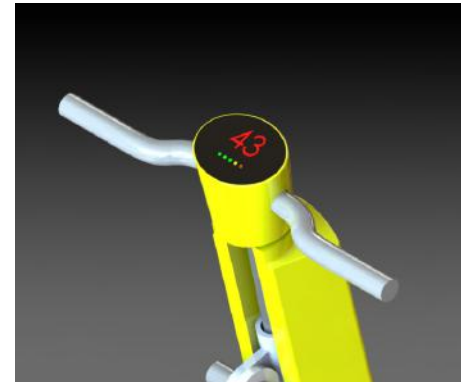
## ***The Smart Micro EV*** *for interior use*



# Folding Commuter e-Bike



Li ion batteries  
Easy Foldable design  
Digital speedometer



- Wheel base :
- 319mm (folded)
- 830mm (unfolded)
- Seat height: 512mm
- Wheel Diameter: 200mm
- Power :250W



**ABANDONED**  
**Lack of Funding**



**BLDC Motor**  
**Wheel mounted**  
**250 W / 400W**



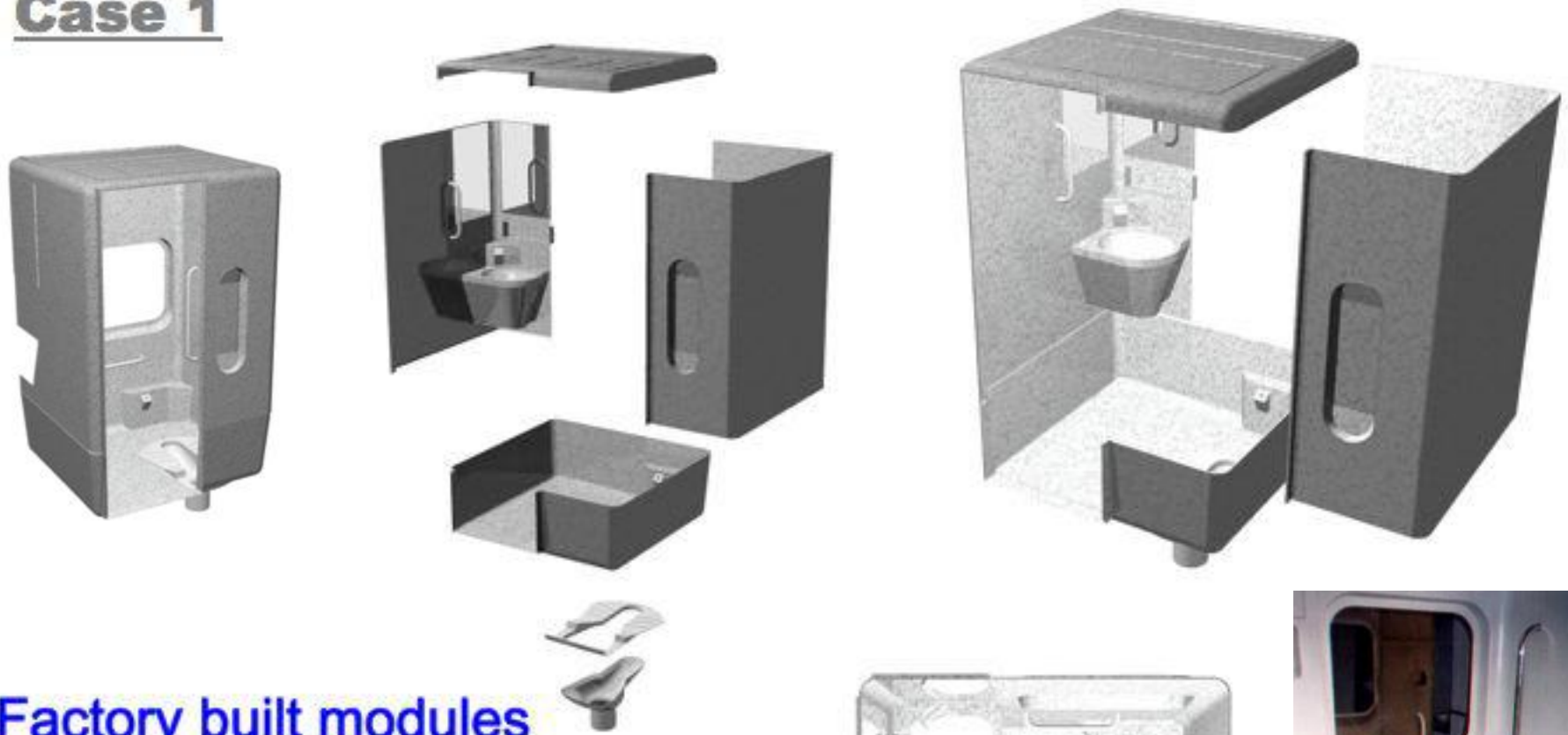
*Under Development*  
*In collaboration with*  
*Electrical Engg. Dept. IITB*



Proposed Design of Hybrid Trolley Bus  
Integrated with patented technology  
(Light Weight Aluminium Modular Body)

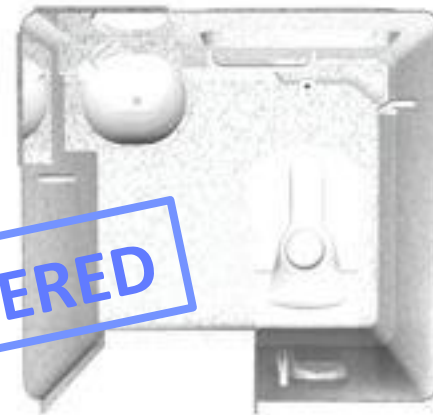


# Case 1



Factory built modules  
Easy assembly  
Maintenance free  
Low weight  
Long life  
Hygienic

**SUCCESSFULLY DELIVERED**



Modular Toilet for Rail coaches - schematic



**SUCCESSFULLY DELIVERED**



JEC Asia  
Innovation Award 2010  
in Singapore



**Modular Luxury House-boat for Kerala Tourism**  
*2 Bedrooms with attached bath / Lounge / Pantry*  
**27 m long x 4.5 m wide x 4.0 m high**  
**Material : FRP**

## Case 3

INNOVATION IN CONSTRUCTION METHODS –  
integrated with design concept

### Luxury Houseboat for Kerala Tourism

Modular Construction- *5 Modules for super structure*

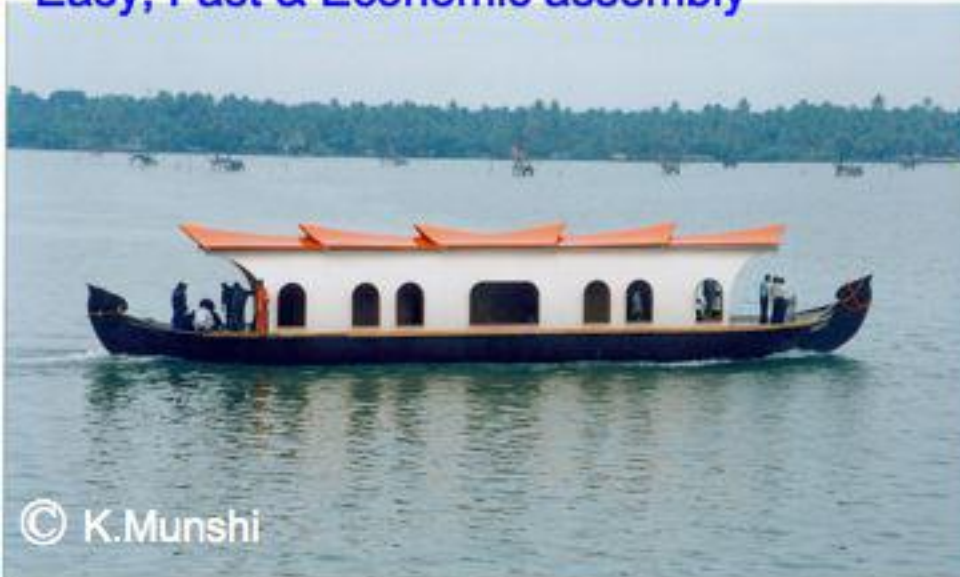
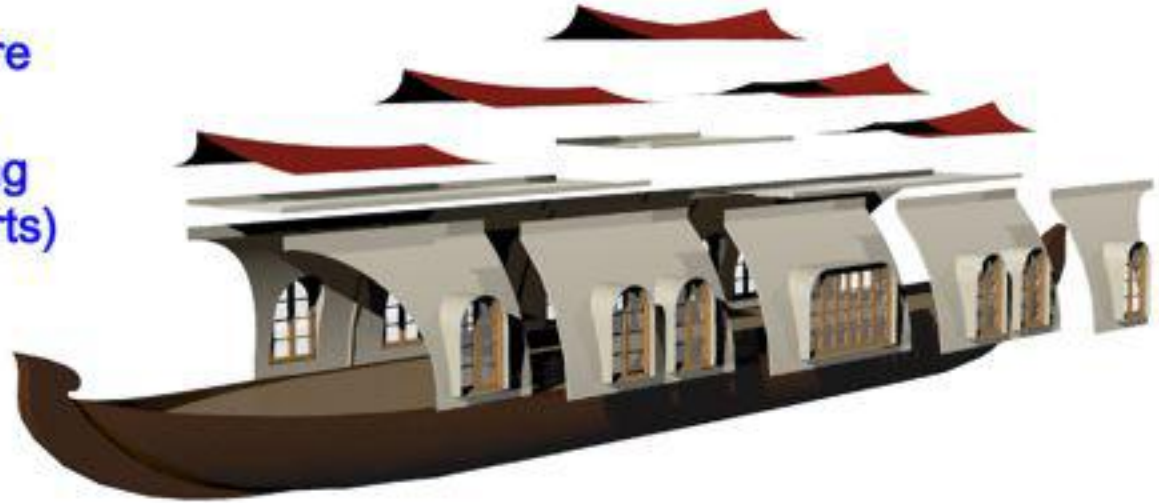
FRP Hull & Super-structure

Self-supporting interlocking  
modules (no metal supports)

Factory built panels

Expandable system

Easy, Fast & Economic assembly





# Modular Frangible Cabin 6m x 3m x 3m

*Installed at:*

1. Bangalore International Airport
2. Delhi International Airport
3. Hyderabad International Airport

**Patent**

**SUCCESSFULLY DELIVERED**



***Under installation at Bangalore***

Frangible Cabins (BIAL)



# Case 4

## Frangible Cabin in FRP For Bangalore International Airport

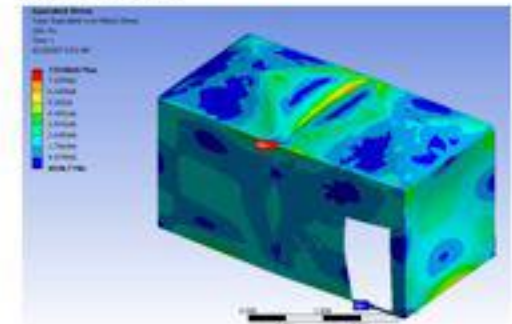
Modeling & Analysis to ensure it collapses on impact with aircraft

*Patent*



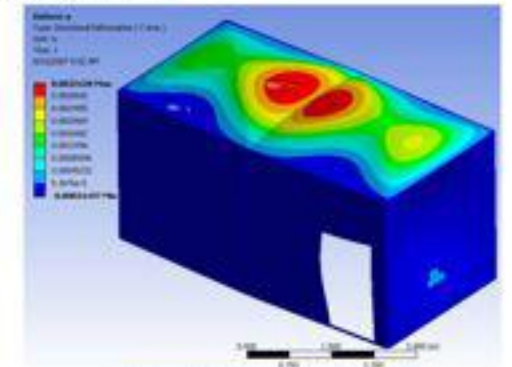
Designed to Collapse

ANALYSIS RESULTS:  
Von Mises Stress Distribution



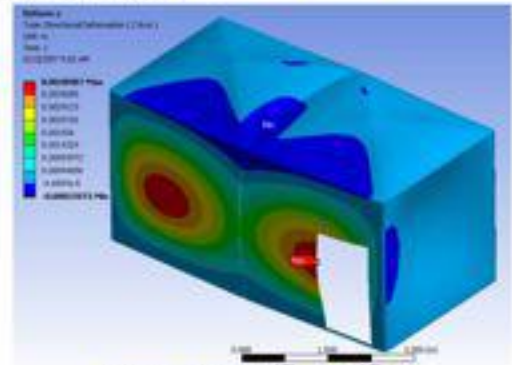
Maximum Value (von-Mises Stress) → 7.9188 MPa

Deformation in Y-direction



Maximum (Y- Deformation) → 3.24 mm

Deformation in Z-direction



Maximum (Z- Deformation) → 3.89 mm

## PORTABLE Rural Bank Module



## Solar Powered Rural Bank Module



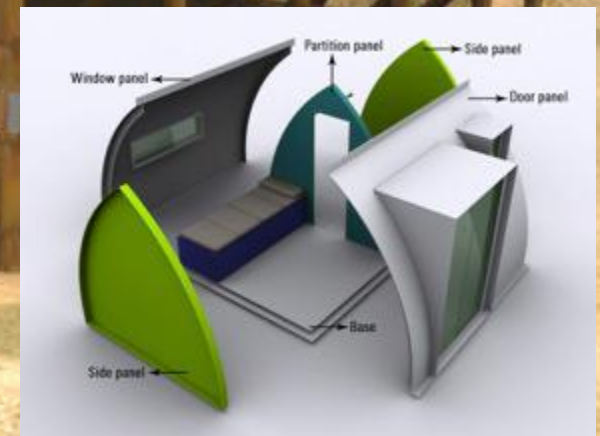


The potential of **FRPs** is immense -  
yet to be explored

Creative design inputs  
can make all the  
difference to make  
composites a truly  
wonder material



Beach Cabin in





# SOLAR RICE COOKER CUM OVEN

*Hassle Free*



**SUCCESSFULLY DELIVERED**



Single dish cooker

4 persons

Solar Oven

Cooks a meal in 3 hours

Teflon coated

Weight: 6 Kgs

# Hygienic Rural Toilet (dry sanitation system)

sanitation system (which avoids direct discharge of excreta into the nearby water bodies or on to the open lands). To come up with a sanitation solution catering specifically to the needs of rural India with water shortages which is cost effective, manageable, modular, (i.e. portability, flexibility, ease of manufacturing, deployment and maintenance) and sustainable (derive economic benefit by making fertilizer for their fields)

2012 - 2014



## LESS WATER – ZERO DISCHARGE

**Waterless – No flush system**

**No chemicals, enzymes – No external additives**

**Aids & accelerates natural process of decomposition**

**Women friendly – help in disposing sanitation pads**

**Elderly friendly**

**Utilisation of waste as fertiliser**

**Bring science to empirical level – easy understanding**

**(No mystery)**

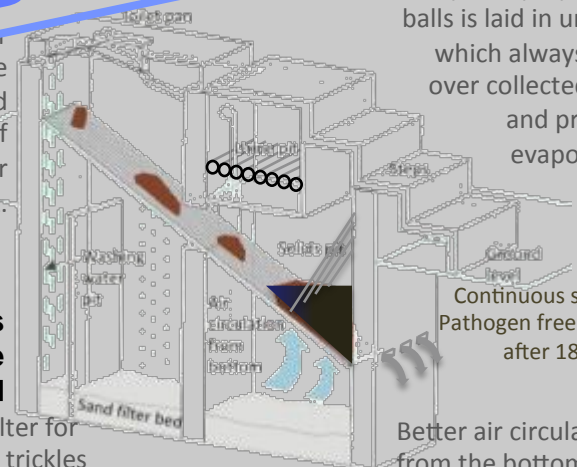
**SUCCESSFULLY DELIVERED**

The solid matter slides over the inclined sieve and collects at the edge of the sieve in the lower part of the front pit.

**Sanitary Pads  
Kitchen waste  
can be disposed**

Gravel bed acts as a filter for washing water, which trickles down to the soil.

patent application no. 3711/MUM/2013  
Patent Application no. 645/MUM/2014.



A layer of polystyrene balls is laid in urine pit which always floats over collected urine and prevents evaporation.

Continuous supply of Pathogen free Manure after 18 months

Better air circulation from the bottom as well, to aid aerobic decomposition.

i congratulate to you and your IDE team for successful development of water-less toilet - Pratik Sangave

.... opportunity for me that I could meet with such an innovative person. I saw your developed toilet for rural application , I would like to personally see that it is supplied in this area for marketing in hills - Dr SB Singh, Outstanding Scientist & DIRECTOR, Mins of Defence, DRDO,

.... warm greeting's and a hearty congratulation's to you and your team for developing the **"DRY-SAN HYGIENIC RURAL TOILET"** - Sushant Wath, CSIR-NEERI

I came to know that you innovated one toilet system which can reduce the water consumption, I am really impressed & want to Know more about it – Kashyap, Baroda

... Today we visited Bio -Toilet designed by your organisation and also you given your precious time to explain the technology. we are highly appreciate the same . Our Deptt. i.e MSDP ( Slum sanitation Prog.) conducting Swatch Bharat Abhiyan . we are constructing community toilets in slum area of Mumbai Municipal Region. Kulkarni A.E I/C / Jadhav S.E



# Endorsements

Very nice to hear. We could have included It in the social innovation seminar today at pune. Pl consider a paper at Iccig.org . Look forward to hear from you - prof anil k gupta founder, honey bee network, National Innovation Foundation, IIM Ahmedabad

It was a pleasure meeting you and knowing about the innovative sanitation system – Rakesh BIAF

We were captivated by the Rural Toilet design - truly a simple and innovative product which would touch the lives of many people in India and rest of world - Surjit Lahiri Vice President – Technology Mindteck Ltd

..... is interested to invest in the toilet project. As told we have already started working on the same and the meetings are to be arranged in the coming two weeks - Sarang

Dear prof. Munshi,

We were captivated by the Rural Toilet design - truly a simple and innovative product which would touch the lives of many people in India and rest of world.

Regards,

**Surjit Lahiri**, Vice President - Technology

Dear Sir,

First of all congratulations for your wonderful product, 'The dry San hygiene'  
It's truly a bliss for rural parts and slums of India, where, basic hygiene and sanitation services seems like a dream.



A Sine-IITB Company

***Innovation  
Development  
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We Believe:

.....creative design strategies, appropriate engineering concepts, combined with humanistic approach help develop innovative products, which also address the concerns of the users effectively and make these products successful in the market place .....

[www.ctechlab.com](http://www.ctechlab.com)



A Sine-IITB Company

***Innovation  
Development  
Company***

C Tech is looking for Entrepreneur Partners  
Strategic Collaborators  
Participating Investors

[www.ctechlab.com](http://www.ctechlab.com)





C TECH

A Sine-IITB Company

*Innovation  
Development  
Company*

**JUGNOO** जुगनू  
LED Eco-Lighting



**ECO**  
ELECTRIC  
VEHICLES