

## Point of Care device for detecting Vitamin B12

Dr. Kumudha A | Magnimous Info Tech Pvt. Ltd.

### Problem Statement

In India, over 650 million people, have B12 deficiency, which is due to vegetarian diet in all age groups. Vitamin B12 is crucial for efficient functioning of central nervous system, which is responsible for maintaining alertness and memory recall and good immunity. Hence large populations will benefit with this device.

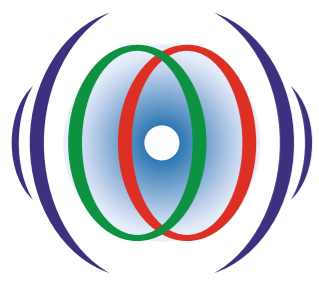
### Concept & Innovative Technology

Simple Onsite Visual Nano based bio sensing for Vitamin B12. The aim is to develop and test a low cost & simple diagnostic test for Vitamin B12 as point of care setting. This new procedure will have a great impact on existing technologies for production of cost-effective biosensor platform, easily adaptable for high throughput assays, automated analysis & conveniently generalized to other systems. This would allow doctors to monitor B12 levels and intervene as soon as B12 deficiency was detected.

### Benefits & Applications

Low cost & simple diagnostic test for Vitamin B12 based on Onsite Visual Nano Aptamer bio sensing. It can be used by anybody and anywhere. It will benefit a large population in detecting vitamin b12 deficiency at an early stage.

## NURTURING IDEAS



**An all fit scalable electric powertrain optimized for power density & efficiency with innovative powertrain topology, material engineering and thermal management**

**Mr. Vishal Mali | Ashnni Motors Pvt. Ltd.**

## **Problem Statement**

The biggest challenges of any EV technology are around the Battery and drive-train, specifically power-train Thermal, efficiency management and scalability across all mobility platforms/applications. These issues needs to be addressed from first principal basis. Material selection, Design, engineering and packaging.

## **Concept & Innovative Technology**

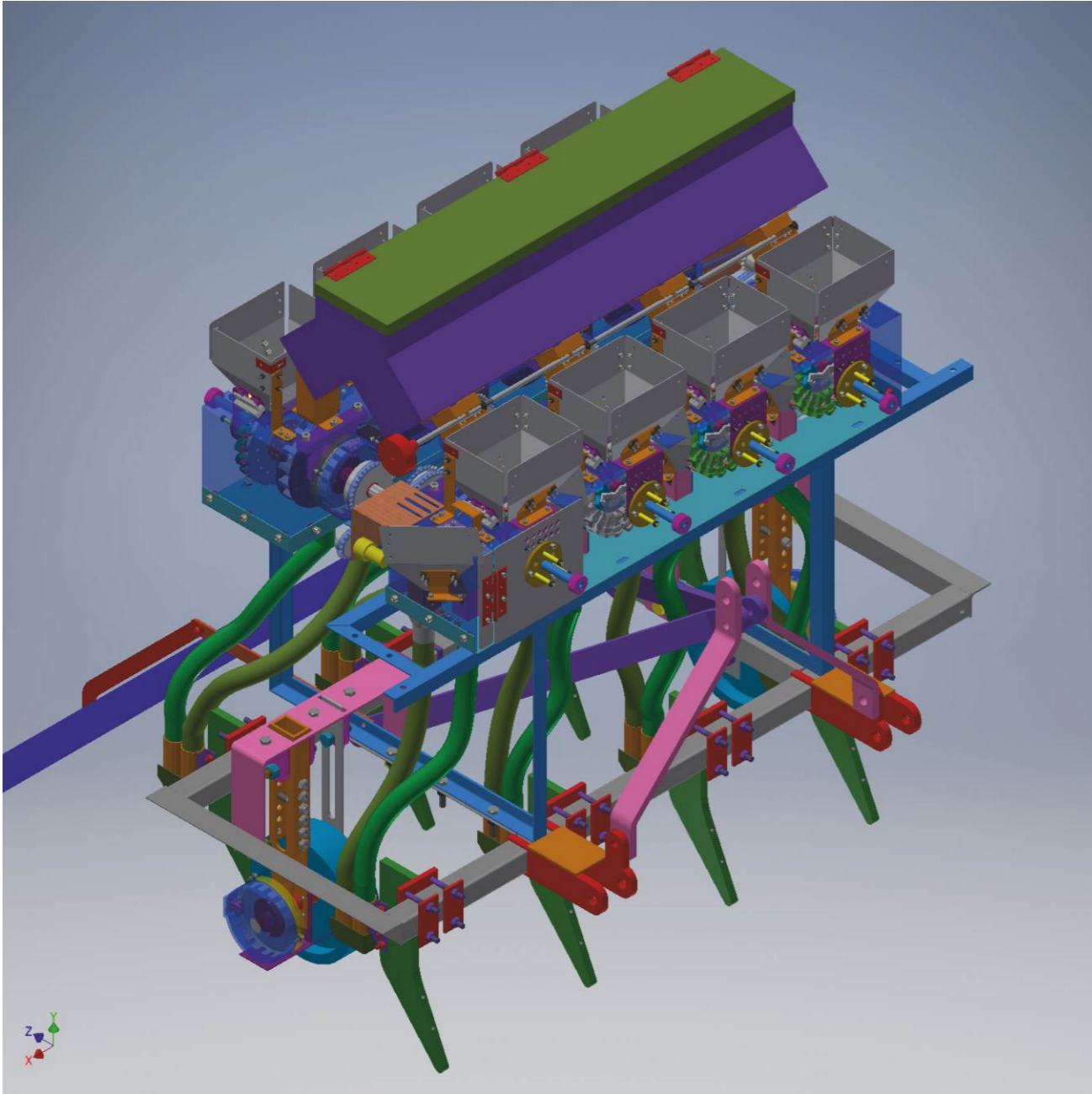
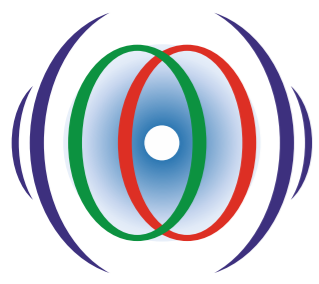
Highly power-dense li-ion battery pack, The design and integration of current carriers and heat dissipating elements allows the optimized heat and current flow. The motor is designed to deliver highest possible efficiency. The size and shape is allows it to be compact and power-dense. The overall architecture and integration of the magnets stacks and coils reduce the thermal stresses.

## **Benefits & Applications**

The electric mobility is fundamentally governed by the battery and motor. Anything that is electric has these elements be it electric vehicles, industrial material handling vehicles, electric boats, military level small ATV, drones, etc. This is not restricted with any scale or application. Our scalable platform can be utilized for any of the mobility solutions. Due to the unique thermal management the whole power-train has almost 2X lifecycle than that of typical li-ion power-trains.

## **NURTURING IDEAS**





## Electronic Sowing Implement

Mr. Deepak Reddy

### Problem Statement

We are addressing lack of proper equipment and workforce shortage in agriculture, especially for cotton sowing operation. Mechanical sowing equipment, which are currently used, lack precision, operational flexibility, and reliability causing wastage of seed and land. For certain crops like cotton, this technology is useless as farmers cannot afford wastage due to high cost of seeds causing lakhs of farmers to use conventional tools and/or workforce, which is already declining in agriculture.

### Concept & Innovative Technology

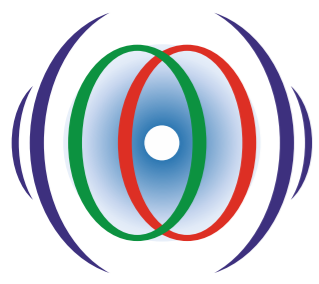
Electronic Sowing Implement (ESI) is tractor driven equipment developed with the intention of (but not limited) to be used for cotton crop. The multiple patents applied, covers the unique method of precise placement of seeds in the soil, which is needed for crops like cotton.

### Benefits & Applications

ESI has the operational flexibility that easily allows farmers to plant two different crops simultaneously. Its onboard electronics reduces the effort and time to setup the equipment and provides precision and reliability. Overall, 70% farmers are awaiting proper mechanization in sowing. With our product we can reach lakhs of farmers awaiting better technology and revolutionize the current scenario of farm mechanization.

## NURTURING IDEAS





## Biometric Authentication Device

Mr. Nikhilesh Wani

### Problem Statement

The cybercrimes related to the identity theft are on a rise. The authentication mechanisms provide good level of security, but hackers are coming up with newer methods of exploiting the vulnerabilities present in these mechanisms.

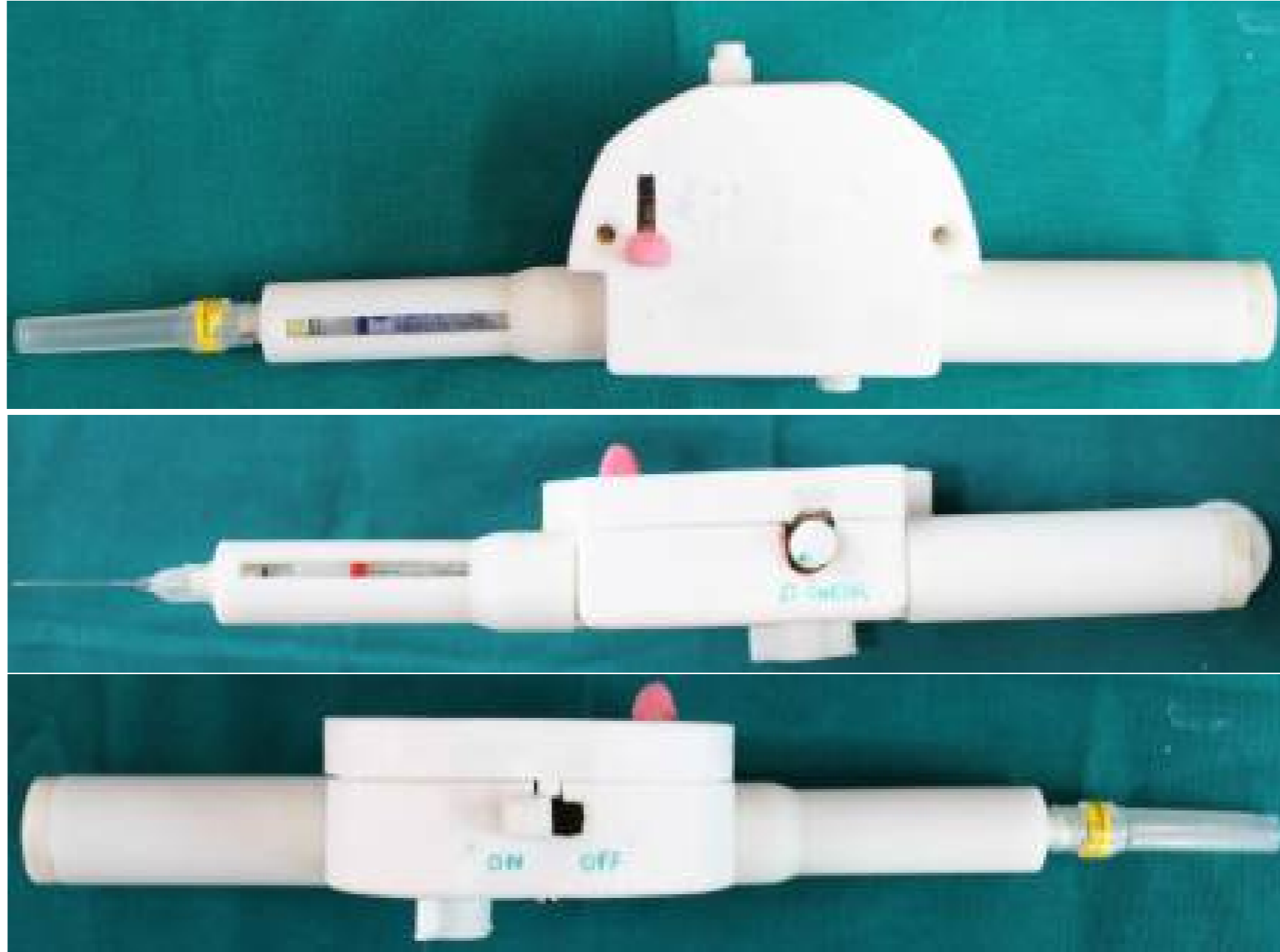
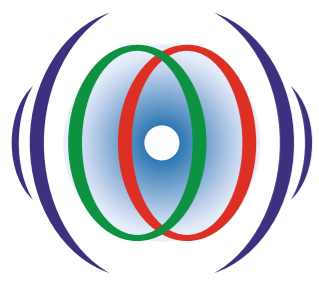
### Concept & Innovative Technology

The technology combines the power of state-of-the-art biometric technology and wireless communication interfaces with the security and scalability of the cloud to provide the users a secure and seamless way to manage their login credentials and access them whenever and wherever they want. With our technology, the users can simply connect their authentication devices to their PC or phone and provide their fingerprint to access and autofill the passwords.

### Benefits & Applications

With this technology, people can now access their login credentials for any of the online websites or applications with just a tap of their fingerprint. As there is no requirement of remembering the passwords anymore, people can set up tough and unique passwords for all their accounts and thereby increase the level of cybersecurity they have. The applications of the technology can be further extended to secure payments, secure government IDs and in the physical access control.

## NURTURING IDEAS



## Local Anesthetic Pen (LAP)- A Self-controlled dental anesthesia syringe for children

Dr Rajavardhan K

### Problem Statement

Intraoral local anesthesia by injection is done for alleviating pain during dental treatments in children and adults, it frequently ends up delivering pain and anxiety prompting consequent unfavourable behaviour during treatment. The device developed through the project will be a rate and volume-controlled, pharmacological technique to improve the experience of children receiving local anaesthetic during the dental procedure.

### Concept & Innovative Technology

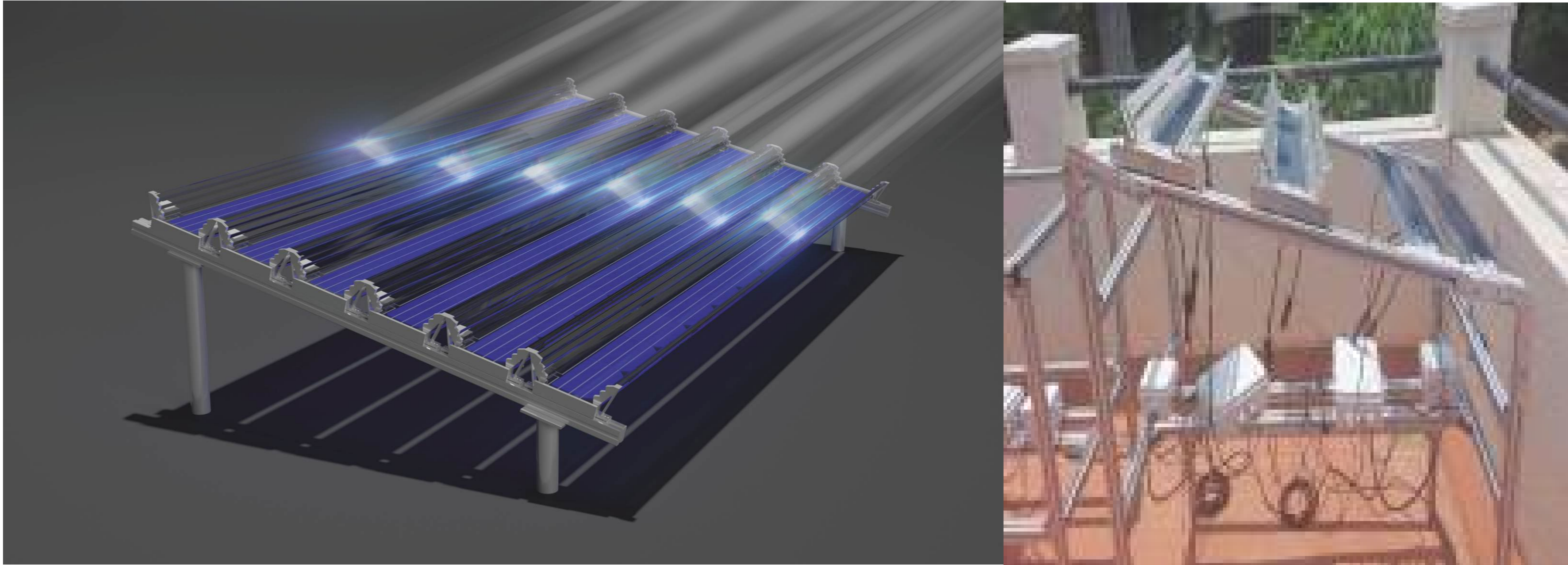
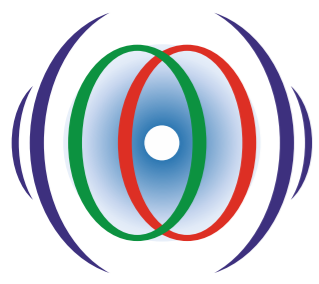
Concept: The development of this syringe is conceptualized from the working principle of insulin devices used by diabetic patients. Innovative Technology: Self controllable (rate and volume) dental local anesthesia syringe system

### Benefits & Applications

The product Reduces Pain during injections done before dental treatments. Moreover provides an Improved esthetic appearance over a regular dental syringe while, the Self-controlled injection system provides more comfort for the dentist and patient.

## NURTURING IDEAS





## Light harvesting glass accessories for solar panel that boost energy generation by 20%

Dr. Lakshmi Santhanam | Renkube Pvt. Ltd.

### Problem Statement

Solar panels today generate peak power only at noon when it is exposed to maximum intensity of sunlight and at other times the energy generation is a bell curve. Like in early morning 7-9 am or 3-5 pm the panels generate only 50% of its peak power.

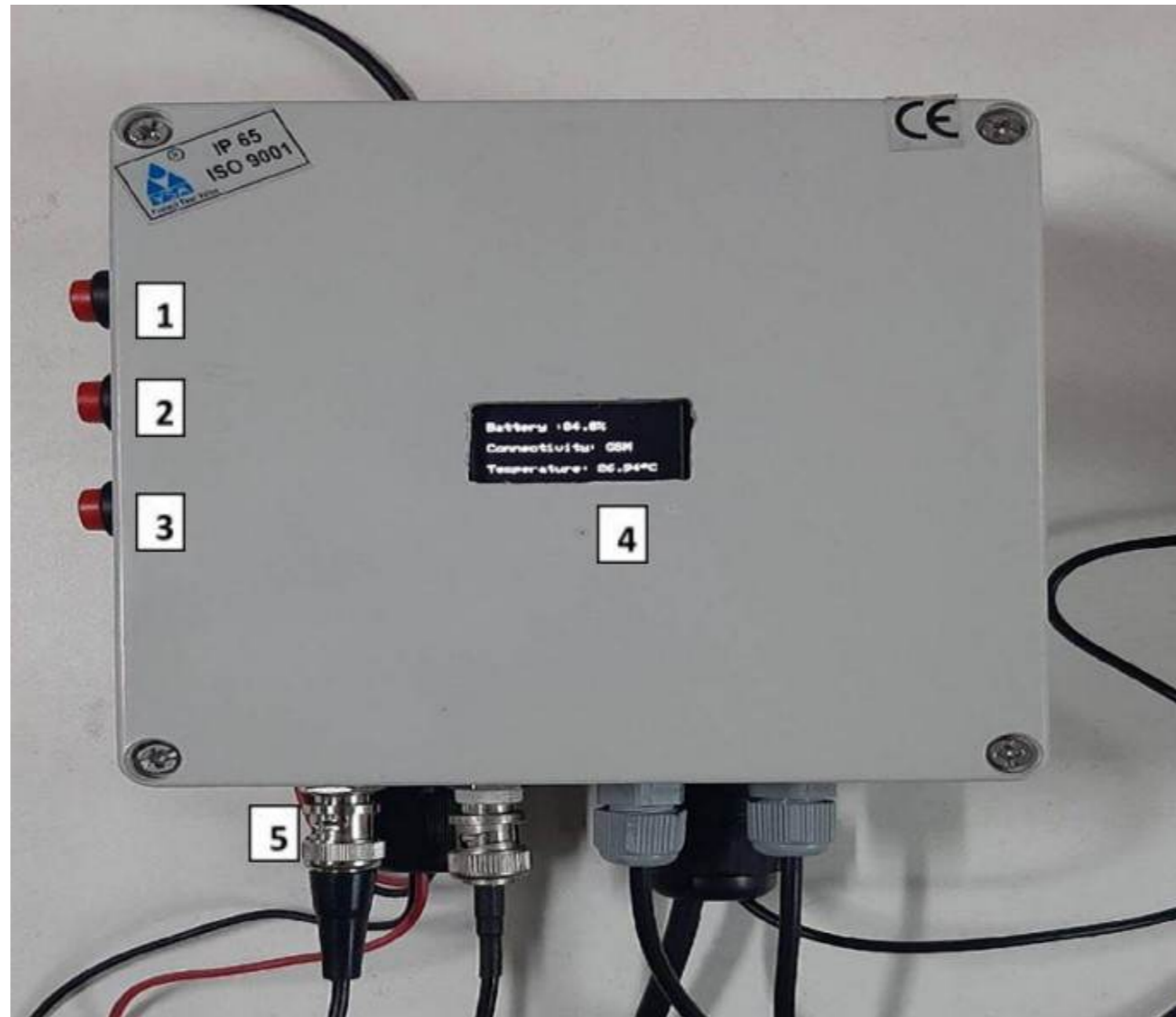
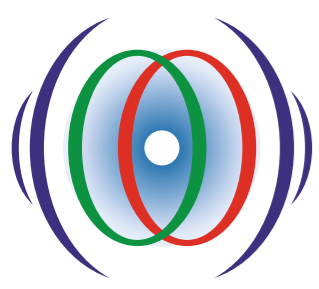
### Concept & Innovative Technology

Our technology offers a solution to improve the overall energy generated from the solar panel with our light redirecting glass accessory by 20% more. A 100 Wp panel that used to give 4 units will now be enabled to generate 5 unit with our patent pending glasses. The glass works purely by the nature of its design and intricate geometries to redirect more sunlight to the solar cell.

### Benefits & Applications

For 100 KW rooftop installation, an end customer investing additional capex of 5% on this project stands to earn Rs 2 Lakhs/year with the extra units of energy generated and can earn this for the next 25 years of the project. For a PV manufacturer, we give a competitive advantage with our light redirecting glass that can be made with regular clear window glass.

## NURTURING IDEAS



## IOT based re-circulatory Aquaculture and Monitoring Systems

Mr. Suvadeep Sarkar

### Problem Statement

When 50% of ocean fish population is lost due to overfishing and traditional aquaculture requires huge volume of water and land, also has very low productivity due to lack of water quality and its monitoring, the demand and supply gap is now 30% and growing further.

### Concept & Innovative Technology

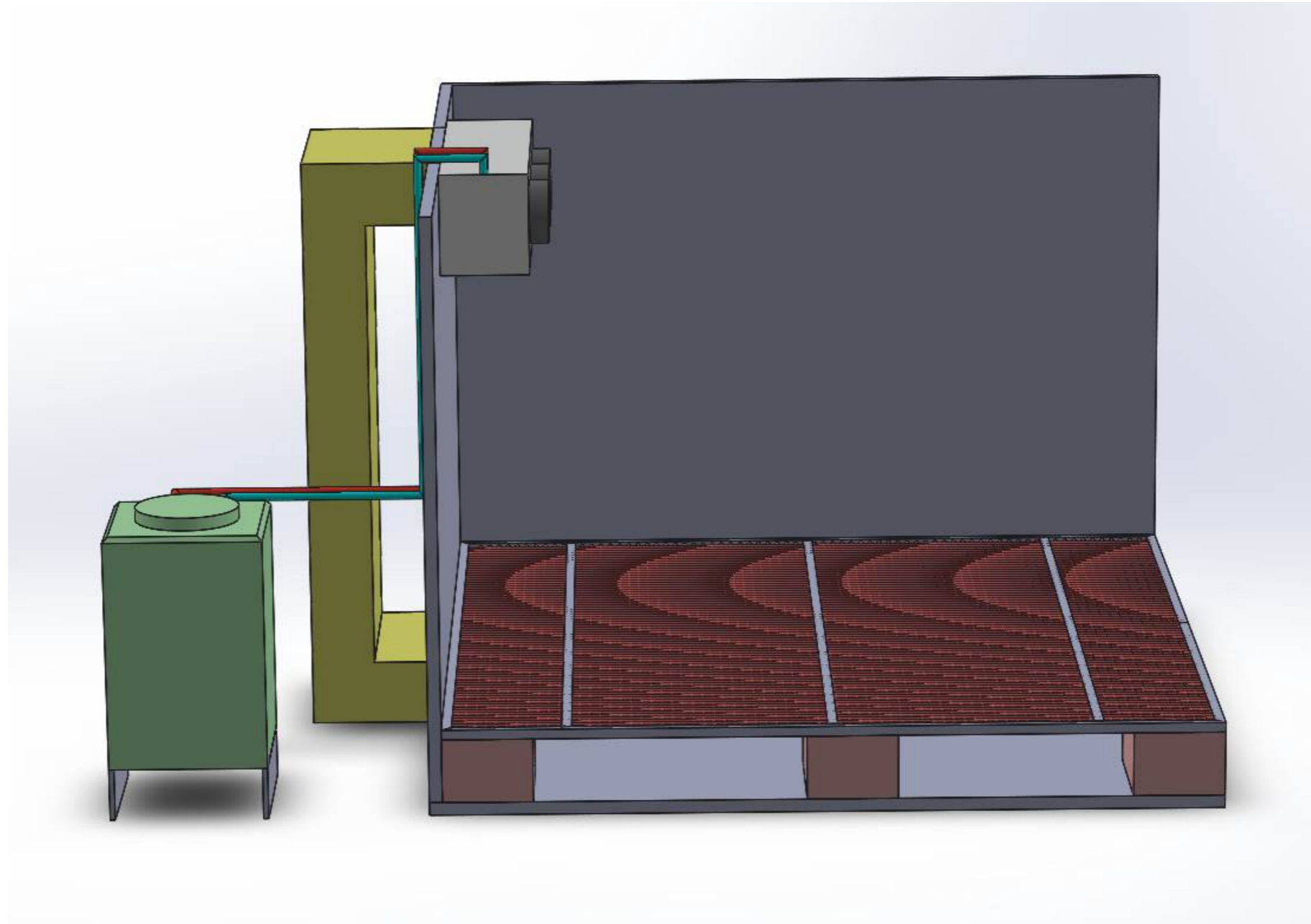
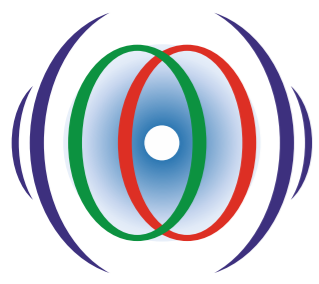
IOT based Nano-aquaculture system in India transforming Aquaculture production dramatically by 30 times and reducing initial seed mortality by 4 times.

### Benefits & Applications

It requires less land. Generally around 900 sq. ft. It requires less water. Generally around 25000 liters. Critical Aquaculture water quality parameters like pH, DO, TDS and Temperature can be monitored real time and preventive steps can be taken. Monitoring system works on 2G-SIM card, batteries and solar. Can be installed in backyard and enable micro-entrepreneurship and income source for woman households.

## NURTURING IDEAS





**A low-cost onion storage system that maintains ideal temperature, humidity, air circulation and ventilation, and reduces storage losses from 40% to 10%**

**Mr. Vishal Singhal | Temparate Technologies Pvt. Ltd.**

## **Problem Statement**

Our country's current onion storage methods lead to wastage of 30-40% of the crop in a typical year. But in years with heavy rainfall the wastage is up to 60% and higher. This leads to supply shortages and a steep rise in onion prices, as witnessed this year.

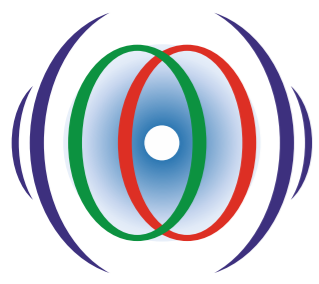
## **Concept & Innovative Technology**

We are developing a new type of system for the long-term storage of onions. The system maintains storage conditions in the desired range of 25-29 °C temperature and 60-65% relative humidity while providing adequate ventilation to avoid the build-up of CO<sub>2</sub> and other gases. An IoT-based monitoring and control system monitors the storage conditions and controls three subsystems: an indirect evaporative cooling system, a desiccant based regenerative dehumidification system, and a ventilation system.

## **Benefits & Applications**

The new storage solution can reduce the wastage of onions to only 10% of the crop in any year, regardless of the weather conditions. This will help in stabilising onion prices, increasing farmer incomes and increasing export revenue for the country.





## Smog Removal Machine

Dr Vijaysinh Sawant | Ambiair Cleaning Technology Pvt. Ltd.

### Problem Statement

Surrounding area and sky appears grey due to high density of smog. This in turn reduces the Air Quality Index (AQI) and reports health hazards to living systems. This especially is serious crisis in winter season every year.

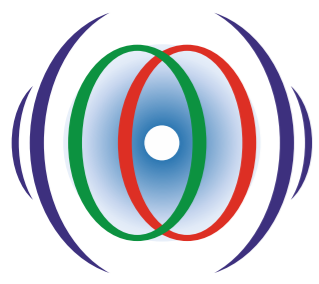
### Concept & Innovative Technology

SRM uses different sensors for identification of various pollutants and implements either/or both positive and negative ionization technology in proportionate manner with ozone identification and suppression technology. This machine cleans air by sucking smog from the top and releasing cleaned air through four sided vents. Purification of air is active process without using any filter.

### Benefits & Applications

SRM has ability to collect, capture up to 78 % of air borne particulates from the dangerous PM 2.5 to PM 10 micrometer range from air and turn it to carbon dust. The potential application of SRM is, installation of number of such systems at main squares in city, local parks, factory premises, highways, airports and number of places in metro cities to improve AQI and visibility, the respiratory health hazards and transportation problems can also be significantly reduced.





## High Torque (>60NM @Low RPM) Synchronous PM Motor with Drive Electronics

Mr. Yogesh Walimbe | Micromation Systems (OPC) Pvt. Ltd.

### Problem Statement

Plenty of low speed non-passenger EV applications like Trolleys, Surveillance Farm-aid vehicles employ typically available BLDC motor rated to provide good power & efficiency at speeds of > 2500 ~ 3000 RPM but low torque & poor efficiency at low (~1000) RPM, hence with higher (>10:1) reduction ratio gear boxes for motor to wheel power transmission resulting in lower Run/Charge & lower battery life.

### Concept & Innovative Technology

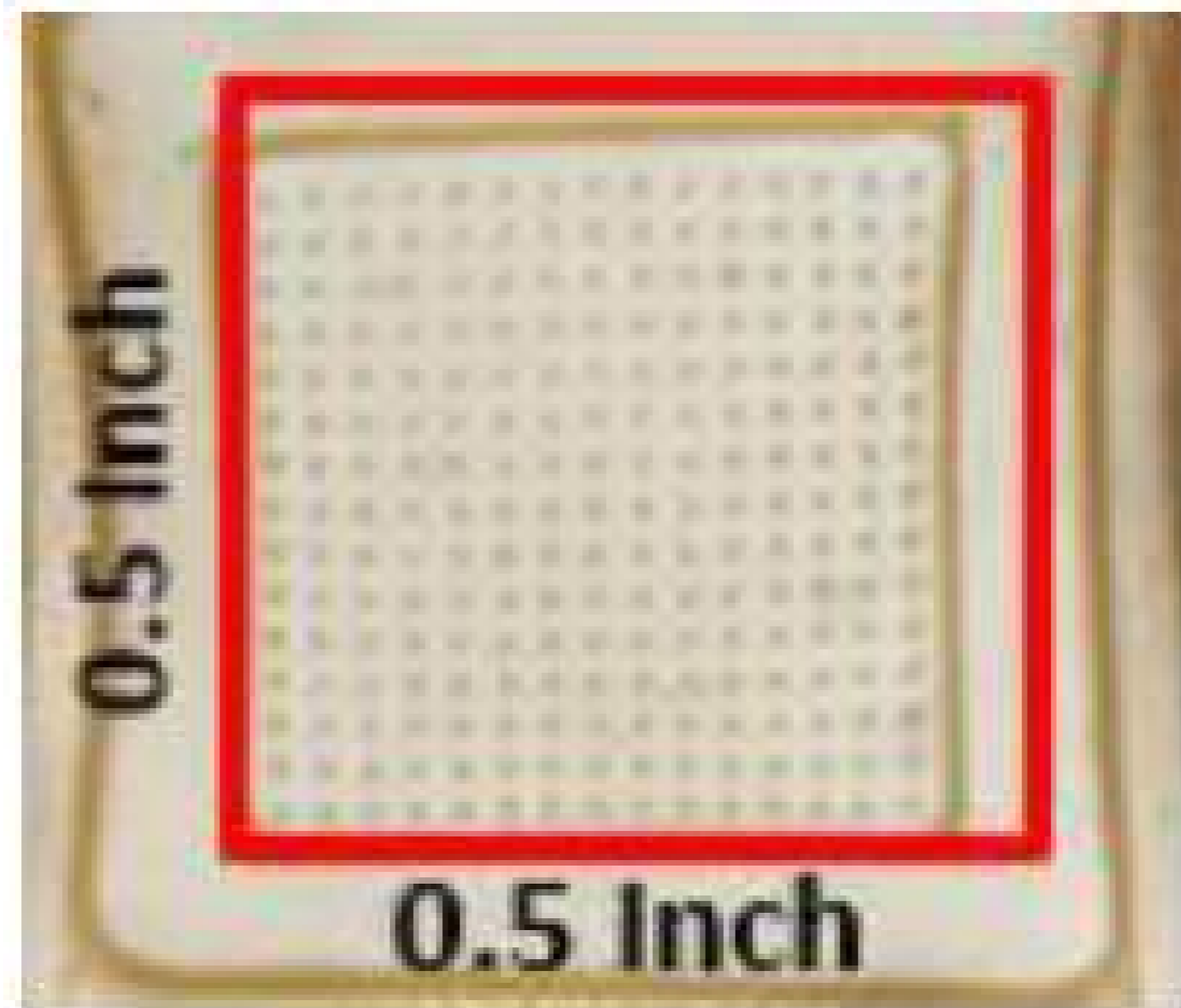
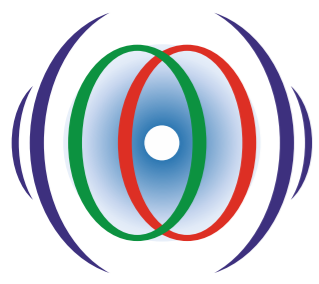
The Synchronous PM motor with its Drive electronics provide very High Torque at starting speeds & moderate or just enough or needed torque at application speeds. This allows for smaller reduction ratios between motor and wheel and thus allows efficient alternate reduction. The motor Torque-Speed characteristics matching with locomotion requirements, Coupled with such efficiency for power transmission, promises optimized battery consumption for local application conditions and ensures better Run/Charge & higher battery life.

### Benefits & Applications

The resultant benefits of higher Run/Charge and higher battery life would offer technologically superior solutions at an economy cost advantage for many EV applications like 3/4 wheeler passenger transport, wheel trolley transport and 2/3 wheel cart for farm applications.

## NURTURING IDEAS





## Development of Hyaluronic Acid Microneedle Patch Enriched With Cardamom Extract For A Nourished Blemish Free Skin

Dr. Amita Ajit

### Problem Statement

Concerns regarding the side effects of chemicals on the skin, causing skin irritation & allergies have been one of the key factors fueling the market growth. The facial care segment has led the market too.

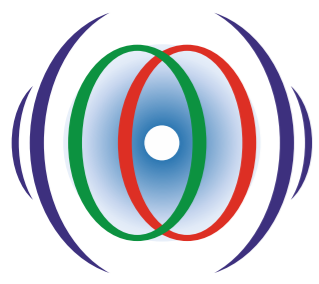
### Concept & Innovative Technology

Cardamom essential oil is popular in skin care due to its anti-inflammatory, antioxidant, antimicrobial and immunomodulatory properties. Delivery of these extracts through microneedling technology is an effective procedure when paired with natural products such as Hyaluronic acid. Cardamom extracts when paired with Hyaluronic acid microneedling, the repair process begins immediately resulting in quicker regeneration, softened wrinkles and scars, as well as a thicker dermis. We have developed a microneedle product that combines the cardamom extract and Hyaluronic acid for a nourished blemish free skin and for the extended treatment of wounds.

### Benefits & Applications

This novel product will benefit consumers in the facial care segment and could be sold through OTC market and also through beauty saloons, dermatology clinics, plastic surgery clinics etc.





## Smart Baby Warmer (Retrokit)

Mr. Kamal Sehgal | Inframedtech Pvt. Ltd.

### Problem Statement

The current baby warmers are standalone servo control devices with no data communication/logging for analysis and no intelligent protocols. They also lack the remote connectivity and aggregation of data for Central Monitoring.

### Concept & Innovative Technology

The warmers will be intelligent and smart with interconnectivity and Central as well as remote monitoring capability. They will have Integrated temp, PR, Oxygenation and baby weight monitoring with USP's for absolute ease of weighing process management minimising need to handle baby, while also encompassing data logging, trends, nurse and doctor roster logs, nurse activity logs, drug database and admission and discharge functions. Analytical tools will be present for easier therapeutic decision making with Admin and factory controls for improved monitoring of service, break downs, complaint resolutions, timely calibrations, history and upgrades.

### Benefits & Applications

AI driven intelligent algorithms to generate vital parameters alert pop-ups, local alerts and notifications over Email/SMS of critical conditions with an automatic generation of custom reports such as "Daily Baby Health Report", "Baby Health Record from date of admission", "Discharge Summary with drug records" shall help in improving efficiency and effectiveness of baby care.

## NURTURING IDEAS