

Synthetic Biology Inspired Probiotic Based Helicobacter pylori Oral Vaccine

Ajay Kalanjana Monnappa | Biosustain Labs Pvt. Ltd.

Problem Statement

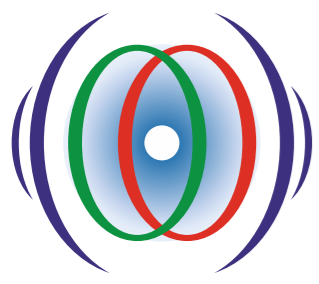
Helicobacter pylori (H. pylori) bacteria infect our stomach. This usually happens during childhood. A common cause of gastric, stomach ulcers (peptic ulcers). H. pylori infection is present in more than 80% Indians and half the people in the world. This pathogen was declared as a type one carcinogen by the World Health Organization (WHO). Till date there is no vaccine against this pathogen. So H. pylori is considered as one of the top six priority pathogens that require vaccine development (WHO, July-2022).

Concept & Innovative Technology

ProSiCell technology is the probiotic based postbiotic which is derived from engineered non immunogenic and nonpathogenic bacteria. Nano sized postbiotic will be equipped with any kind of biomolecule derived from the pathogen to elicit active immunity. ProSiCell is an oral or topical delivery platform containing adjuvants to target the mucosal immune system.

Benefits & Applications

Therapeutic or preventive oral vaccine application. Biomolecule delivery applications (DNA, RNA, Protein). Easy to manufacture, minimal purification steps will be practiced. Biocompatible and safe. Stable at room temperature. Rapid turnaround time-delivery ready vaccine in 15 to 30 days.



Design and Development of efficient bulb crushing system to recover value added materials

Sagar Mukundrao Gawande

Problem Statement

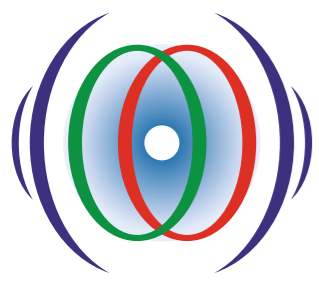
There is no separate collection facility for vehicular bulbs. Most garages dump bulbs with other solid waste or burn with oil soaked cottons. In rural area they throw the bulbs into the streams or dump openly.

Concept & Innovative Technology

The abrasive action of steel balls placed in the drum unit along with collected bulbs and rotated in a drum for pre-determined number of rotations leads to impact on inserted bulbs and allow it break.

Benefits & Applications

One can get 600gm of stainless steel metal and 400gm of glass from 1kg of collected bulbs. One can earn Rs. 101.40 per kg from crushed bulbs by selling steel and glass. If we add the selling price for tungsten and mercury it will give us revenue with more profit. After subtracting the entire expenditures one can generate a net profit of Rs. 66.4 per kg. If we consider Maharashtra and India as a whole this quantum and revenue generation will be more than the expected. This innovation will help in Swachh Bharat Abhiyan and Make in India initiative.



Development of Filter media for chelating and removing high loads of dissolved metal salts from pickling acid

Dr. Ranjit S. Joshi | HariSi Pvt. Ltd.

Problem Statement

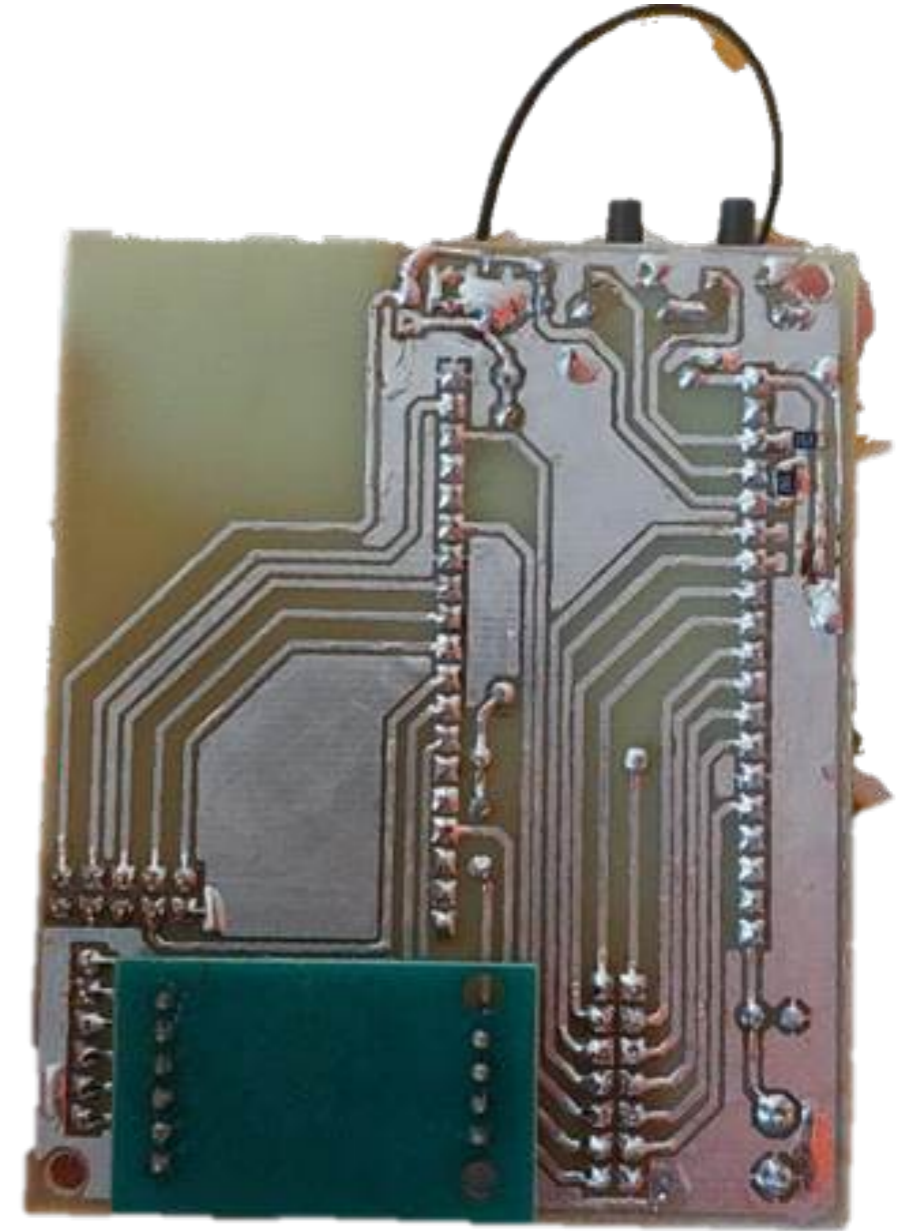
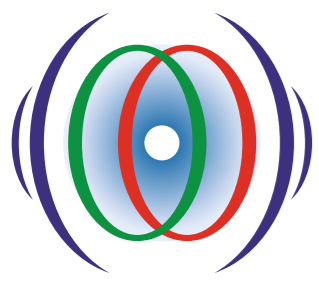
Pickling acid in metal processing (galvanizing) industry is a problem due to very high dissolved metal salts (TDS) content and undissolved or colloidal metal oxides (TSS) in very low pH aqueous system. Getting rid off the dissolved metal salts is not solved till date by any cost-effective in-house option available to this industry is a PAN-Global eventuality in this industry segment.

Concept & Innovative Technology

REGOLITH which is a proprietary blend of materials starts a bundling out of TDS & TSS part of solids entered the acidic environment and converts them into a non-compressible nature make them process (filtration) friendly. Regolith in synergy with filtration method dictates removal of TDS/TSS in a well-engineered schedule to extend the life of Pickling Acid indefinitely.

Benefits & Applications

Low-to-Negligible waste acid fall out; Reduction in Acid disposal; Converts compressible pickling sludge to non-compressible precipitate; Increases productivity & reduction in down time of pickling tanks; Reduced rejections of finished good; Lower acid fume generation increases life of industrial infrastructure; Helps to achieve Zero-Liquid-Discharge target.



An IOT based Self-cleaning Uroflowmeter with disposable urine container

Gandhali Tophkhane

Problem Statement

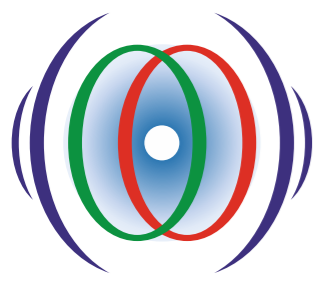
The self-cleaning uroflowmeter, which is a basic device used by urologists to detect problems in lower urinary tract, was not functioning properly due to choking of the beaker. Salt depositions from the urine, discharge of fecal matter, debris or small particles from water source blocked the beaker. The resulting report was also not accessible remotely.

Concept & Innovative Technology

Disposable type of urine container which can be easily replaced. IoT interface to give instantaneous results to the user on his/her phone/PC/tablet. Indication of changing the beaker in case of blockage.

Benefits & Applications

It is used by every urologist as a first screening test to determine the problems in the lower urinary tract. The innovation would help in smoother operation of the Uroflowmetry test, reduced downtime as the urine container will be easily replaced and easy accessibility as the IoT interface will allow to get reports on the smart devices



Detachable Power Attachment and Steering Handle For Manual Wheelchair

Nishad Mahavir Bagawade | Eglence Mobility Pvt. Ltd.

Problem Statement

There is no reliable and affordable mobility vehicle for indoor as well as outdoor use for the leg handicapped and old people. Crossing long distances in limited time within society/institute/company/airport/hotels/hospitals etc. is a challenge for people with walking disability. Increasing Pollution & Oil and Gas Prices due to depletion of natural resources.

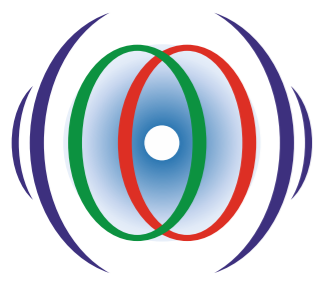
Concept & Innovative Technology

The unit consists of a motorized front wheel with steering handle battery arrangement and attachment adaptor that makes the manual wheelchair electric powered when assembled. The innovation is in attachment adaptor and joining mechanism between adaptor and powered wheel arrangement. The joint transfers the driving force and steering direction from the power attachment to the wheelchair. It also considers sitting ergonomics as it provides ample space for the user. Attachment and detachment are easy, minimum time consuming, and with minimum linkages.

Benefits & Applications

Enabling people with walking disabilities to move indoors and commute outdoor with better speed, range, and reliability. Making People with walking disabilities Self Reliant (Aatma Nirbhar) by providing Reliable, Affordable, Environment Friendly Mobility.

NURTURING IDEAS



Robotic Bed to Wheelchair Device (DETOIN)

Jayakrishnan Namboothiri P. N.

Problem Statement

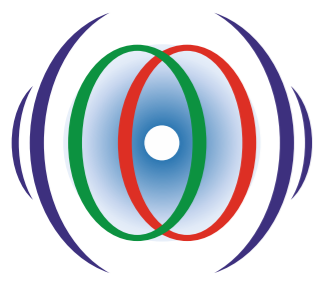
People who are bedridden, injured in accidents, or paralysed have numerous challenges in life and must rely on others to provide their basic requirements. They may live their lives independently by using this Robotic Bed to Wheelchair Device to overcome the problem.

Concept & Innovative Technology

The basic scientific idea behind the Robotic Bed to Wheelchair Device (DETOIN) is the use of PID-controlled DC motors for movement. The device has unique technology that enables transfer, turning, and repositioning as well as joystick and voice control movement and a conveniently accessible bathroom. The objective is to provide a wheelchair that will enable the person to independently navigate their surroundings, including their home, place of education, place of employment, and community.

Benefits & Applications

The system uses technologies for automatic transfer, turning, and repositioning, as well as voice control and joystick movement. The applications are: Hospitals - For elderly patients who are reliant and bedridden, Nursing Homes/Old Age Homes - For the elderly and persons with disabilities and for accident victims & paralyzed people.



Sustainable Stubble Management Ecosystem – (SSME)

Vaibhav Sehgal | FarmOn Agristack Pvt. Ltd.

Problem Statement

Crop residue management is one of the major growing problems facing by the Indian farmers. Due to non-availability of the efficient and economical solution, the farmers are forced to burn the crop residue which leads to 17% Air pollution, 2 lakh crore economic loss and 3.5 lakh deaths annually.

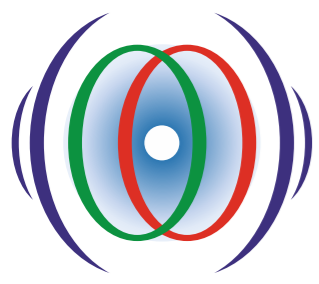
Concept & Innovative Technology

The system consists of three machines working in harmony with each other. At its core is the Patented Stubble Reaper Baler, named as PRAPTI. The machine cuts the stubble making it in cylindrical bales simultaneously seeding the next crop. The bales are then dropped and transported off-field using MITTI Bot while performing soil inspection. The pellet machine then converts these low-density bales into small and high-density cylindrical pellets helping to reduce the storage and transportation cost up to 2/3rd.

Benefits & Applications

This technology will help farmer to clear the land and sow seed with this model at minimal prices. Due to lower transportation costs and storage requirements for Pellets, they can be easily transported to Industries and generate additional revenues from which the monetary benefits are shared with the farmers.

NURTURING IDEAS



Long range, high endurance Hybrid VTOL UAV with RGB + IR Camera Payload

Rushikesh Chaudhari | Tecrient Space Pvt. Ltd.

Problem Statement

Solar panels lose efficiency due to dust, obstruction, micro cracks, etc. This leads to decrease in power output from the Solar Park resulting in lower revenue for the plant owners. Manual Inspection of panels for fault detection is an expensive, time-consuming and tedious process. Multirotor drones used for Thermal inspection have very low flight time and highly expensive.

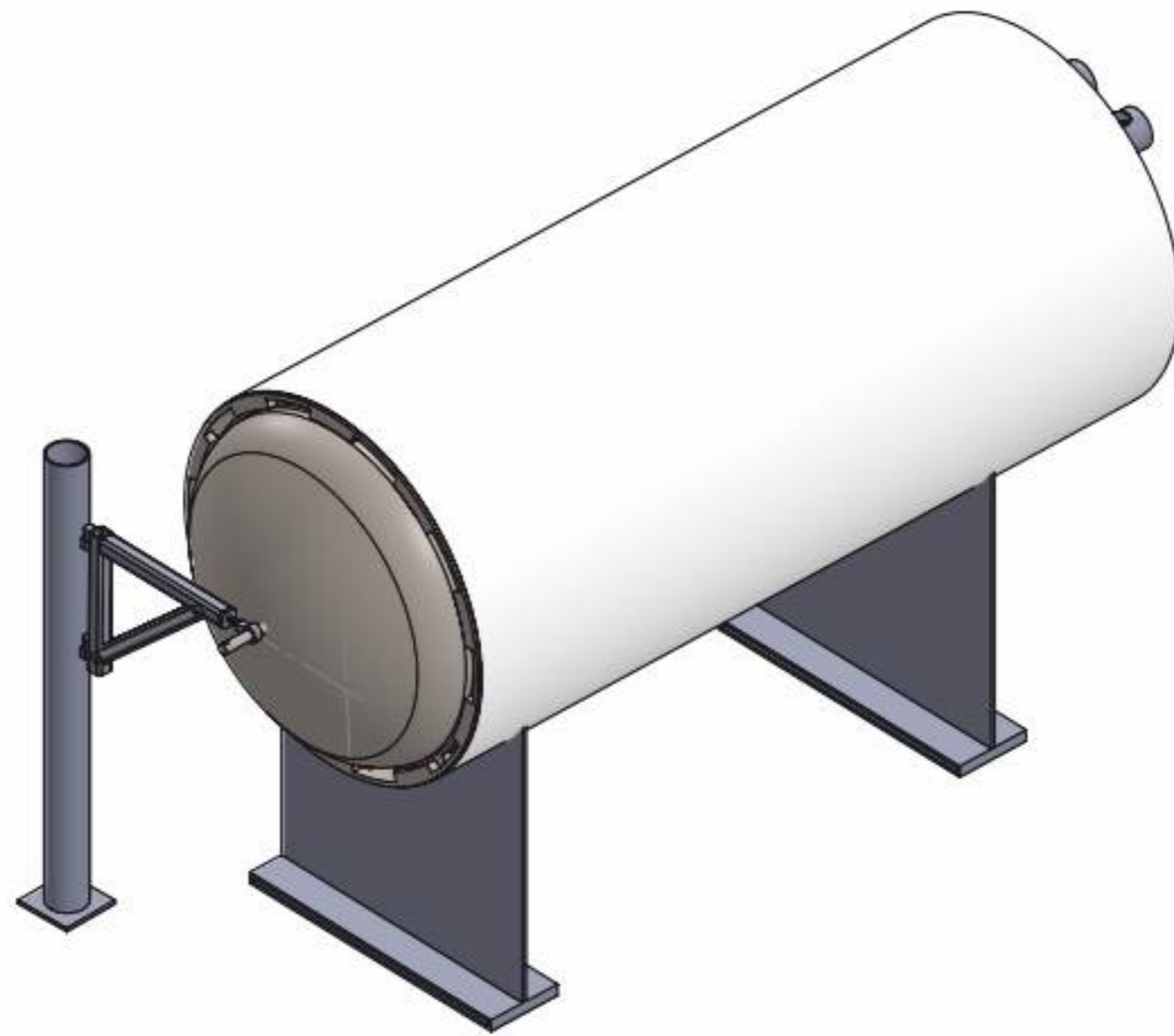
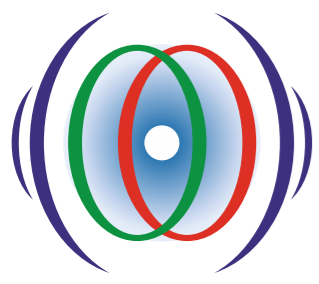
Concept & Innovative Technology

Long range, high endurance Hybrid VTOL UAV with RGB + Infrared Camera Payload to detect faulty Solar Panels. Take off and land from small spaces and is 5x faster at survey than multirotor drones, and 30x faster than manual surveying.

Benefits & Applications

Benefits: Predictable Preventive Maintenance, reduced Maintenance and Repair Cost by 10x. Zero Downtime. Avoid Dangerous Work hours.

Applications: Solar Panels in Solar power parks, Wind Turbine Blades, High Power Long Transmission Lines, Oil and Gas pipelines for Structural Defects and Leakages.



Eco-Friendly Cremation

Rajhans Namdeo Chavan

Problem Statement

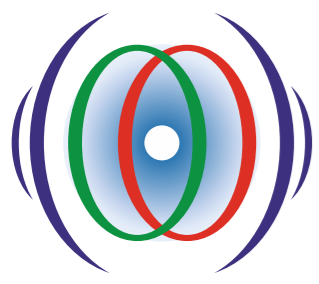
Existing cremation methods rely heavily on flammable fuels or high-power electrical systems to complete the process; such systems are costly, polluting and provide only a thin margin of safety for those operating them.

Concept & Innovative Technology

Hydrolysis is the primary operating principle in this technology. The procedure involves immersing the corpse in an alkaline solution, which breaks it down into various basic components that are naturally harmless. The entire process can be sped up by heating it, which acts as a catalyst and shortens the process time. The system used to heat up the process uses less energy than existing systems and takes much less time to reach operating temperature.

Benefits & Applications

This process consumes less than half of the total energy consumed by the previous system while also marginally lowering total process time. Because this entire process is enclosed and does not use flammable fuel to function, it is fully smokeless, reducing air pollution while boosting operator safety.



AI+ Estrous Detector

Kalpak Shahane | Vaishvik Innovative Solutions LLP

Problem Statement

Artificial or natural Insemination is the highest required procedure in Milk Industry. To enhance breed quality Artificial Insemination (AI) is convenient and best option for quality and quantity milk production. Another important issues - False, Late or non detection of Estrous & Ovulation period i.e. Silent Heat Detection problem. Not a single company/Startup in India is manufacturing Estrous detection though they manufacture Endoscopic AI. Even no company in World is manufacturing a combination of both.

Concept & Innovative Technology

Sensor based Detection of Estrous period in cattle and Endoscopic Artificial insemination. We are making a sensor based Estrous detector with endoscopic camera on its tip so it will detect silent heat and can be used to inseminate the cow.

Benefits & Applications

This product will increase successful Artificial insemination by endoscopic AI application plus many of cows doesn't show physical symptoms that problem will be solved by sensors combination of both will benefit farmers.