

Project Title: **ADROIT WIPERS**

A windscreen wiper or windshield wiper is a device used to remove rain, snow, ice and debris from a windscreen or windshield. Almost all motor vehicle, including cars, trucks, trains locomotives, watercraft with a cabin and some aircraft, are equipped with such wipers, which are usually an important requirement also legally. A wiper generally consists of a metal arm, pivoting at one end and with a long rubber blade attached to the other. The arm is powered by a motor, often an electric motor. The blade is swung back and forth over the glass, pushing water or other precipitation from its surface. The speed is normally adjustable, with several continuous speeds and often one or more "intermittent" settings. On some vehicles, a windshield washer system is also used. This system sprays water or an antifreeze window washer fluid at the windshield using several nozzles. The windshield washer system helps to remove dirt or dust from the windshield when it is used in contact with the wiper blades. The conventional washers would blast the windshield with continuous spray, temporarily impeding your view at the very moment you are trying to improve your view. With Adroit Wipers the windshield wipers and washers are combined replacing the conventional spray nozzles. Tiny holes along each blade, spray the fluid directly in front of the wipers as they sweep in either direction, as a result water consumption is reduced by almost 50 % over a conventional windshield wiper system. This system is economic and can be used with a small adjustment.

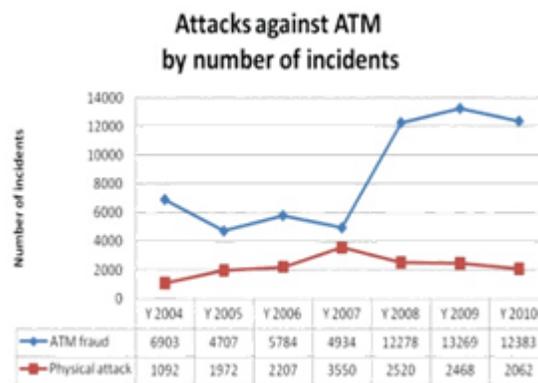
Project Title: **ATM FRAUD PREVENTION MACHINE**

Now a day the fraud regards to atm machines increases day by day progressively. The graph of robbery in atm includes physical attack. The below statistics necessitates the implementation of atm crime prevention system. Therefore, this paper suggests the method of providing security to both the atm and the customers whoever using atm service....

For remedy of this problem, we find out the solution that is "atm fraud prevention system machine ". By this system we can prevent the fraud of atm by various means.

In this atm system when any robber or person who want to rob it enter in the atm machine and want to take cash out the machine through drilling, hammering or other means of source then following thing will happen in this atm system.....

When the robber hammered or drilled the atm box then at that time the atm door



automatically closed.

In the same time the sleeping gas (neothyl gas) instantly releases in atm cabin that unconscious the robber at that time .

At that time only the siren starts and the message of robbery send to dial 100 police vehicle . So they suddenly report at their within soon

Project Title: **Automatic braking system in automobiles**

As we know, in our country, according to survey of last year a total of 4,80,652 road accidents took place in India resulting loss of 1,50,785 lives which is 413 per day, which is a very serious problem for our country. The motive of our project is to minimize or stop such serious problem. Whenever there is a vehicle in high speed near traffic, road turning and crowded area then our automation braking system work to decrease the speed of the vehicle or automobiles independently or automatically without manpower..

It is economically feasible or very low cost which can be implemented in small area or even rural area.

First of all, we use receiver with the help of a sensor, in automobiles. We use transmitter on the traffic, crowded area, corner's street. Whenever there is vehicles in very high speed then, the transmitter send signal to the receiver which is in build in automobiles. Whenever receiver receives the signal then it works to decrease the speed or even stop by applying break on the vehicle.

By decreasing in speed of vehicle or automobile there will be decreasing of road accidents which saves many lives every day. It is economically feasible or very low cost which can be implemented in small area or even rural area.

Project Title: **Automatic Fluid Tap Controller and Fluid Saving**

It is observed that many times due to loosed tap valve or due to leakage and improper monitoring of taps lots of fluid is wasted. Due to improper monitoring lots of water is usually wasted, for example; because of bucket overflow, overflow of tank.

In this project our aim is to design an automatic tap using ultrasonic sensor with the help of AURDINO-UNO board. This project is capable of sensing the fluid level

automatically and capable of turning off the tap valve when fluid is about to overflow. This will help the society to eradicate the wastage of fluid.

Project Title: Analysis of Drag Force Between Maruti Alto And Omni Van, In Terms Of Engine Heat Dissipation And Fuel Consumption

In today's world, with increasing fuel prices and stricter emission control, increasing the fuel efficiency of a vehicle has become one of the major focuses of the manufacturers. And it is relatively more difficult and complicated to squeeze out 5 horsepower from the engine, than simply improving the aerodynamic design of the vehicle. About half of the fuel energy generated from the combustion chamber of the engine is dissipated or lost to counter this strong aerodynamic force and propel the vehicle against it. Thus even in 1% decrease of drag coefficient can save hundreds of rupees per year by the increase of the fuel economy of the vehicle. We decided to provide a comparison of fuel consumption of two vehicles, i.e. one a hatchback (maruti alto) and a boxy van (maruti omni) as they would have different drag coefficients. Thus the corresponding relation between the drag coefficients and the fuel consumption would be incurred. This will just sum up the idea of the importance of aerodynamic reduction and how much money can be saved by just understanding simple physics of aerodynamic drag force and using it to our advantage. This will be the first part of the research analysis that would be related to the corresponding relation between aerodynamic drag and the corresponding difference in the fuel efficiencies of both the vehicles. The second part of the research would be integrated on the proper heat dissipation techniques inside the engine bay of the vehicle. The aerodynamic drag would again come into the picture, here the incoming air would be properly channelled via a duct system to the engine bay, thereby reducing drag as well as ensuring proper heat dissipation from the engine compartment. By doing this research, the data that would be generated would give an important comparison between the aerodynamic drag of the vehicle as well as its corresponding fuel efficiency of the vehicle, and the amount of money that could be saved by the implementation of the usage of duct system.

Project Title: Autonomous Drone

The idea behind the project "Autonomous Drone" is to create a Quadcopter with Sensing abilities and responses according to it. In brief it has the ability to fly and find its way on its own using the distance sensors and computing the values of the distance sensors with the help of Control Theory. It has a feature to construct a live Map and it helps in seeking enemy traps.

Features:

1. Altitude Holding
2. Position Holding

3. Live Video Streaming

4. Autopilot Driven

Project Title: Charging of Electronics Gadgets as Smart Phone by Utilising Wind and Solar Energy

This is an era of electronic gadgets like Smartphone, tablet, etc. But charging these gadgets is one of the main problem which arises during travelling or in remote places.

Our project is practical, portable charging unit for electronic gadgets. This project harnesses the wind energy and solar energy to charge a mobile during journey or in a remote area. The system has a highly effective wind energy system which can be used in the car, train or even in the mountain, remote places where electricity is not available.

It converts wind energy into mechanical energy by using a 350 rpm motor which in-turn produces electricity. This electricity is then controlled by using a diode which stabilizes the required voltage and current ideal for charging.

Another side of the block system uses a solar panel where it uses solar energy to charge a cell or mobile. This project proposes a universal mobile charger which is a highly efficient, easy to install, portable, very economical as it uses non conventional energy source.

Project Title: Automatic Food Dust, Vacuum Cleaning Machine

This project deals with the fabrication of automatic food dust vacuum cleaning machine .The aim of this project work is to develop and modernize process of cleaning the food dust using the automatic machine .

It is useful for cleaning food dust .It can widely used in houses ,hospital, auditorium, shops, computer centre etc. Cleaning of food dust is very important one for our health and reduces the man power requirement. In our project food dust are cleaned automatically by putting step in the machine. Hence our project is very useful in our day to day life .

Project Title: BALANCING WHEEL IN CYCLE

As we all know about cycle, it is the means of transport which is used by every class of people whether they are rich or poor. Poor people used it as a means of transport while rich people used it to maintain their health, It is used by every age group for different different purposes but it's uses is on a large scale in every country,but there is a problem of balancing it by many peoples and at traffic also we have to support it by our legs therefore to get rid off this problem we can attach

a support which is known as flywheel. The concept of flywheel comes from design of aeroplane as it supports it during landing but it can also be useful in bicycle. The flywheel is a device to control bicycle and make it more stable as before. Balancing wheel will help in maintaining the constant angular speed of the other two wheels of bicycle. The design of balancing wheel is simple not so complex.

Advantages:-

- 1- It will made bicycle more stable.
- 2- Easy driving of bicycle.
- 3- It is not more costly, easily affordable for all group of people.
- 4- It will provide more balance during stopping of bicycle.
- 5- It will made the design of bicycle more better than before.
- 6- The one who drive will not have to more worry about driving because of it.
- 7- Learning of bicycle for small age age group of people become more simple.

Project Title: CALCULATE THE PERFORMANCE OF SPARK PLUG IGNITION ENGINE BY USING FUEL BLEND

Bioethanol (BioE) is a fuel derived from renewable sources of feedstock, typically plants such as wheat, sugar beet, corn, straw, and wood. Bioethanol is an alternative fuel that is produced almost entirely from food crops. Bioethanol represents an important, renewable liquid fuel for motor vehicles. In order to produce BioE from cellulosic biomass, a pretreatment process is used to reduce the sample size, break down the hemicelluloses to sugars, and open up the structure of the cellulose component. The cellulose portion is hydrolyzed by acids or enzymes into glucose sugar that is fermented to BioE. The sugars from the hemicelluloses are also fermented BioE. Producing and using BioE as a transportation fuel can help reduce carbon dioxide buildup in two important ways: by displacing the use of fossil fuels, and by recycling the carbon dioxide that is released when it is combusted as fuel. Using ethanol-blended fuel for automobiles can significantly reduce petroleum use and exhaust greenhouse gas emission. An important advantage of crop-based ethanol is its greenhouse benefits.

An alternative fuel vehicle is a vehicle that runs on a fuel other than traditional petroleum fuels (petrol or Diesel fuel); and also refers to any technology of powering an engine that does not involve solely petroleum (e.g. electric car, hybrid electric vehicles, solar powered). Because of a combination of factors, such as environmental concerns, high oil prices and the potential for peak oil, development of cleaner alternative fuels and advanced power systems for vehicles has become a high priority for many governments and vehicle manufacturers around the world. Hybrid electric vehicles such as the Toyota Prius are not actually alternative fuel vehicles, but through advanced technologies in the electric battery and motor/generator, they make a more efficient use of petroleum fuel. Other research and development efforts in alternative forms of power focus on developing

all-electric and fuel cell vehicles, and even the stored energy of compressed air. An environmental analysis extends beyond just the operating efficiency and emissions. A life-cycle assessment of a vehicle involves production and post-use considerations.

Project Title: **CLOTH DRYER & SOAP DRYER**

Today is an era of technology, and technology plays a vital role in today world. On the same note, our team has made a project named as the "Cloth Dryer & Soap Dryer" which in these days this can be very useful to us. Cloth Dryer and Soap Dryer is low cost device. In cloth dryer a wet cloth can be dried in at least 15 minutes. This device runs in less consumption of electricity. In rainy season, clothes takes a lot of time to dry due to the humid weather. In this situation we can use this device. This is a lightweight device and thus can be taken anywhere while travelling, and since it is low budget device anyone can afford it. On the other hand, Soap Dryer is used after bathing to save soap bars. When soap is wet, it dissolves and reduce in size, even when it is not in use. So to stop this we preferred to dry the soap when not in use. Thus this device stops extra wastage of soap. In addition to this, Cloth dryer operates with less consumption of electricity. Also it don't need any special skill to operate it and thus can be operated by any unskilled person also.

Project Title: **Crane Cable Trolley**

A trolley is a large metal basket or frame on wheels, used for transporting heavy or large items. Crane cable trolley is a special type of trolley which helps in transportation of material in a building from ground floor to upper floors. It is a motorized trolley which runs on very strong rope known as cable. In earlier days , transportation of material was done manually i.e. by labours but nowadays , cable trolley is used which saves time and money. We'll be showing a building of 3 floors, out of which 2 floors will be completely cemented while the top floor will be lacking the cementing part. The trolley will carry the matter through cable to the top floor for the purpose of cementing.

Project Title: **Design and Fabrication Of Automotive Suspension Control Arm By Composite Material**

In the automotive world, the function of suspension system is to absorb vibrations due to rough terrains or road disturbances and to provide stability under circumstances like accelerating, cornering, uneven road, braking, loading and unloading etc. Control arm is one of the most important parts of the suspension system, as it joins the steering knuckle to the vehicle frame. Also suspension arm is responsible for up and down movement of wheels when hitting bumps. It is also designed to maximize the friction between tire contacts, patch the road surface to

provide vehicle stability under any circumstances. It can be seen in many types of the suspensions like wishbone or double wishbone suspensions. Many times it is also called as A-type control arm. The unique combinations of properties provided by aluminium and its alloys make aluminium one of the most versatile, economical, and attractive metallic materials for a broad range of uses. Aluminium has a density of only 2.7 g/cm³, approximately one-third as much as steel (7.83 g/cm³). One cubic foot of steel weighs about 490 lb; a cubic foot of aluminium, only about 170 lb. Aluminium can resist corrosion by water, and other environmental factors, and by a wide range of other chemical and physical agents. The static structural analysis was done to find out the stress, deformation and safety factor of component. Result obtained from the analysis was studied to check whether the design is safe or not. In some cases the stresses becomes more than safe limit. In that case optimization approach is carried out to increase the structural strength of the component. In this case maximum von-mises stress is 211 MPa which is below the yield strength of the material. Specifically, it will cover the analysis and testing of composite laminates, as well as the design of metallic hard points to transfer loads into them. These two areas are where composites differ most significantly from traditional structures built from steel or aluminum, and are critically important in the design of effective composite structures.

Project Title: **Design And Fabrication Of Horizontal Axis Wind Turbine**

Wind energy is one of the promising renewable energy, used to generate electric power. The search for environmental friendly, sustainable energy has promoted in this industrial world. The present global technological society is depended on the availability of energy. The development of industry, agriculture and transportation, etc. is totally depended on the availability of power. The cost of energy is increasing day by day due to the increase in the demand of power and depletion of the conventional energy resources, which are used in the generation of electricity. So, it is very essential to make use of the non- conventional sources of energy like wind energy, solar energy, tidal energy, etc. Wind is considered to be one of the most promising resources in the renewable energy portfolio. Wind energy is used to generate electrical power by rotating the rotor shaft by the conversion of kinetic energy of wind into rotational energy of the shaft. The objective of this work is to develop a domestic wind turbine which works at low wind speeds and which can be made available to the common man at a very low price. Polyvinyl chloride, which is easily available, has been utilized to fabricate the blades. In the design process, basic aerofoil section is considered with various forces acting on the blades are calculated theoretically and the design is optimized to get the optimum power output. The rotational speed of the wind turbine is maximized by using a gear ratio. A DC dynamo which acts as generator is used to extract power.

Project Title: Power Generation Using Vehicle Suspension

Regenerative shock absorber is a type of suspension system that converts parasitic intermittent linear motion & vibration into useful energy, such as electricity. Conventional shock absorber simply dissipate these energy as heat. In our project, we use shock absorber, rack & pinion arrangement and dynamo. As shock absorber effect formed, spring is compressed. Linear movement of crank is converted into the rotary motion due to pinion moves as the rack is meshed with pinion and the pinion is mounted on the shaft which is connected to shaft of dynamo. Due to this arrangement, rotary motion of pinion is used to rotate dynamo. As dynamo rotates, it leads to the generation of electrical energy. And this energy is used to charge the battery and these store energy is use for different vehicle accessories like power window, lights & air conditioners etc. this energy applicable in most of the military vehicles, race automobiles & maximum suspension system. We also use electromagnetic system to generate power .To achieve this we here use the principles of electromagnetism in order to generate electricity from this motion. Our shock absorber is made up of a metal shaft, spring, magnet, coils, base with screws and joints. It uses a coil wound around in particular turning arrangement over the inner beam of the part. We use cylindrical supports in order to minimize friction and ensure smooth generation. The head of the absorber consists of magnets attached to outer core which are aligned with inner core to ensure smooth motion while ensuring efficient generation. This arrangement is fitted with springs in a precise manner so as to achieve the desired motion and magnet coil overlapping which allows for generation of electricity through electromagnetism principle. Thus our system puts forward a smart power generation system using electromagnetic suspension system. Its main advantages are, that it uses low maintenance parts, produces free energy in a suspension system.

Project Title: Design and Fabrication of Portable Biogas Plant run by Kitchen Waste

Kitchen waste is the best alternative for biogas production in a community level biogas plant. It is produced when bacteria degrade organic matter in the absence of air. Biogas contain around 55 - 65% of methane, 30 – 40% of carbon-dioxide. The calorific value of biogas is appreciably high (around 4700 Kcal or 20MJ at around 55% methane content). The gas can effectively be utilized for generation of power through a biogas based power generation system after dewatering and cleaning of the gas. In addition the slurry produced in the process provides valuable organic manure for farming and sustaining the soil fertility. In this model, an attempt has been made to test performance of different ratio of kitchen waste in a metal made portable floating type bio gas plant of volume capacity 0.018 m³ for outdoor climatic condition of New Delhi, India. Each of the bio gas plant 30kg slurry capacity in batch system for all measurement. During this period, the temperature, solar radiation and relative humidity have been measured. We have also analysed

the constituent of biogas, pH, volume and rate of biogas production at different level of temperature observation on daily basis.

The disposal and decomposition of plastics has been an issue which has caused number of research works to be carried out in this regard. The present work proposed a solution for plastic by removing fuel from plastic and remained plastic used as tar to built roads. It can be carried out with the help of catalytic pyrolysis which involves the degradation of the polymeric materials by heating them in the absence of oxygen and in the presence of a catalyst. In the proposed work, different oil samples will be produced using different catalysts under different reaction conditions from waste plastics.

Project Title: **DESIGN AND FABRICATION OF PORTABLE FREEZE**

The objective of this project is to design, fabricate and assemble an economically priced "Domestic Refrigeration Unit" having an aesthetic look, is efficient and is small in size. Refrigeration systems that use environment-friendly refrigerants provide a sustainable advantage when compared to other refrigerant selections. However, the energy use associated with refrigeration system operation and the environmental impacts associated with its generation and distribution often outweighs the choice of refrigerant. To minimize environmental impacts associated with refrigeration system operation, it is reasonable to evaluate the prospects of a clean source of energy. In the field of military and medical science there are refrigerators used to cool samples or specimens for preservation. They include refrigeration units for storing blood plasma and other blood products, as well as vaccines and other medical or pharmaceutical supplies.

Project Title: **DESIGN AND FABRICATION OF REAPER MACHINE**

This project is to help small-scale farmers to meet an increased demand for local grains, by designing a reaper machine to harvest grains more efficiently. Our research work focus on simplifying harvesting operation for small land owners for different harvesting varieties of crops in less time and at low cost by considering different factors as power requirement ,cost of equipment, ease of operation, field condition, time of operation and climatic conditions. The operating, adjusting and maintenance operations are made simple for effective and easy handling even by unskilled operators.

- In this project a mechanism is being developed for harvesting of crop cutter so that harvesting can be done easily in minimum period of time.
- The mechanism will be used to cut the crops which will help farmers.
- The dimensions and specifications are taken as per availability of standard parts.

- Basically the design is done according to the need of small farmers at the very low price.
- It is designed even for small piece of land.

Project Title: Design and Fabrication of Refrigerator cum Oven

Cooling can be defined as the process of extracting heat from a substance using a heat exchanger. Spatial cooling is the same phenomenon as cooling, although heat is extracted from a defined space, to ensure that the temperature in the space is kept lower than the surroundings. Refrigeration has been required since early times. Food materials begin to decompose at higher temperatures. Preservation of food made the commercial use of a refrigerator.

In our project the heat of refrigerator cooling coil is used for heating the oven. The refrigerator is also used as oven. So it also works as oven and the waste heat of refrigerator cooling coil is used for heat the oven. It saves the electricity as this way the heat is used for the cooking and this works as refrigerator as well as oven.

The need for sustainable fuels is higher than ever. Cleaner and greener alternatives are also recommended to offset the damage created by conventional fuels so far. The portability of this system helps in easy transportation. The continual operation of this equipment accounts more electrical energy consumption. Furthermore, a significant amount of waste heat is rejected by the condenser of refrigerator.

Project Title: Design and Fabrication of Tricycle Floor Cleaner Under Swachh Bhart Aabhiyan

This project aims at the fabrication of Tricycle Floor Cleaning machine. The entire arrangement is kept in a tricycle setup which can be operated by manual pedaling. This system can be used in hospitals, railway stations, metro bus stands etc. The major advantage of this system are keeping pollution free environment in the public, avoiding infections to sweepers and scavengers, fast and accuracy in cleaning methodology etc. It also reduces human effort and less number of cleaning employees. By increasing moisture effect even tiny particulate matters can be easily absorbed during the cleaning process. When cleaning is effective, occupational diseases can be minimized and pollution free public places are obtained.

In our project we have made the machine to operate in a fully mechanical way with tricycle, pump etc components. The floor cleaner is of very simple construction and is very easy to operate without any prior training and with safety.

Project Title: Design and fabrication of Vapour Absorption Refrigeration cycle for commercial vehicle

Our objective is to make effective air conditioning using waste heat of commercial vehicle. Till now every refrigeration in commercial vehicles is working on Vapour compression refrigeration system in which their compressors are driven by engine power directly, which reduces the engine efficiency in terms of power output and fuel consumption, so in order to eradicate this issue we use vapour absorption refrigeration system.

To enhance the pick up of vehicle by removing the power consumption used by the compressor.

Motivation behind the making of project -

- To provide an efficient cooling system for automobile which runs without consuming the engine power.
- To provide refrigeration system for the food storage in commercial vehicles.
- To gain real-world experience in the field of engineering and manufacturing.
- Many times it has happened when vehicle is overtaking on road and has his A.C. on, at that moment of time driver unable to get the required pick-up to overtake because compressor is extracting the power of engine. Which results in accidents.
- Vehicles are not able to provide best economy when it has it's A.C. on because again compressor is extracting power from engine.

In our project we developed a model of a refrigeration system which is working on principle of VAR system. In our model we used the hollow copper pipe of dia 1 mm approx and all the part of system made by this metal itself refrigerant used in this R-134A important part of the system are Collector, condenser, capillary tube (expansion valve) and evaporator, fan.

The model is successfully made and run to achieve desired output.

It has following advantages :

Pollution free system.

It can be used in food storage plant and automobile, cabin.

One time investment with minimum running expense.

Project Title: **Domestic Waste Management**

Domestic Waste Management is one of the basic essential services provided by municipal authorities in the country to keep urban areas clean. The large quantity of waste in the city can be minimized by using waste hierarchy method. This waste hierarchy refers to "3R's" (Reduce, Recycle, Reuse) and our project is working on Reuse method and the biggest problem for the reuse of materials is mixing waste materials obtained after domestic uses. Our project's key feature is the separation of this waste with the help of underground separation operations. In this operations, we separates metallic waste, contaminate water, composite waste, lightweight waste etc. for reusing this in useful way.

Project Title: **Electricity produce by wind mill**

Wind energy is a renewable source of energy and it is available free of cost. Wind possesses kinetic energy which is used in wind mill. This kinetic energy is converted into mechanical energy and further this mechanical energy is converted into electrical energy. In this project similar concept is used, but by putting this whole concept on the front right side of the bus.

As the bus moves air strikes on the front with high velocity which is going west. This high velocity of wind is considered as drag force. If a windmill is installed on the front right end with the nozzle to increase its velocity as a result of it, high amount of kinetic energy will produce. Further this kinetic energy can be converted into electrical energy by using generator.

Project Title: **EARTH-AIR HEAT EXCHANGER**

The air conditioning systems presently employed in various areas to maintain the ambient temperature are all electrically operated and consume a huge amount of electric capital for their routine work. The aim of this project is to induce a method by which we can use the subterranean temperature of earth to cool a designated area. We have made a project targeting the cooling issue, with the help of earth's temperature and creating a temperature ambience which is suitable for growing and preserving vegetation. It is a well known fact that when we get below the earth's surface, the temperature tends to be constant at around 8 to 12 °C, depending on latitude. This temperature is suitable for vegetables. In this project we have only used tubes and compressor. Apart from that we have also used thermocouple by measuring the temperature. The cooling tubes system consists of long pipes buried underground with one end connected to the house and the other end to the outside. Hot exterior air is drawn through these pipes, where it gives up some of its heat to the soil, which is at a much lower temperature at a depth of 3m to 4m below the surface. Surface area is directly proportional to the heat flow rate. It uses thermal inertia law.

Project Title: **Efficient Heating and Cooling Device**

Necessity is mother of invention, but in this era innovation has left invention far behind. Due to excessive pollution the temperature differences have risen a lot, for the comfort of humans many such devices are being invented such as refrigerators, air conditioner, heaters etc. But these devices are much spacious and costly. To overcome all these problems our project aims to provide refrigeration, conditioning and heating in very less space, time and cost. The proposed project is based on the principle of refrigeration in which heat is extracted from the hot region and released it into another space which is to be heated. This results in increasing the efficiency of whole system.

Project Title: Electromagnetic Engine

The concept behind the electromagnetic engine is derived from the attraction and repulsion properties shown by an electromagnet. The conventional engines are getting outdated now a days because of their consumption of fossil fuels which add up to the already over pitched levels of pollution. Natural calamities such as the greenhouse effect, the depletion of ozone layer, global warming and the uncertainty in our day to day climate.

The setup consists of a set of electromagnets which can change polarity on the account of the distance between the electromagnets. The rapid succession of the inverted polarities creates a reciprocating motion which can then be channelled to the wheels with the help of a transmission box.

Project Title: Electrostatic Smoke Precipitator

As we all know that no one like smoke whether it's in a room full of cigarette fumes or a city choking with pollution. We will obviously prefer to breathe in a fresh and clean air. The major sources of this pollution are factories, but it will be impossible to shutdown those factories, as industries are the Lifeline of our economic system.

In fact technology has a pretty good solution to the problem for over a century, in the shape of electrostatic smoke precipitator. It is equipped with static an electric filter which snatches the harmful fumes and ash from dirty air, as hot flue gases flows along a pipe greatly reducing pollution and helping to improve the environments.

Secondly we can also apply these things in the vehicle so as through this we can reduce the air pollution. Electrostatic precipitator work by firing dirty flue gas passed, to electrode which takes the form of metal wires, bars plates inside a pipe or smoke's tack. The first electrode is charged to a very high negative voltage. As the dirt particles moves passed it they pick up a negative charge. Higher up the pipe there is a second electrode consisting of metal plates charged to a high positive charge

Project Title: Experimental and feasibility analysis of conversion of Maruti omni van into Hybrid Electric vehicle

For minimizing the exhaust gas pollution every hybrid vehicle is trying to operate the vehicle in electric mode in heavy traffic conditions at low engine speed, but on highways or in no traffic run on internal combustion engine mode at comfortable or economical speed. The concept of hybrid vehicles are being developed internationally, the gasoline and diesel ICE vehicles will produce the pollutant rest of their life. For saving fuel for future and minimizing the pollutant producing from the cars operating on diesel or petrol engines, an experimental work was carried out of converting existing petrol or diesel cars into Hybrid Electric vehicle. The main purpose of this is to conserve the fossil fuels, for posterity.

An existing 800 cc Maruti Omni car is converted into experimental Hybrid electric vehicle model has been tested at a steady speed. In our model we have used a gearbox with the electric motor for torque enhancement which will give the vehicle a better acceleration. This conversion helps the conservation of a good amount of fuel.

Project Title: Fire Fighting Robo

Fire fighting robo is a device which is used to control the fire instead of fire brigade. Undoubtedly, fire fighting using fire brigades is a great challenge everywhere especially in our country due to various reasons such as unavailability of free road, narrowness of street and lack of training to fire brigade staff etc. Fire fighting robo is the replacement of manual fire fighter and it is an effective device to control the fire in any situation. It takes very little space to reach the site and minimum skills required to operate that is easy to handle. It will be equipped with camera and sensor range that will provide images and intensity of fire to the controlling centre. The whole system will be equipped with microprocessor controller. The programming will be inbuilt, its operation will be easy, and speed controlling will be completely manageable. The greatest advantage of this project is to employ a system which will also account for the safekeeping for a firefighter's life.

Project Title: FOLDING HOUSE

This is the latest in a series of houses we have designed based on the idea of encampment which develop the contours to create open kiwi version of a walled garden. This house is located on a site in the marine development in the bay of island, which we have been designing for almost 10 year from original concept through to the main recreational and infrastructure building. The original derelict farm has been converted with sensitive landscaping and the planting of over one million trees. The large footprint generated by the client's requirements is divided into three separate building surrounding an open courtyard which draws the space of the beach up the valley and into the overall composition, The gathering of elements complement the poetic form of the bay and enhances the context. This is generous house to accommodate extended family and friends without feeling cramped. This largest contains the family living and bedroom area, whilst the medium element accommodate guests. Between the two is an independent lounge for movie or teenage gathering. Iconic triangulated roofs float' over the space. Poplar plywood ceilings soft shifts of light and animate the spaces, utilizing the constantly shifting sky capes, Overhangs vary to provide effective solar control. Roof modulation reflect the rolling hills of the surrounding valley, designed to fit under the regulated 5m maximum height Floors gently change level to follow the contours of the bay, and there are a number of places to be outside either in or out

of the sun and breeze Materials used in contraction are in situ concrete vertical cedar irregular module boarding. Silver anodised aluminium with double glazing plywood ceiling and yellow cedar soffits, membrane roofing. Potable water is collected in tanks up the hill which are protected by 90 sqm of photovoltaic panels for power generation.

Project Title: Fuel from Waste- An Innovative approach

The disposal and decomposition of plastics has been an issue which has caused number of research works to be carried out in this regard. The present work proposed a solution for plastic by removing fuel from plastic and remained plastic used as tar to built roads. It can be carried out with the help of catalytic pyrolysis which involves the degradation of the polymeric materials by heating them in the absence of oxygen and in the presence of a catalyst. In the proposed work, different oil samples will be produced using different catalysts under different reaction conditions from waste plastics.

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The disposal and decomposition of plastics has been an issue which has caused number of research works to be carried out in this regard. The present work proposed a solution for plastic by removing fuel from plastic and remained plastic used as tar to built roads. It can be carried out with the help of catalytic pyrolysis which involves the degradation of the polymeric materials by heating them in the absence of oxygen and in the presence of a catalyst. In the proposed work, different oil samples will be produced using different catalysts under different reaction conditions from waste plastics.

Project Title: Hybrid Hydraulic Bridge

Hybrid Hydraulic Bridge is a railway cum road-bridge. This project is an amalgamation of the conventional railway bridges with the road ways. The already over-cumbered railways and roadway lines on the face of the planet demands more and more land and deforestation and hence leading to the global extermination of many species of plants, trees and animals. The Hybrid Hydraulic Bridge would serve the purpose of two bridges in one which would in turn utilise less land, resources and labour. The structure would be in two levels, the above would be the fixed railway line and the lower level would act as a hydraulic bridge. This lower level would have a set of mechanical links and leverages which can work together to give way to the ships crossing underneath the bridge. It consists of four pillar supporting the structure at the ends and is a truss type continuous bridge.

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Project Title: HYBRID SOLAR POWER SYSTEM

All the natural wastage energies are used for production of Electricity. Thus, the Electrical Power or Electricity is available with a minimum cost and pollution free to anywhere in the world at all times. This paper will reveal a novel step in generation of electricity and availability of natural resources without disturbing the ecological balance. This paper describes a novel and developing Electrical Power Generation mechanism by integrating photovoltaic Solar Energy, solar Energy with Wind Energy and non conventional energy sources. Thus we can have an uninterrupted power supply irrespective of the weather condition without any sort of environmental pollution. Furthermore this process makes possible the electricity generation at least production cost. Utilizing lightning energy for electricity generation reveals a advanced step. The equipment consists of combination of PV solar-cell array & a mast mounted wind generator (vertical axis turbine), storage batteries (lead-acid), an inverter used to convert DC power to AC power.

Project Title: Hydroponics-Farming without soil

Hydroponics is a method of farming without soil. In this technique an aquatic environment is provided to the plant and mineral nutrient solution is fed into that aquatic environment which enables the process to be more efficient than when using soil. Hydroponics is suitable for commercial food producers and hobbyist gardeners alike. Hydroponics possesses several advantages over a soil medium. Unlike plants grown in soil, plants grown in a hydroponics system do not need to develop extensive root structures to search for nutrients. It is easier to test and adjust pH levels. In the hydroponics method, plants are raised in an inert and perfectly pH balanced growing medium where the plants only need to expend minimal energy to acquire nutrients from the roots. The energy saved by the roots is better spent on fruit and flower production. By providing constant and readily

available nutrition, hydroponics allows plants to grow up to 50% faster than they would in soil.

Project Title: INNOVATION IN IRON FABRICATION

Being one of most essential industries in India, Iron and steel industry has helped in generation of several subsidiaries and small scale industries. It also supports transport, fuel, power and communication industries. It is estimated that Indian iron and steel industry exports around 50% of total production. Production in these industries has been increasing for last 20 years. Also there is an increase in export of iron ore. Experts believe that reduction in export duty has helped iron and steel industry grow at a rapid pace. There are several players that operate in this industry in India. Major ones include Tata Steel, SAIL, Jindal Steel and power limited, Essar Steel and Bhushan Power and steel. Sponge- iron is a metallic product which is produced by reaction of iron oxide and carbon monoxide with the presence of essential temperature. This is a direct reduction process where carbon monoxide is acting as reducing agent and the iron ore reduced in solid state as such it is also known as direct reduced iron (DRI). Hematite iron ore (Fe_2O_3) is used for reduction. After reduction of iron ore the product resembles spongy because of pores left behind after removal of oxides as such it is called sponge iron. A direct reduced iron (DRI) production plant is a shaft reduction furnace to produce DRI with large metal iron content by directly reducing iron ore (or iron ore pellets) with reducing gases. While the produced DRI is mainly used as the raw material of electric steelmaking, it is also used as blast furnace feed for energy saving (reduction in coke consumption) and increased production of molten iron at integrated blast furnace steelworks. A wide variety of gases including by-product gases generated in integrated blast furnace steelworks and coal gas refined in coal gasifiers, as well as widely-used natural gas, may be used as reducing gases.

Now let me tell you have a brief review for my project, in this project we have worked on the coolant section of iron fabrication in DRI POWER PLANT. Till date the fins are not used in any DRI POWER PLANT We did the utilization of fins on the external section of coolant. The fins have a property for reduce the heat. Till date the temperature of iron coming out of the coolant is 190-210 degree Celsius. If we reduce the temperature of the iron which come out from the coolant section then we make more pure iron. If we use fins, the temperature of iron coming out for the coolant is 150-160 degree Celsius and the more pure iron we have found.

Project Title: INNOVATIVE DUSTBINS

Pollution is the introduction of contaminants into the natural environment that cause adverse change. Pollution can take the form of chemical substance or energy, such as noise, heat or light

Pollution have adverse effect on our environment and nature which cause serious health issues.

According to the World Health Organization, poor air quality causes seven million premature deaths every year, making it the planet's largest single environmental health risk. According to a study by The Lancet, India accounts for the maximum number of premature deaths from pollution in the world, with as many as 2.5 million people dying prematurely in the country in 2015 due to pollution-linked illnesses.

Adverse air quality can kill many organisms including humans. Ozone pollution can cause respiratory disease, cardiovascular disease, throat inflammation, chest pain, and congestion. Water pollution causes approximately 14,000 deaths per day, mostly due to contamination of drinking water by untreated sewage in developing countries

For all these problems waste decomposers work on three different forms as listed below :

1). Our first green coloured bin is for collecting green waste i.e. waste like of fruits peels, vegetable waste or other green waste which would decomposes and become an manure for plants and agriculture.

This works on the principle of RE-USE.

This green waste serves the purpose of highly fertile manure and hence increase growth of production.

2). Our second blue coloured bin works on the principle of REDUCE.

This dustbin is made for collecting an waste that can be burn under high temperature and reduces to ash . This ash should be purified before leaving in atmosphere by an filtering process and hence the smog which will enter an atmosphere is fresh and hence prevents global warming and other serious climatic issues.

3). Our third yellow coloured dustbin works on principle of RECYCLE.

This dustbin is made for collecting only paper and recyclable material that can be collected from bin at an regular interval of time and hence used in factories or industries for recycling and reuse. This waste can again converted into reusable form after undergoing through certain process.

In this way our waste decomposer works on 3-R principle .

*REUSE

*REDUCE

*RECYCLE

Project Title: **INVESTIGATE THE IMPACT OF SUPERCHARGING PERFORMANCE OF SPARK IGNITION ENGINE**

There are many inventions aimed at improving the performance of IC Engines. It is a known fact that the power output of an engine increases with an increase in amount of air or mixture in the cylinder. This paper studies the performance characteristics and effects of supercharging process in SI Engine. Most of the automobiles are overpowered, for most of the time these vehicles operate at less than speed. Full power is needed only for accelerating and hill climbing during the remaining time the excess weight of the vehicle is carried with loss of efficiency and the most important parameter of the engine is the shape and size which accommodates for its weight. A smaller engine can be used advantageously when used with supercharger, the supercharger being used only when excess power is required.

Keywords: SI Engines, Supercharger, Supercharged engine, performance.

Project Title: **INVESTIGATION OF HEAT TRANSFER ENHANCEMENT THROUGH FIN SURFACE MODIFICATION UNDER FORCED CONVECTION**

Extended surfaces are employed in many engineering applications such as heat exchanger, chemical reactor and micro-electronic devices; hence many techniques have been investigated on enhancement of heat transfer rate. Bergles classified heat transfer intensification methods in to three categories- Active techniques, Passive techniques and combination of these two. But it has been reported that in many cases heat transfer enhancement through passive methods are used as this technique do not require any external power source for this purpose. Passive method generally uses surface or geometrical modifications to the flow channel by incorporating inserts, artificial roughness or material removal from the surface. Passive methods when adopted particularly in Heat exchanger applications proved that the overall thermal performance improved significantly. This paper presents the review on heat transfer enhancement using passive methods and explores how extended surfaces with geometrical modifications like dimples, protrusions, grooves etc., improves heat transfer characteristics. This information is useful for future use of the geometrical modifications of extended surfaces based on the space availability and cost.

Project Title: **Internet of things (IoT)**

In this era of digitization and automation, the life of human beings is getting simpler as almost everything is automatic, replacing the old manual systems.

Nowadays humans have made the internet an integral part of their everyday life without which they are helpless.

The Internet of things (IoT) is the network of physical devices, vehicles, home appliances and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these objects to connect and exchange data. Each thing is uniquely identifiable through its embedded computing system but is able to inter-operate within the existing Internet infrastructure. Internet of things (IoT) is an emerging technology and also a need for today. It provides a platform that allows devices to connect, sensed and controlled remotely across a network infrastructure.

Our project is based on Home Automation. The main objectives of home automation are controlling, management and coordination of home appliances in a comfortable, effective and secure way. It's a good choice to design a terminal based on the phone. We can extend the Android platform into household objects. It means that the remote control based on the Android phone will become a mainstream way. After logging into the control interface, users can easily control the lights, TVs, and air conditioners anytime, anywhere, which brings great convenience to people and improves the quality of life. It includes automatic water the plant when the temperature is high. It also includes automatic clothes moves inside the house when the rainfall occurs. In this project, we will construct an android app interface and voice AI system to control appliances at home. Raspberry Pi/Esp8266 is used as server/ gateway and ESP as a node for the devices. Status of the appliances is also updated on the UI.

Project Title: **Loop Train**

Travelling now a days is one of the major concerns. The travel and tourism industry is one of the world's largest industries with a global economic contribution (direct, indirect and induced) of over 7.6 trillion US Dollars in 2016. This alone can tell us that at least half of the population is indulged in travelling activities and thus requires for a much better means of travelling these days. Loop train is a hyperloop train which will work in the same field. Existing conventional modes of transportation of people consists of four unique types: rail, road, water, and air. These modes of transport tend to be either relatively slow (i.e., road and water), expensive (i.e., air), or a combination of relatively slow and expensive (i.e., rail). Hyperloop is a new mode of transport that seeks to change this paradigm by being both fast and inexpensive for people and goods. Hyperloop is also unique in that it is an open design concept. Hyperloop is a proposed system of transport that would see pods or containers travel at high speeds through a tube that has been pumped into a near-vacuum. The train pods would either float using magnetic levitation technology or float using air caster "skis", similar to how pucks travel across an air hockey table. With so little friction in the tunnel, the pods would be able to travel at immense speeds with a projected top speed of 760 mph. The pod would initially

launch using an electric motor before levitation takes place and the pod can glide at cruising speed in the low-pressure environment. Tunnels for the Hyperloop would be built either above or below ground, at only around 3m in diameter, taking up a smaller ground footprint than traditional rail and road. Our project shows a miniature model showing the working of the loop train.

Project Title: Mini Heat Exchanger

Abstract:-Fuel economy issues have been studied in a particular rural a reduce heat loss during cooking the major energy losses are heating of excess air heat carried,away by the combustion product.the energy loss due to evaporation of cooking water is also significant because it represent about one third of the heat reaching.

Advantages:-

- (1) Two works take place simultaneously.
- (2) Reduce the heat loss.

Keywords:- Stoves,cooking,fuel efficiency,firewood,India.

Model description:-A heat exchanger is a device used to transfer heat between a solid object and fluid may be separated by a solid wall to prevent mixing or they may be in direct contact.

area of India.following a description of the cooking practices are examined the use of aluminium pot with copper hollow wire its result in.

Project Title: Model of a Smart Village Through Techno-Socio Aspect

This is an idea to transform an existing backward village to a smart village where we want to provide such an amenities that will allow the villagers to lead a comfortable life at that place itself. We have come up with an idea to reduce the size of the solar panels by the usage of magnifying glass that will produce the same results as when bigger panels used this makes the installation much affordable.

Usage of waste plastic (bottles etc) can be utilized for the construction of flexible pavements which will reduce the cost of the construction and more durable since plastic is a non degradable material. Production of bricks with addition of metal residue (a waste from steel mfg industry) which is otherwise disposed. This gives additional strength to the brick and is very economic.

The solution to these needs is usage of sustainable materials such as solar panels for production of electricity, dust absorbers ,construction of flexible pavements through plastic wastes, enclosed glass bus stops with enough led lighting ensuring women's safety especially during night time, employment generation to reduce farmers suicide. Also we have come up with an idea about how to reduce the size of solar panels producing the same output as per the requirement.

Project Title: MODIFIED HAND CART

A cart is a vehicle designed for transport, using wheels and normally pulled by a pair of domestic animals. A handcart is pulled or pushed by one or more people. We have many methods to transport the goods from one place to another, but still there are many places where we still use carts to transport the goods. Carts being one of the oldest methods of transporting goods have very simple and tiresome mode.

Our project can be used to handle the agricultural product and goods. The problem of handling, moving and operating is simpler and it finds huge applications.

Incorporating easy steering mechanism and brakes to make turning hand-carts easy and arrest slide on inclines respectively. A compassionate idea is to make life easier for street vendors and farmers who use hand-carts. They faced problem turning it especially at acute angle turns. To do this, the loaded cart has to be lifted and rotated about the front wheels, which is quite cumbersome. By keeping this problem in mind we thought of some steering and brake mechanism system to be applied on cart so that their work become easy and efficient.

Project Title: Multipurpose Exercise Bike to generate Electricity and Water

In this project we are using Exercise Bike and modified it so that we can generate Electricity from it and also for lifting or supply of water.

The basic purpose of using exercise Bike is we generally use this Bike for exercise purpose for maintaining our physical fitness.

Exercise Bike are normally present in our houses so by small modification in them we have created this "Multipurpose cycle" for generation of electricity and lifting and supply of water.

We attach a sprocket by the help of a chain from the paddle so that when we paddling that bike it transmit motion to the sprocket and with the help of gear train mechanisms we attach a water pump and a dynamo, so that we can lift or supply water and along with that by the help of dynamo we can generate electricity.

Advantages :- This bike is exercise bike so that using this bike provides us physical fitness and by the help of mechanisms we added we can generate Electricity and also use it for pumping and lifting water.

This machine is completely eco-friendly and very useful for mankind.

Project Title: Municipal Waste Collector

As we all know that one of the major concerns of the world is the waste collect, management , utilization and disposal. The amount of waste produced per year is

2.12 billion tons. But unfortunately only 30% of which is been recycled, in which the Wet Waste is not included. Well talking about India we all know about Swatch Bharat Abhiyan, in which the main problem faced is the waste collection, management and waste segregation. So we have come up with an idea of proper wastecollection and its management for which we have made a small working model, which is economical and easy to operate.

As we all know that Swatch Bharat Abhiyan is in full throttle but the biggest problem we face in this campaign is collecting the garbage. As we all know that government is investing lots of money for the same. As the government wants to clean the streets of India, but come up with a problem of polluting the environment due to the gasses emitted from the garbage collecting trucks. So we have designed a prototype which we will install in several Garbage Collecting Vehicles, with a suction pipe which sucks garbage directly from the dustbins of the houses to the Vehicles.

This prototype will work on the principle of the vacuum cleaner which sucks the waste and then the whole waste is collected in the garbage tank and is then meshed to fine particles after which the whole trash is directly supplied to the industry where this garbage will be used to generate electricity, constructions of roads, manure and for other useful works. Due to this, the land occupied to dump the waste will be saved.

Project Title: Optimized Air Compressor

Optimized air compressor is design to minimize vibration and noise. Operating cost is also an important issue for the owner, packager and machinery consultant. An effective study will save significant operation cost and will maximize production capacity and reliability. Significant savings can be realised through optimizing pulsation control even for relatively straightforward installation.

By optimizing air compressor we can reduce the size and weight of the compressor however its efficiency will remain equal to traditional compressor. This can reduce the power consumption and effort to portability.

The objective of our present work is to reduce weight, size, noise level, vibration and enhance efficiency. Portability is the big issue in traditional compressor which is overcome in our project. Main objective of compressor is in "Art Work and Denting & Painting" and in various domestic purposes.

Advantages-

- 1.) Noise free and less vibration as compared to traditional compressor.
- 2.) Less current consumption and provide high efficiency.
- 3.) Low power consumption (1/6hp).
- 4.) No leakage, constant pressure and portable.

Project Title: Portable Multipurpose Machining Table

This project presents the concept of Multi-Function Operating Machine mainly carried out for production based industries. Industries are basically meant for Production of useful goods and services at low production cost, machinery cost and low inventory cost. The model facilitate us to get the operation performed at different working centre simultaneously as it is getting drive from single power source. Objective of this model are conservation of electricity (power supply), reduction in cost associated with power usage, increase in productivity, reduced floor space i.e. Drilling, Cutting, Shaping.

Today in this world every task have been made quicker and fast due to technology advancement but this advancement also demands huge investments and expenditure, every industry desires to make high productivity rate maintaining the quality and standard of the product at low average cost.

Project Title: **Portable Drill Machine**

Now a day, machines are widely controlled by embedded system. To meet the need of exploding population, economic and effective control of machines is necessary. The body of the drill machine is made up of wooden material like board and shaft, and the motor is fixed in a wooden board with the help of nut and bolt. The one end of taper chuck is connected in barring and another end is connected in shaft. And the last end of shaft is connected to the motor mechanically. All are connected in the centre axis of motor. The chuck is connected in the taper chuck arbour. This whole mechanism fitted in board with the help of nut bolt, and board are connected in another board with the help of ball bearing Drawer Channel to take horizontal motion.

Project Title: **Portable Seed (Potato) Planting Machine**

The India is an agricultural country and 75% of its GDP depend upon the agricultural sector. On the basis of this we have made this machine, which is specially made for planting potatoes and thus also named as "Automatic Potato Planting Machine". The machine is capable of making 6 inches deep trench, it is able to make two trenches together and at the same time it drops potatoes inside that trench. Along with that it will pour the soil over the seed or potato and cover it completely. We can also use it for planting Ginger, Garlic, Turmeric and some other plants. The basic purpose of introducing this machine is to reduce the man power at field and also providing an agricultural tool to farmers with average income and small farms. This machine is around 50% cheaper than all machines currently present in the market. Also with being cheaper, it is Portable, Efficient, and User-Friendly too. According to the current agricultural scenario in India more than 60% of farmers use traditional methods for planting potatoes. If we use traditional method for potato farming it takes at least 8 to 10 workers and 8 hours in the

sowing processes only. But this machine hardly takes 2 men to complete the same work in 8 hours in the same field.

Project Title: PRAS (Power Ramp cum Alert System)

This world is aggressively progressing in development, the sustainability of energy stands out to be one of the prime concerns. Power Ramp is one such concept which sustains energy at its best on the road. The setup consists of a mechanical arrangement which transforms linear displacement to rotary via a rack and pinion arrangement. This power is then transmitted to a centrally operated shaft which is coupled to a permanent magnet DC motor capable of generating electric voltage up to 35 volts. Further upgrades to this model are the addition of an alert system and a vehicle counter, which comprises of a camera and a circuit working on a special program. The circuit has been programmed to count and alert the operator about the vehicles with a camera which has also been programmed to capture the images of the same, whenever a vehicles passes over it. The electricity produced from it can be utilised in applications such as charging a DC Battery, Charging E-vehicles such as E-rickshaw, Powering Street and Traffic Lights, Energy source for operation of Toll Tax Gates etc. Key Areas of implementation are Toll gates in national highways and Entry Gates of schools and Hospitals. Also the same can be used to energise the alert system, and hence does not need any external energy source for the same, and thus can be called as a self energised alert system. The alert system can be used in parking lots to count and keep a check on every vehicle coming in and out and to prepare a organised record with their images too. The same can be used in toll tax gateways. Its multi functional feature is its main advantage with the added function of an alert system, i.e., it can be used as a burglar alert system for any vehicle and thus ensures safety of the vehicle at ones home as well.

Project Title: Prosthetic Limb

Our model is an approximate mechanical duplication of human leg. We are making an artificial limb that may be able to help the survivor to make their living with an ease. People who lose their limbs either due to an accident or because of several medical causes. In general in western countries people lose their limbs due to medical causes such some of the cardiac issues or due excess of sugar in general, etc Despite of that in India number of population lost their limbs in an accidents. These people are generally from middle economic status and an even larger number of population are from the economic status of below poverty line. An imported bionic limb is very best in class, even does a better performance than human limb in several aspects but it costs nearly to a mid range car. As per our estimation our prosthetic limb may cost around 3K INR or 50 \$(U.S) In our project we are trying to reduce the cost as much as we can by using general stuffs which

are cheaply and easily available. We are trying to figure out the way our leg moves and the degree of freedom it has along with how it conserves the momentum during motion. Our main goal is to achieve better flow and comfort during the walk.

Project Title: **Reverse System in Three Wheeler Gearless Activa Car**

Generally there is no reverse mechanism available in four stroke activa engine. The project is based on reverse mechanism. In this project we've designed a systematic reverse system in gearless activa engine by using kinetic self motor, bendix drive and its toothed flywheel. The whole arrangement installed on the clutch system and power is obtained from 12V and 30 to 35 amp battery. This mechanism is very useful for future activa engine based car because it is low costly engine with reverse system can be improved in future research by placing best regulator and accelerator to control the speed. Electricity generation is also possible by doing further research in this mechanism because during forward motion of vehicle toothed flywheel is also rotates so it can be connect to the dynamo. This reverse mechanism can also be improved by using high efficient DC synchronous type motor in place of kinetic self D.C motor. In this way this mechanism is more suitable in low budget future gearless activa engine based car.

It can be used to reverse any two or four stroke engine. It is specially designed for backward motion of three wheeler gearless activa car. This mechanism can also be used in two-wheeler because this is external system. This mechanism can also be used to generate electricity through engine by installing dynamo to generate electricity.

Project Title: **RADAR SYSTEM**

Radar is an object-detection system that uses radio waves to determine the range, angle, or velocity of objects. It can be used to detect aircraft, ships, spacecraft, guided missiles, motor vehicles, weather formations, and terrain. A radar system consists of a transmitter producing electromagnetic waves in the radio or microwaves domain, a transmitting antenna, a receiving antenna (often the same antenna is used for transmitting and receiving) and a receiver and processor to determine properties of the object(s). Radio waves (pulsed or continuous) from the transmitter reflect off the object and return to the receiver, giving information about the object's location and speed.

The modern uses of radar are highly diverse, including air and terrestrial traffic control, radar astronomy, air-defence systems, antimissile systems, marine radars to locate landmarks and other ships, aircraft anti-collision systems, ocean surveillance systems, outer space surveillance and rendezvous systems, meteorological precipitation monitoring, altimetry and flight control systems,

guided missile target locating systems, ground-penetrating radar for geological observations, and range-controlled radar for public health surveillance
So we have design this system in order to solidify our defence system.

Project Title: **Rice Husk Water Purifier**

As water is continuously getting polluted by industrial waste products, household wastes and toxic chemicals, drinking water is also getting contaminated at a high rate. We have studied and found out that the water purifier provided by various company are expensive and sometimes ineffective, so we have made a water purifier which is low cost, easy to handle and eco-friendly.

Our water purifier consists of 4 main chambers:

1. Potash Alum Chamber- It removes the colour and dust impurities. It is based on the principle of coagulation of potash alum with impurities.
2. Filtration Chamber- It removes those particles which are not separated in the potash alum chamber.
3. Adsorption Chamber- It is the main chamber where our rice husk will show its proper working. Firstly, we will activate our rice husk by heating it in the absence of air, then filter and add it to the water to be purified. Activated rice husk has the power to adsorb the harmful chemicals which are present in the water, on its surface and reduces its hardness to greater extent. The hardness of this water is reduced to 120 ppm, which is good for drinking.
4. UV Ray Chamber- It at last kills the harmful bacterias.

Project Title: **Seed treatment machine**

In the modern era of high demand we require high production of crops to achieve high yield for that we need to have a efficient sowing mechanism. This machine is used to treat the seed before sowing. It works in a manner in which seeds enter in inlet and moves to downward outlet. In hole we spray the chemical which is mixed among the chemicals by criss cross shaft and finally treated seeds comes out from the outlet .This machine is faster and cheaper than the traditional seed treatment machine . It is very beneficial for Rabi crop. With the help of this machine the productivity has increased twice thus it provides good quality of crop and help farmers to earn more.

Project Title: **Sensor Based Self Automatic Vehicle**

As the world's fuel consumption has increased in last two decades. Therefore, it is estimated that at this rate the available fuel will be consumed in next 100 years of tenure. Therefore it is required to design green vehicles capable of self power capacity. This project is aimed to design a human powered automatic vehicle equipped with all accessories and sensors viz. integrating sensor, back indicators,

motion sensor and alarm and warning systems. The vehicle is designed to generate its own DC power which is utilized for serving the all sensor modules. As an extension of the project, solar panels can be added to generate solar powered vehicles. All the sensor modules are implemented for the goal of minimum energy consumption.

Project Title: **Smart Helmet**

Helmet is one of the safety measures which we use while riding a bike but some of the basic problems which we face such as sweat, suffocation due to pollution and dust after putting it on. To get rid of this problem we just need one helmet and blower which works on variable speed. The helmet will be internally wired and the air would flow with the help of a duct. When we switch the blower on the air will pass through a pipe and this will allow the air to pass inside the helmet which will provide cooling effect inside the helmet and will also help in removing suffocation, for the removal of dust there will be separate duct in front of the helmet which will also be connected to the blower. This separate duct will also have a passage which will slow down the flow of air in front of it, which will help in removing the dust.

Project Title: **Smart Irrigation System**

Smart irrigation system tailor watering schedules and run-times automatically to meet specific landscape needs. These controllers significantly improve outdoor water use efficiencies. Unlike traditional irrigation controllers that operate on a preset programmed schedule and timers, smart irrigation controller monitors the weather , soil conditions and plant type, to automatically adjust the watering schedule to actual conditions of the site.

For example, as outdoor temperatures increase with no rainfall chances, smart irrigation controllers consider on site-specific variables such as soil type and moisture, water required for the sowed crop according to the predicted temperature of the day, sprinklers' application rate, etc to adjust the watering run times or schedules.

Smart Irrigation System will be the combination of smart weather forecasting system and soil monitoring system. Soil monitoring system will use soil moisture sensor to check the moisture level of soil, and if it is below the required level then it will pass the message to irrigation controlling system. Smart irrigation method will message its smart weather monitoring system to check for possibility of rain. Weather monitoring system will use DHT (for Temperature and Humidity) sensor to check the present condition of weather, this data will be passed to our machine learning algorithm which use previous year datasets to predict the weather condition and pass the result to smart irrigation system. Then smart irrigation system will decide the irrigation schedule of the field and send instructions through cloud to operate the water pump. These processing results can be

monitored with the android application along with various features related to field and its environment by the farmer.

Project Title: Soil Parameter Monitoring for Precision Agriculture

This project explores the potential of sensors testing in the area of agriculture. Project is aimed to improve the efficiency of the agriculture in India. A multi sensor parameter monitoring system is designed on Arduino based testing unit for system automation and monitoring. Real time data is observed on the LCD screen and different soil parameters like temperature and moisture are recorded and evaluated. An automatic irrigation system is designed for the agricultural applications. The data is continuously monitored at control station and if it exceeds the desired limit, the irrigation system is triggered accordingly. The implementation of system software and hardware are given, including the design of sensor module this system overcomes the limitations of existing wired sensor networks. Testing is done on the different soil samples collected from the vicinity of the Bhopal and Vidisha.

Project Title: TecShoo Car

Online purchasing now a day has come into trend. In 2016, an estimated 1.61 billion people worldwide purchase goods online. In 2016, global E-retail sales amounted to 1.9 trillion U.S. dollars and projections show a growth of up to 4.06 trillion U.S. dollars by 2020. With this estimation of the market of the online retail shops there could be a time in the near future when everything which is being purchased and brought will take place entirely on the internet but it will require a massive development in the delivery system of the purchased products. TecShoo Car is one of those developments made by us which will be The Basic Working Block in the Smart Delivery System proposed by us. The car can be helpful when we order something, as it will deliver the product with the added advantage of its security. The car will detect and reach our location provided to the online retailer, with the products which has been chosen by us at the website. The customer will pick the products based upon his own decision after feeling and seeing the products by himself, and can easily return the products if they are not satisfied with any of the product at the same place where it has been delivered. The security will be taken care of, as when the online retailer will send the OTP to the customer, which when fed to the security system of The TecShoo Car, will authorise the customer to open the car and to have a glimpse on the products. The payment modes will also be according to the satisfaction of the customer, as it will be his/her own decision to pay through Debit Or Credit Card, swiped through the Swiping machine in the car; through Paytm; or through online retailers on wallet systems.

Project Title: Surveillance Robot

With increase in infiltration of restricted premises there is a serious demand of surveillance. Using CCTV cameras would require a large initial investment. Hence we require a better solution.

With every Square frame increase in the surveillance region it would require more number of cameras, this is where robot is a better choice.

It is comparatively cheaper and can cover a large area to be surveyed.

Such droid are better and more risk free.

In future we can add Arduino microcontroller and make android friendly so that it can be reprogrammed with your Smartphone.

Keeping in mind the above points, it is a fairly good solution with area covered and efficiency provided.

Project Title: The SOVRUN Train System

The SOVRUN system is a concept of non-stop train. The full form of SOVRUN is Sum Of Velocity RUN which depicts the idea of Continuity Of Motion. In this system the passengers travel through trains, and there is no need to stop the train at every upcoming station. With the implementation of this system we will be able to save up to 35% of diesel in case of diesel engine train, and up to 25% of electricity, in case of electric engines. And also in countries like India where the problem of delayed trains is a big issue, will be resolved by this system. This system can double the average speed of Indian railways and can save up to 50% of time, with many more other profit.

Project Title: The Footpath Ropeway

India stands at 2nd in the world population with 1.343 billion people which contributes 17.74% of world's population and with the increase in this population, the need of vehicles is also increasing for travelling and transportation but the conditions of roads in India is not good and thus create problems such as "Traffic" and "Accidents". For this, a large amount of vehicles are thus needed to satisfy the population, but on the other hand produces large amount of pollution which directly affect the environment. So keeping this in mind we thought and came up with an idea named as "The Footpath Ropeway" which is a type of Ropeway in which people travel from one place to another place and also for transportation of several goods too. By setting this project in the city it will act as a public transportation service and will also act as a revenue source for the government. This on the other hand can replace the domestic vehicles. This Ropeway is eco-friendly as it runs on electricity, and thus reduces air pollution. It will bring out a New Era of Transportation which has not been set in any part of the world. Some of its major advantages are:

1. It is an eco friendly,

2. And economic project,
3. Which could be a best source of earning for the government,
4. India could be the 1st to set this kind of unique project in the country.

Project Title: Train Accident Protection System

In this day to day life, when the society is rushing toward a better future, they don't even think about their safety, and they become so much careless, that they even can run on the platform with the train they would want to catch, whether it is a long distance or a short distance train. This model showcases the working of a useful mechanism that can be used between a train and a platform. As we all know that there is a 20 cm gap between the train and the platform which can be lethal in case someone falls in that space or get stuck in between the gap. The project assures for this safety, as it deals with covering the gap with a sheet of metal, which is inclined at some angle up to and upon the platform. The metal covering will be released out of the train and will be controlled by the train driver, whenever the train stops on a platform. The mechanism needed for this system is very much economical and simple to operate, as it only needs foldable sheets of metal, operated manually by the driver, whenever needed, and can reduce the loss of several innocent lives and can prevent several accidents due to this gap between the train and the platform.

Project Title: Two Wheeler Carriage Wagon

Nowadays, a immediate need of public transportation has emerged keeping in mind the current pollution level of India. As we know that India has one the best railway grid system in the world.

Two Wheeler Carriage wagon is basically a new approach for mode of transportation of two wheeler commodities. It has a number of advantages over the conventional ways of transportation of such commodities i.e.

1. It require less time
2. It can be trusted in all weather conditions
3. It has less chances of goods getting damaged
4. It promises better results in low economic cost

In days to come, it promises a revolution in the transportation of such commodities, as it will

1. Help in strengthening the current railway grid
2. Providing better economic returns to the railway system
3. Less level of traffic on roadways

Project Title: Treadmill Bicycle

This project-work modifies a treadmill to better fit to the requirements of users. Treadmill bicycle is designed for those humans who love to exercise but in indoors. Treadmill equipped on bicycle frame and formulates a big innovation named 'TREADMILL BICYCLE'. This bicycle has electronic parts and runs perfectly on human momentum. As the rider walks on the treadmill, the belt butts up against the rear wheel propelling the bike forward. Treadmill bicycle is designed for runners as the ideal treadmill device, this device combines the best exercise running and cycling to deliver a low-impact, high performance workout outdoors. We believe it is the ideal device for healthy runners. It delivers an exercise experience that is closer to running than anything else available today.

Project Title: WATER POWERED TURBINE (by creating whirlpool)

By installing turbulent whirlpool turbines in most canals or rivers we use the flowing water to generate electric power in as many homes as possible. We can also say it as a small Hydropower plant. Hydropower plant can deliver decentralized energy at low cost. This technology works well in rural areas, as long as there is a river nearby. This system can be installed in a week, where the system must be installed at a slope or decline of the stream. The whirlpool turbine makes use of small rapids or waterfalls to harness energy. We can dig up the land near the water source to install a concrete basin in the shape of a spiral. The generator and impeller goes inside the basin. Then a river wall is lifted so that some of the river water will pour into the basin rapidly in some incline and spiral shape of the basin, and thus runs the turbines. It is believed that it can have longer operating life and doesn't require much maintenance. Since basin life is too long, and fish won't be harmed in the turbine. It produces limitless free energy as long as water is flowing. And thus can generate electricity 24\7, with no external power requirement. It is Economical and Eco friendly in every aspect.

Project Title: VCRS CUM VARS

Energy is the primary component to run any system in the world. According to the second law of thermodynamics, there is an external work required to run the refrigerator which transfers the heat from the sink to the source. In order to maximize the performance of the refrigeration system, the input energy supplied to the refrigeration system needs to be utilized effectively. Most of the industries release remnant gases to the atmosphere which are responsible for air and thermal pollutions in the environment. These heat sources can be employed as input energy to VAR system and can also lead to the reduction in thermal pollution. HRS has the potential to enhance the performance of simple VCR system and it will be very suitable for industrial applications where low grade and high grade energy sources are available. Low grade energy sources like exhaust flue gas, hot stream, geothermal sources, etc., can be used as a heating source for VAR system.

Integration of these two refrigeration systems have some salient features like higher COP, improvement in cooling performance, momentous energy savings and healthier environmental condition due to the usage of eco friendly refrigerants, (HCFM as refrigerant).

Project Title: Wind Energy Irrigation Machine

Here we are using wind energy for the purpose of irrigation. Our society believes in electrically powered water pump to lift the water but here we are using turbine to pump water with the help of wind energy with the help of Beam Engine Mechanism. This mechanism is used to convert the rotary motion into reciprocating motion.

The wind energy is used for rotating the turbine and turbine is connected with crank which is finally connected to the levers. The levers are connected to the piston rods and pistons then reciprocate in the ground. This helps us in the suction of the water from the ground, where we can directly use this water or can store the same in a water tank.