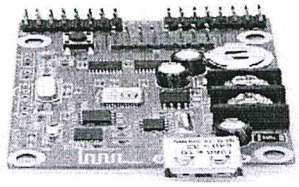
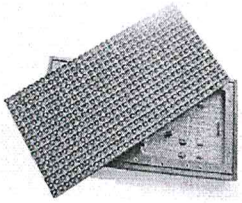
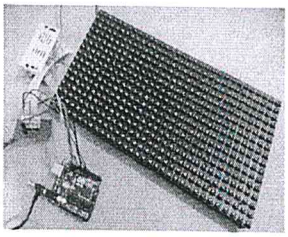
1. LED Scrolling Display Using Arduino UNO Board :

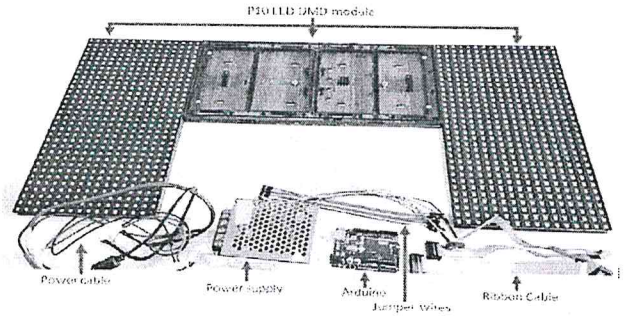
This project was done by IV B.Tech ECE students.The Objective is- Display advertising plays a very importing role in marketing and there are several advertisement methods like newspapers, posters, glow signboards, etc. but digital LED display boards are getting popular nowadays because of their reliability and advantages. Although they are a little bit expensive still they are durable and customizable, like the advertising text can be changed easily whenever needed and they can also be used as Digital Notice Board at any public place. We previously used an 8x8 LED matrix with many boards to control the text displayed over it, today we will use the P10 display with Arduino.

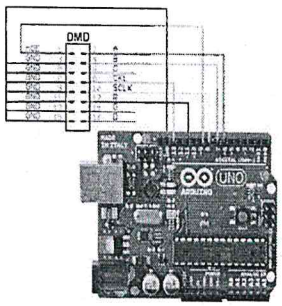
A digital scrolling text display is a display system that can display digital texts on a board made of LED array. The information it displays is pre-programmed using a microcontroller. Basically, the microcontroller used to program the P10 LED dot matrix display is called the "Control Card". This control card comes in many forms and has many features, but with the help of Arduino DMD library, we can program the Arduino board to work with the P10 dot matrix display. The P10 LED dot matrix display also comes in different colours.

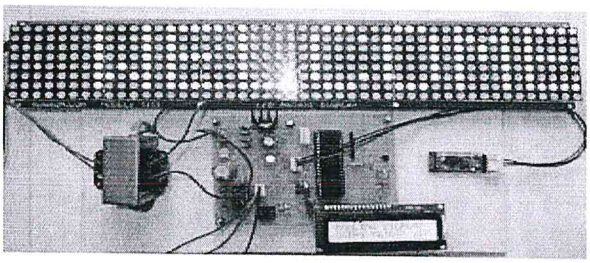




Materials Needed for Scrolling Text Display With Arduino

1. Arduino Uno board X 1
2. P10 LED Dot Matrix Display (DMD) Module X 3
3. 5 Volts, 5 Amps power supply
4. Connection ribbon cables X 3
5. Power supply cables
6. Bunch of jumper wires







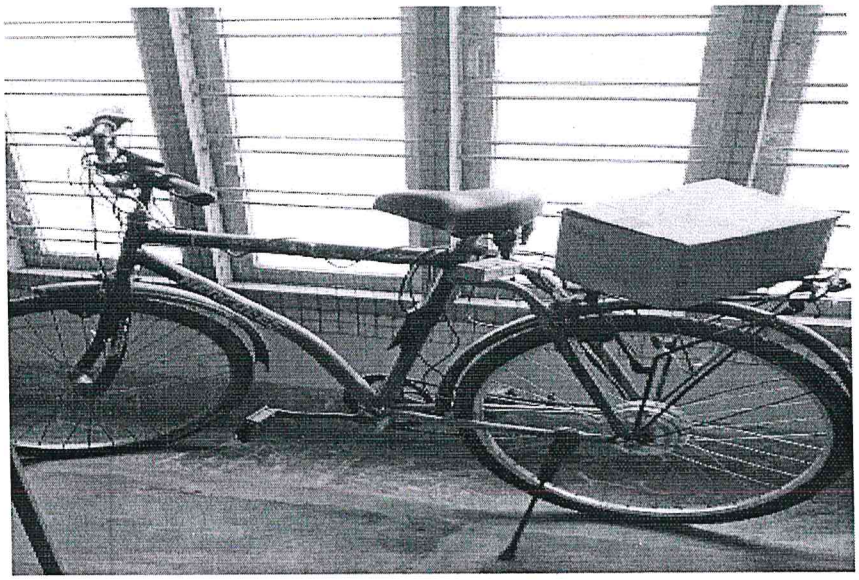
2. E-Bicycle

This project was done by IV B.Tech EEE students.The Objective is-An electric bicycle also known as an e-bike is a bicycle with an integrated electric motor which can be used for propulsion Many kinds of e-bikes are available worldwide, from e-bikes that only have a small motor to assist the riders pedal-power to more powerful e-bikes which are closer to moped-style functionality. All retain the ability to be pedalled by the rider and are therefore not electric motorcycles.

The Electric bike is a bike which is driven with the help of battery which is coupled to electric motor. Energy crisis is one of the major concerns in today's world due to fast depleting resources of petrol, diesel and natural gas. In combination with this, environmental decay is an additional factor which is contributing to the depletion of resources which is an alarming notification. Our project has the solution for this above perilous problems. The system which we innovated is the Electric Bike. This project has various benefits both to the members of the team and also external benefits thereby making awareness of using alternative modes of transport. The Electric Bike which works on the battery that is powered by the motor is the general mode of transport for a local trip. The solar panels can be alternative source for this by adding it to the system. The Electric bike which will be running on battery, the power is supplied by the motor, thereby supplying this power to drive the other gear components. The main purpose of using this E-bike is that it is user friendly, economical and relatively cheap. The efficiency of this system undeniable compared to conventional modes of transport. E-bike comprises the features like high mobility efficiency, compact, electrically powered, comfortable riding experience, light weight vehicle. E-bike is the most versatile future vehicle considering its advantages. Electric motorcycles and scooters are plug-in electric vehicles with two or three wheels. The electricity is stored on board in a rechargeable battery, which drives one or more electric motors.

The parts are as follows:

- Battery
- Motor
- Controller
- Shaft drive
- Throttle
- Charger



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3. Go-Cart with Bio-Gas :

This project was done by IV B.Tech Mechanical students. The Objective is-Biogas is the mixture of gases produced by the breakdown of organic matter in the absence of oxygen (anaerobically), primarily consisting of methane and carbon dioxide. Biogas can be produced from raw materials such as agricultural waste, manure, municipal waste, plant material, sewage, green waste or food waste. Biogas is a renewable energy source.

Biogas is produced by anaerobic digestion with methanogen or anaerobic organisms, which digest material inside a closed system, or fermentation of biodegradable materials. This closed system is called an anaerobic digester, biodigester or a bioreactor.

Biogas is primarily methane (CH_4) and carbon dioxide (CO2) and may have small amounts of hydrogen sulfide (H_2S), moisture and siloxanes. The gases methane, hydrogen, and carbon monoxide (CO) can be combusted or oxidized with oxygen. This energy release allows biogas to be used as a fuel; it can be used for any heating purpose, such as cooking. It can also be used in a gas engine to convert the energy in the gas into electricity and heat.

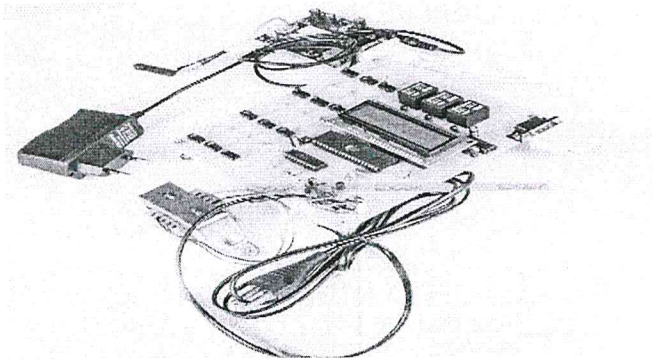
Biogas can be compressed after removal of Carbon dioxide, the same way as natural gas is compressed to CNG, and used to power motor vehicles. In the United Kingdom, for example, biogas is estimated to have the potential to replace around 17% of vehicle fuel. It qualifies for renewable energy subsidies in some parts of the world. Biogas can be cleaned and upgraded to natural gas standards, when it becomes bio-methane. Biogas is considered to be a renewable resource because its production-and-use cycle is continuous, and it generates no net carbon dioxide. As the organic material grows, it is converted and used. It then regrows in a continually repeating cycle. From a carbon perspective, as much carbon dioxide is absorbed from the atmosphere in the growth of the primary bio-resource as is released, when the material is ultimately converted to energy.

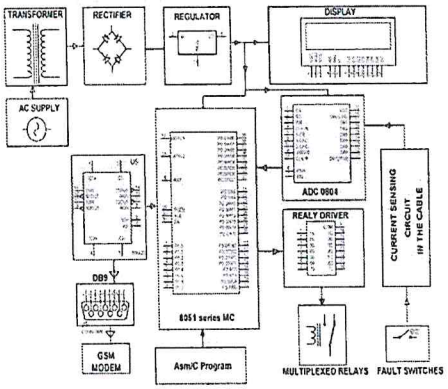
4. **IOT based information display system:**

This project was done by IV B.Tech CSE students. The Objective is- IoT stands for Internet of things. It is a new form of internet connectivity through which various physical electronic devices can be connected to each other over the internet. When various electronic and hardware devices are connected using this technology they can communicate with each other, monitor and control each other over the internet. The IOT technology is being applied in various fields such as media, environmental monitoring, infrastructure management, manufacturing, energy management system, medical system, home automation, and transportation systems to solve various engineering challenges.

Underground Cable Fault Distance Display System over the Internet

The main intention of this project is to find the underground cable fault distance (in kilometers) from the base station and also to display the same over the internet. In general, if a fault occurs due to any reason in the underground cable system then, it is very difficult to identify the location of the fault to repair it.





Display of Underground Cable Fault Distance over the Internet

The above figure represents the block diagram of underground cable fault detection and displays over the internet project. This project circuit block diagram consists of various blocks such as a power supply block, microcontroller block, relays, LCD display, and GSM module. Thus, this proposed IOT application can be used to detect the exact location of the fault and also for sending the data to a particular website in the graphical format along with displaying over an LCD display using GSM module.

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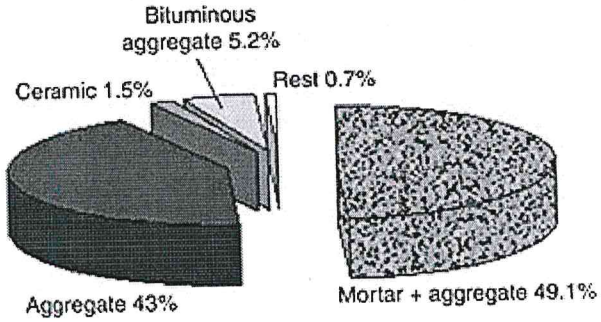
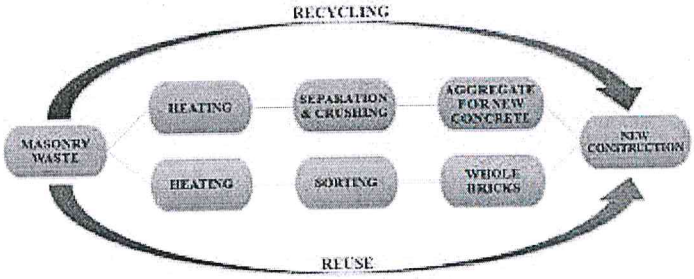
5. Recycled Aggregates in concrete:

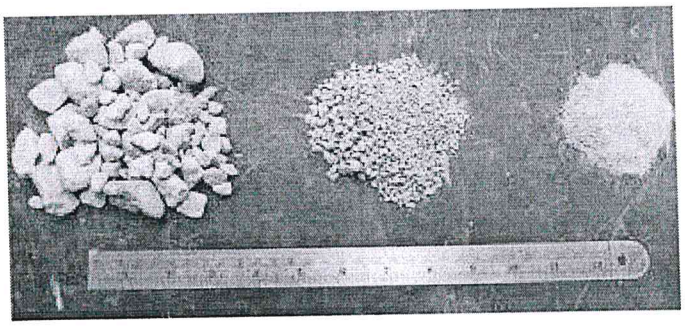
This project was done by IV B.Tech Civil students. The Objective is-One of the major challenges of our present society is the protection of environment. Some of the important elements in this respect are the reduction of the consumption of energy and natural raw materials and consumption of waste materials. These topics are getting considerable attention under sustainable development nowadays. The use of recycled aggregates from construction and demolition wastes is showing prospective application in construction as alternative to primary (natural) aggregates. It conserves natural resources and reduces the space required for the landfill disposal.

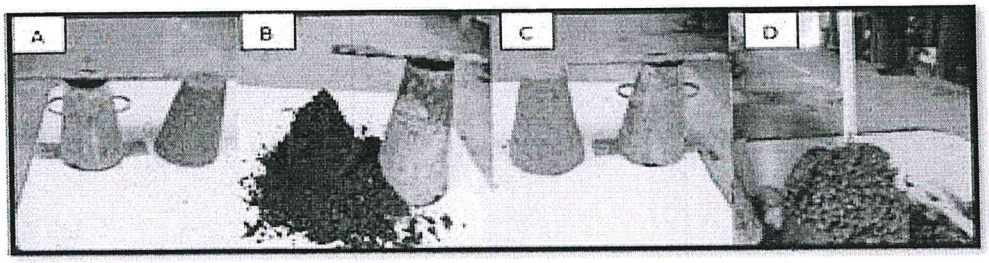
This paper presents the experimental results of recycled coarse aggregate concrete and results are compared with the natural crushed aggregate concrete. The fine aggregate used in the concrete, i.e. recycled and conventional is 100 percent natural. The recycled aggregate are collected from four sources all demolished structures. For both types of concrete i.e. M-20 and M-25, w/c ratio, maximum size of aggregate and mix proportion are kept constant.





Any construction activity requires several materials such as concrete, steel, brick, stone, glass, clay, mud, wood, and so on. However, the cement concrete remains the main construction material used in construction industries. For its suitability and adaptability with respect to the changing environment, the concrete must be such that it can conserve resources, protect the environment, economize and lead to proper utilization of energy. To achieve this, major emphasis must be laid on the use of wastes and byproducts in cement and concrete used for new constructions. The utilization of recycled aggregate is particularly very promising as 75 per cent of concrete is made of aggregates. In that case, the aggregates considered are slag, power plant wastes, recycled concrete, mining and quarrying wastes, waste glass, incinerator residue, red mud, burnt clay, sawdust, combustor ash and foundry sand. The enormous quantities of demolished concrete are available at various construction sites, which are now posing a serious problem of disposal in urban areas. This can easily be recycled as aggregate and used in concrete. Research & Development activities have been taken up all over the world for proving its feasibility, economic viability and cost effectiveness.



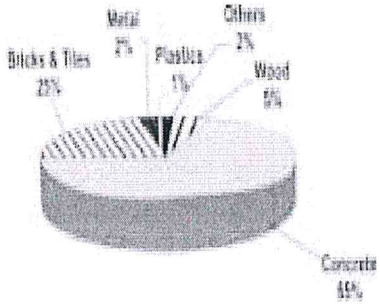


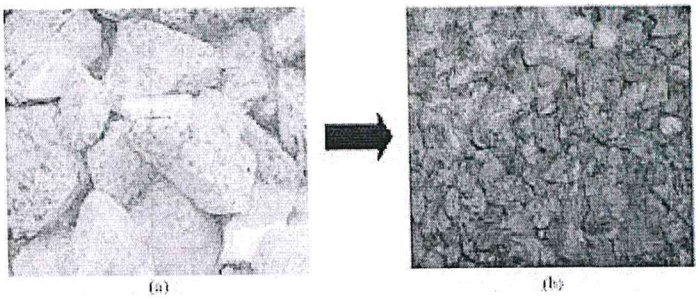
The main reasons for increase of volume of demolition concrete / masonry waste are as follows:-

- Many old buildings, concrete pavements, bridges and other structures have overcome their age and limit of use due to structural deterioration beyond repairs and need to be demolished;
- The structures, even adequate to use are under demolition because they are not serving the needs in present scenario;
- New construction for better economic growth;
- Structures are turned into debris resulting from natural disasters like earthquake, cyclone and floods etc.
- Creation of building waste resulting from manmade disaster/war.

Recycling and Reuse of Construction & Demolition Wastes in Concrete

The recycling and reuse of construction & demolition wastes seems feasible solution in rehabilitation and new constructions after the natural disaster or demolition of old structures. This becomes very important especially for those countries where national and local policies are stringent for disposal of construction and demolition wastes with guidance, penalties, levies etc. A typical lay out plan of recycling plant for construction waste has been shown in Figure





Indian Status

There is severe shortage of infrastructural facilities like houses, hospitals, roads etc. in India and large quantities of construction materials for creating these facilities are needed. The planning Commission allocated approximately 50% of capital outlay for infrastructure development in successive 10th & 11th five year plans. Rapid infrastructural development such highways, airports etc. and growing demand for housing has led to scarcity & rise in cost of construction materials. Most of waste materials produced by demolished structures disposed off by dumping them as land fill. Dumping of wastes on land is causing shortage of dumping place in urban areas. Therefore, it is necessary to start recycling and re-use of demolition concrete waste to save environment, cost and energy.

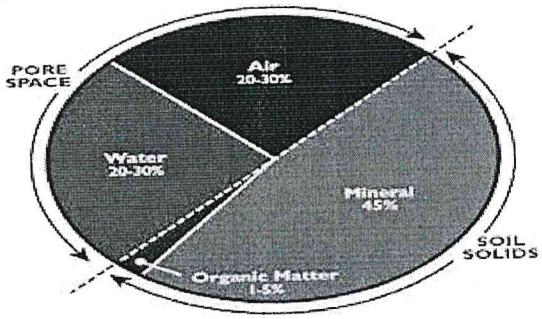
Central Pollution Control Board has estimated current quantum of solid waste generation in India to the tune of 48 million tons per annum out of which, waste from construction industry only accounts for more than 25%. Management of such high quantum of waste puts enormous pressure on solid waste management system.

6. Influence of organic conditions on growth and yield of Hibiscus Cannabinus:

This project was done by IV B.Tech Agriculture students. The Objective is-Hibiscus plant species are mostly found in the tropics and subtropics areas. It has green or red calyces that distinguish two main varieties: the Hibiscus sabdariffa variety altissima HSA (green variety) and the H. sabdariffa variety sabdariffa HSS (red variety)

Different parts of HSS are well known and studied. The cardioprotective, anti-hypertensive, antioxidant, antiseptic, and aphrodisiac properties of extracts obtained from HSS calyces, stems, flowers, and leaves. On the contrary, HSA is more cultivated for the fibers of its stem and often is confused with H. cannabinusL. (kenaf) Unlike kenaf, HSS rods first undergo bacteriological rusting before being used as fibers.

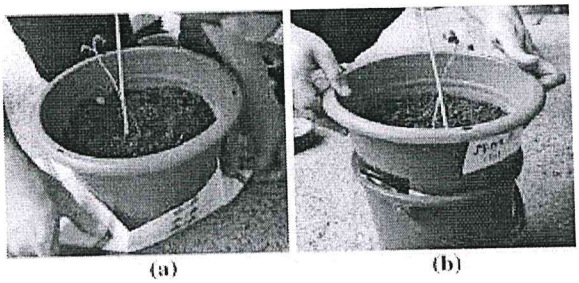
The seeds of H. sabdariffa, byproducts of the calyces, are not used since they are released into the wild. The fatty acid profile of HSS seed oils have been described to be highly linoleic (39%) and contains saturated fatty acids. By following Halphen's test and HBR titration, in the variety sabdariffa seed oils the presence of cyclopropene and epoxy acids. Indeed, it was reported in the seed oils of plants belonging to Malvaceae the presence of some unusual fatty acids known as cyclopropenoid fatty acids and epoxy fatty acids.On the basis of the properties and the occurrence or not of these compounds, these oils could be used for food,cosmetics, or as fuel. Vegetable oils are used in diesel engines, for agriculture purposes, and for alimentation of biodiesel since they seem to have greater potential. In that capacity, explored the performance of HSS oil as a biodiesel blend of diesel engines.To our knowledge, there is no study on the biodiesel potential of HSA seed oil. The fuel potential of both seed oils could be linked to the varietal particularities. Therefore, the present study aims to characterize the vegetable oils extracted from the seeds of the two varieties of H. sabdariffa in order to evaluate their fuel potential.



MATERIALS AND METHODS: Plant materials Roselle seeds of variety UKMR-2, were purchased. The seeds were initially sown in a germination tray (a) and (b) containing peat moss medium. Seedlings were placed in a greenhouse and were watered twice daily.

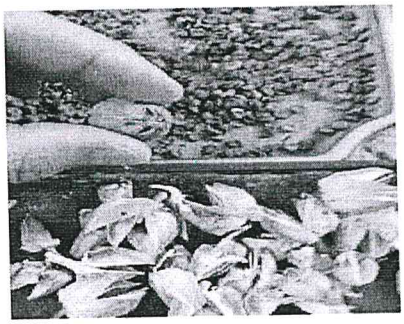
Fertilizers application: After one week of seedling, the processed goat manure obtained was added into big polybags (20 cm x 24 cm) containing 30 kg soil per bag. Before the transplantation of young seedlings into the polybags, the soil and goat manure were sowed to achieve homogeneity.

Transplanting: After one week of sowing, seedlings were transplanted into polybags. A total of 15 samples were used in five different treatments of goat manure. The rates of fertilizer treatment consisted of T1 (control), T2 (40 mt/ha), T3 (80 mt/ha), T4 (120 mt/ha) and T5 (160 mt/ha). Each treatment was applied in three replications. The experiment was conducted in Randomized Complete Block Design (RCBD).

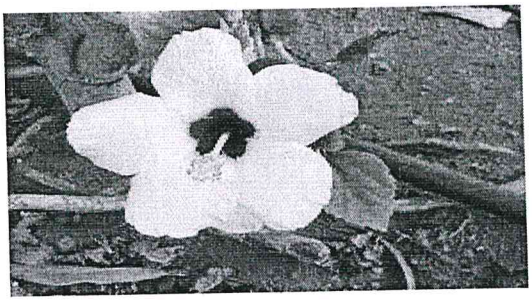


(a) (b)

Harvesting: After two months of planting, the roselle calyxes were harvested. The harvested calyxes were standardized at maturity index 3 where the calyxes were ripe, well developed and fresh or their seeds were visible and red-brownish in colour.



The growth measurements: Stem diameter of roselle was determined using the caliper. Stem height was determined using a measuring ruler with the aid of a thread from the soil surface to the top of the plant. The number of leaves was counted manually. Leaf area outlines were traced out on a graph paper to measure the leaf area. All the growth parameters were recorded at every three weeks interval for 21 weeks.



The yield of roselle: The fresh weight of roselle calyxes was weighed and recorded using top pan balance (SARTORIUS). For the dry weight determination, the calyxes were oven-dried for 72 hours at 60°C until constant weight were obtained. The data for fresh and dry weights were collected at 12, 15, 18 and 21 weeks of experiment.

Determination of antioxidant and chlorophyll content Carotenoids content: The harvested samples were cleaned and washed with tap water to remove any dirt or dust to avoid any inert debris in the assays. Calyxes (0.5g) were ground up with 3 ml of 80% (v/v) of acetone in mortar and pestle. After that, the mixture was centrifuged at 10,000 rpm for 10 minutes. The absorbance of the supernatant was measured at 663.2 nm, 646.8 nm and 470 nm using the spectrophotometer (UV-1601 SHIMADZU) and 80% acetone was used as a blank. The carotenoids content was calculated using formula: Chlorophyll a, Ca (mg/L) = 12.25A663.2 – 2.79A646.8 Chloropyll b, Cb (mg/L) = 21.50A646.8 – 5.10A663.2 Carotenoids, Cx + c (mg/ L) = 1000A470 –1.82Ca-85.02Cb 198