

IEEE 2017-18 Automobiles Based projects

1) AUTOMATIC BREAK FAILURE INDICATOR AND ENGINE OVER HEATING ALARM

THE AIM IS TO DESIGN AND DEVELOP A CONTROL SYSTEM BASED AN ELECTRONICALLY CONTROLLED AUTOMATIC BREAK FAILURE INDICATOR BY USING IR SENSOR AND ENGINE OVER HEATING ALARM BY USING HEAT SENSOR IS CALLED “AUTOMATIC BREAK FAILURE INDICATOR AND ENGINE OVER HEATING ALARM”.

Automatic break failure indicator and engine over heating alarm is consists of IR sensor circuit, Heat sensor Circuit, Control Unit and frame. The sensor is used to detect the break wire. There is any disconnection of the break wire or cutting of any few turns of break wire, the control signal to the alarm unit. Similarly the heat sensor is fixed to the engine and this heat is measured and giving the alarm signal when the engine heat exceeds the setted temperature limit.

2) AUTOMATIC PNEUMATIC BUMPER

The technology of pneumatics has gained tremendous importance in the field of workplace rationalization and automation from old-fashioned timber works and coal mines to modern machine shops and space robots. It is therefore important that technicians and engineers should have a good knowledge of pneumatic system, air operated valves and accessories.

This system is consists of IR transmitter and Receiver circuit, Control Unit, Pneumatic bumper system. The IR sensor is used to detect the obstacle. There is any obstacle closer to the vehicle (with in 4 feet), the control signal is given to the bumper activation system. The pneumatic bumper system is used to product the man and vehicle. This bumper activation system is only activated the vehicle speed above 40-50 km per hour. This vehicle speed is sensed by the proximity sensor and this signal is given to the control unit and pneumatic bumper activation system

3) AUTOMATIC SIDE STAND RETRIEVAL IN TWO WHEELER

The present paper relates to motorcycles and more particularly to an improved stand for motorcycles. The objective of this paper is to provide a device responsive to an operating condition of the engine of the motorcycle for moving the stand to its raised position when the motorcycle is in its running position. As we all know that today's life is very fast and the rider kick the bike and move forward without removing the side stand because of hurry and this may cause accidents. To avoid such accidents cause due to uplift the side stand, we may produce the new advancement in bike that as we press the gear lever, the cable wire get stretched due to the hook catch lock get de-locked to lift the side stand automatically. The need of prevention of the rider on this type of condition, which is happened many times, hence, it is important to create something or one mechanism, which prevents the rider from the accidents cause due to unlifted side stand. The mechanism should be such that it should neither affect the original mechanism nor create problems. In additional it should not increase the price of the bike. It is just a small mechanism, which operate the stand and operation should so easy. Therefore, it is necessary to have a separate attachment in a bike to lift up the side stand automatically.

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4) AUTOMATIC TIRE INFLATION SYSTEM

Driven by studies that show that a drop in tire pressure by just a few PSI can result in the reduction of gas mileage, tire life, safety, and vehicle performance, we have developed an automatic, self-inflating tire system that ensures that tires are properly inflated at all times. Our design proposes and successfully implements the use of a portable compressor that will supply air to all four tires via hoses and a rotary joint fixed between the wheel spindle and wheel hub at each wheel. The rotary joints effectively allow air to be channeled to the tires without the tangling of hoses. With the recent oil price hikes and growing concern of environmental issues, this system addresses a potential improvement in gas mileage; tire wear reduction; and an increase in handling and tire performance in diverse conditions.

5) ELECTRICAL POWER GENERATION USING SHOCK ABSORBER IN AUTOMOBILE ENGINEERING

In this project we are generating electrical power as non-conventional method by simply running on the vehicle. The power is generated by the rack and pinion arrangement is fitted in the vehicle shock absorber. Non-conventional energy system is very essential at this time to our nation. Non-conventional energy using shock absorber needs no fuel input power to generate the output of the electrical power. This project using simple drive mechanism such as rock and pinion assemble and chain drive mechanism.

For this project the conversion of the force energy in to electrical energy. The control mechanism carries the rack & pinion, D.C generator, battery and LED light. We have discussed the various applications and further extension also. So this project is implemented to all shock absorber, the power generation is very high.

6) FABRICATION OF AIR BRAKE SYSTEM USING ENGINE EXHAUST GAS

The aim is to design and develop a brake system based on exhaust gas is called "AIR BRAKE SYSTEM USING ENGINE EXHAUST GAS". The main aim of this project is to reduce the work loads of the engine drive to operate the air compressor. In this project, we used exhaust gas from the engine to rotate the generator turbine. Then the power is loaded to the D.C compressor and it is used to the pneumatic cylinder to apply brake.

7) FABRICATION OF AUTOMATIC BREAK FAILURE INDICATOR AND ENGINE OVERHEATING ALARM

Car safety is the avoidance of automobile accidents or the minimization of harmful effects of accidents, in particular as pertaining to human life and health. Special safety features have been built into cars for years, some for the safety of car's occupants only, and some for the safety of others. We have pleasure in introducing our new project "AUTOMATIC HEAD LIGHT DIM/BRIGHT CONTROLLER AND ENGINE OVER HEAT ALARM", which is fully equipped by sensors circuit, dim/bright light and engine over heat alarm circuit. It is a genuine project which is fully equipped and designed for Automobile vehicles.

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The aim is to design and develop a control system based on an electronically controlled automatic brake failure indicator by using IR Sensor and engine over heating alarm by using heat sensor is called ***"AUTOMATIC BRAKE FAILURE INDICATOR AND ENGINE OVER HEATING ALARM"***.

Automatic brake failure indicator and engine over heating alarm consists of IR sensor circuit, Heat sensor Circuit, Control Unit and frame. The sensor is used to detect the brake wire. There is any disconnection of the brake wire or cutting of any few turns of brake wire, the control signal to the alarm unit. Similarly the heat sensor is fixed to the engine and this heat is measured and giving the alarm signal when the engine heat exceeds the set temperature limit.

8) FABRICATION OF GEARLESS POWER TRANSMISSION MECHANISM

Also called elbow mechanism. It is an ingenious link mechanism of slider and kinematic chain principle. Transmits power at any angle without utilising gears. Transmits the power between two shafts whose axes are at 90 degree through bent links. Three links slide relatively according to the motion given to input shaft. Due to this, the rotational motion of input shaft is converted into sliding motion of links which is then converted to rotational motion of the output shaft.

9) FABRICATION OF REAL TIME ADVANCED 5 IN 1 MULTI PURPOSE AGRICULTURAL VEHICLE – AGRI VEHICLE

This Agricultural vehicle is an agricultural machine of a considerable power and great soil clearing capacity. This multipurpose system gives an advance method to sow, plow, water and cut the crops with minimum man power and labor making it an efficient vehicle. The machine will cultivate the farm by considering particular rows and specific column at fixed distance depending on crop. Moreover the vehicle can be controlled manually by driving the vehicle using seating arrangement. This agricultural vehicle will be running with batteries. Batteries will be charged using Solar Energy. So ultimate aim is to develop a agricultural vehicle which uses renewable sources for operation.

10) FABRICATION OF ROTARY CAR PARKING SYSTEM

Lack of space availability has always been a problem in urban areas and major cities and to add to it there are cars parked callously on the streets that further limit the space. In order to handle the issue of parking in busy places various types of vehicle parking systems are used worldwide namely Multi-level Automated Car Parking, Automated Car Parking System, Volkswagen Car Parking[1] and many more. The present project work is aimed to develop a reduced working model of a car parking system for parking 6 to 24 cars within a parking area of 32.17 m². It is an amalgamation of the already developed parking systems with the added advantage of reduced space occupancy by the design of a simpler and compact parking system that is rotary and occupies vertical parking space. The chain and sprocket mechanism is used for driving the parking platform and a one fourth hp brake motor shall be implemented for powering the system and indexing the platform. The platform is fabricated to suit the working model. The procurement and manufactured items are in hand and are ready to be assembled with the structure. This model is further useful for various branches of engineering in order to develop Technofist,

different types of automations like PLC, micro controller and computerization. By testing and analyzing the working model we can definitely get the view to develop the parking lots at difficult and busy commercial places.

11) FABRICATION OF ANTI THEFT BIKE WHEEL LOCKING SYSTEM

Aim of our project is to prevent the theft of bikes by using the wheel locking system. We are using solenoid switch as the main device for locking the front wheel of the two wheeler(disc brake system only) Now we are adopting this setup only for the disc brake systems involved bikes. Solenoid is a device which works in linear movement. It consists of plunger, that plunger moves in TOO & FRO direction, when it is connected to the battery supply. In disc brake system, the brake lever is used to activate the action of disc brake. Our plan is to use the solenoid to activate the action of disc brake when the ignition key is in OFF stage. So we need the progame to controle the function of solenoid. The programme must be in such a way that, when bike in IDLE STATE or IGNITION KEY IN OFF, at that time if an unauthorized person tries to move it, then after certain rotations of the front wheel the MICROCONTROLLER must take action with a help of sensor by sensing the rotation of the front wheel & it must active the solenoid function.

12) FABRICATION OF COMPRESSED AIR VEHICLE (CAV)

As the world is hard pressed with the energy and fuel crises, compounded by pollution of all kinds, any technologies that bring out the solutions to this problem is considered as a bounty. In one of such new technologies, is the development of a new engine called as compressed air engine which does not require any of the known fuels like diesel, petrol, CNG, LPG, hydrogen etc. this works using only compressed air. This replaces all types of to-date known fuels and also permanently solves the problems of pollution as its exhaust is clean and cool measured practically as low as 5°C. A proto type, a horizontal, single cylinder low speed engine was modified to run on compressed air. Since this engine runs only on high pressure compressed air, the exhaust of which is undoubtedly only air, making it a zero pollution engine. No heat is generated because there is no combustion of fuel, hence this engine needs no cooling system and it result in reduced cost, weight, volume and vibration. Early cost analysis shows that it's very cost effective and the operational cost is ten times less than that of petrol or diesel. Experimental analysis were carried out on this modified engine to find out its performance characteristics like brake power, mechanical efficiency, overall efficiency, air to Air ratio, volumetric efficiency, cost analysis etc. Though the efficiencies were low as the frictional forces were high for the proto designed engine, however the concept can be applied on a professionally designed engine to improve its performance.

13) FABRICATION OF ELECTRICAL STEERING SYSTEM

Additional future requirements for automobiles such as improved vehicle dynamics control; enhanced comfort, increased safety and compact packaging are met by modern electrical steering systems. Based on these requirements the new functionality is realized by various additional electrical components for measuring, signal processing and actuator control.

However, the reliability of these new systems has to meet the standard of today's automotive steering products. To achieve the demands of the respective components (e.g. sensors, bus systems, electronic control units, power units, actuators) the systems have to be fault-tolerant

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And/or fail-silent. The realization of the derived safety structures requires both expertise and experience in design and mass production of safety relevant electrical systems. Beside system safety and system availability the redundant electrical systems also have to meet economic and market requirements. Within this scope the paper discusses three different realizations of electrical steering systems

- ☐ Electrical power steering system (mechanical system with electrical boosting)
- ☐ Steer-by-wire system with hydraulic back-up and
- ☐ Full steer-by-wire system

The paper presents solutions for these systems and discusses the various advantages and disadvantages, respectively. Furthermore strategies for failure detection, failure localization and failure treatment are presented. Finally the various specifications for the components used are discussed.

14) FABRICATION OF HOVER CRAFT MODULE

Hovercraft module is capable of carrying 1 adult across any flat surface such as hard ground, sand, marsh, snow or water. Experience the exhilaration of skimming from land to water.

The Hovercraft module has been designed and engineered as plans, enabling you to build with only basic carpentry / engineering skills and simple workshop facilities.

A Fast, Low Cost, Full Feature Hovercraft Module Offering –

- ☐ Powerful DC motor for lift with outstanding performance
- ☐ A power full efficient DC Blower for lift (3*3)
- ☐ Thrust Fan
- ☐ Thrust Motor
- ☐ Will operate on water, ice or land
- ☐ Can be used indoors or out
- ☐ Water proof body panels and skirt
- ☐ Easy unbolt and replace maintenance
- ☐ Easy electric setup and run
- ☐ Strong, lightweight, and greater reliability
- ☐ All mechanical assemblies combined to form a single power module,
- ☐ A driving position that affords excellent vision and control,
- ☐ Water or land ready

15) FABRICATION OF INTELLIGENT REVERSE BRAKING SYSTEM

The aim is to design and develop a control system based on intelligent electronically controlled automotive braking system is called “INTELLIGENT REVERSE BRAKING SYSTEM”. Sensor Operated Pneumatic Brake consists of IR transmitter and Receiver circuit, Control Unit, Pneumatic breaking system. The IR sensor is used to detect the obstacle. There is any obstacle in the path, the IR sensor senses the obstacle and giving the control signal to the breaking system. The pneumatic breaking system is used to brake the system. So basically here the car brakes on its own by determining the distance from the object.

The IR TRANSMITTER circuit is to transmit the Infra-Red rays. If any obstacle is there in a path, the Infra-Red rays reflected. This reflected Infra-Red rays are received by the receiver circuit is called “IR

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RECEIVER". The IR receiver circuit receives the reflected IR rays and giving the control signal to the control circuit. The control circuit is used to activate the solenoid valve.

If the solenoid valve is activated, the compressed air passes to the Single Acting Pneumatic Cylinder. The compressed air activate the pneumatic cylinder and moves the piston rod. If the piston moves forward, then the breaking arrangement activated. The breaking arrangement is used to break the wheel gradually or suddenly due to the piston movement. The breaking speed is varied by adjusting the valve is called "FLOW CONTROL VALVE". The compressed air flow through the Polyurethane tube to the flow control valve. The flow control valve is connected to the solenoid valve.

16) FABRICATION OF MOTORIZED TRIANGULAR AIR COMPRESSOR

The compressor is mechanical equipment which is used to increase the pressure with the help of the piston. Need to improve the performance of compressor by several methods. The main aim of the project is to make tri-cylinder air compressor to generate large amount of air with less power and low vibration. In tri cylinder air compressor the three cylinders are kept at 120 degree to each other. The three cylinders are placed radically and equally apart such that the cylinder opening tends to meet on a common triangular compression chamber. The three pistons are made to compress air simultaneously on to common tri angular chamber over shorter stroke and the isothermal efficiency will be better than single cylinder with one piston. The motor is connected to the chain drive to drive the three crank shaft which is used to move the piston. If space is smaller the pressure will be more and bigger the lower. If compressor is made to work at 1400 rpm air taken will be $147.18 \times 1400 = 206052$ liters at 7 atmospheres pressure .The advantage with triangular compressor will be low vibration, smaller unit giving more output and so cheaper to make, ideal for air compressor is Air conditioning and Refrigeration, Vacuum pumps and general purpose usage.

17) FABRICATION OF REGENERATIVE BRAKING SYSTEM USING FLYWHEEL

Brakes are employed to stop or retard the motion of any moving body. Thus, in automobiles the brakes are having the most important function to perform. In conventional braking system the motion is retarded or stopped by absorbing kinetic energy by friction, by making the contact of the moving body with frictional rubber pad (called brake liner) which causes the absorption of kinetic energy, and this is wasted in form of heat in surroundings. Each time we brake, the momentum of vehicle is absorbed that it has gained and to re-accelerate the vehicle we have to start from the scratch to redevelop that momentum by using the more power from an engine .Thus, it will ultimately result in huge waste of energy. As the basic law of Physics says „energy can neither be created nor be destroyed; but it can only be converted from one form to another“, it will be good if we could store this energy somehow which is otherwise getting wasted out and reuse it next time we started to accelerate. That's the basic concept of regenerative ("regent") brakes, which provide braking for the system when needed, by converting the available energy to some usable form. These are widely used in electric trains and the latest electric cars.

18) FABRICATION OF REGENERATIVE BREAKING SYSTEM - ELECTRIC

Energy is always lost as friction in the event of application of a brake. If a part of that energy can be recovered, it helps in improving fuel economy of a vehicle or any machine that consumes petroleum products, ranging from airplanes to drill rigs. This is a concept of regenerative braking. Kinetic Energy Recovery System (K.E.R.S) is one such method used for regenerative braking. It employs the use of Technofist,

motor generator set, coupled to a battery for energy recovery. The motor-generator set acts as a generator in the event of braking and as a motor in the event of acceleration. Thus energy is stored in battery through the generator and the motor runs on this energy generated. Hence energy can be saved during braking and released during acceleration, saving fuel consumption.

A system that takes the energy from braking a car and transforms it into electricity to be used as an alternate electrical power source. It is much like a Hybrid vehicle where petrol/diesel will be used as the primary energy source, with the collected energy being used to supplement it. Kinetic Energy Recovery Systems (K.E.R.S) were used for the motor sport Formula One's 2009 season. The seminar analyzes the principle, construction and working of K.E.R.S and proposes various new fields where its introduction is feasible.

19) FABRICATION OF REMOTE OPERATED SCREW JACK

A jack is an important accessory with a light motor vehicle as well as heavy motor vehicle. It is used to lift the vehicle in order to replace the wheels easily.

All existing jack's that are in use with a light motor vehicle are operated manually causing inconvenience and unnecessary wasting of time.

This project is concentrated on modifying the existing screw jack to enable easy lifting of the motor vehicle in a very short interval of time by using starters, which are controlled by starter switch without any effort.

In this project we are mainly replacing the nut of the screw jack with a couple geared with D.C. motor.

In modern days, human being have become more fashionable that he does not want even a little bit of his effort to be used. So, we made an attempt in our project to reduce the human totally in lifting the vehicle with the help of our motorized screw jack.

20) FABRICATION OF REVERSE GEAR IN TWO WHEELER

At present, there is no system available to back the vehicle. At times when the front wheel gets into a trench it is very difficult to take the vehicle from parking. Even normal people face much problem to take the vehicle out of the parking at that time. In case of the handicapped people who drive two wheelers with extra support wheels, face much problem to take the vehicle out of the parking by pushing the vehicle with legs as we do. In order to take the vehicle out of the parking they need to seek others help or they should push it out of the parking. As a help to them we have designed a gear box which will be fit to the vehicle without altering the existing gear box. The paper deals with the design of such a gear box and the assembly process of the gear box to the vehicle. The design deals with the conditions of the gear box operation, and the design of the gear box based on easy assembly and easy manufacturing at low cost.

21) FABRICATION OF SMART WINDOWS

The situation prevailing today always calls for people and property to be completely secure and safety. In early days security and safety was not of this concern. Advancement in every field and all walks of life has rendered the world with more of malpractice committed by a sect of people who are socially not unacceptable.

Nowadays in organizations, other than conventional means of security and safety electronic security systems are a common feature. The devices provide a foolproof system from which everyone can feel highly secured.

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22) FABRICATION OF STAIR CLIMBING WHEEL CHAIR

A Manual Stair Climbing Wheelchair is important that the physically challenged people are included in the mainstream and this design serves this need. Wheelchair is one of the most commonly used assistive devices for enhancing personal mobility and assists people with disabilities to become more productive members of their communities. But extant wheelchairs have limitations against architectural barriers. In most of the schools and institutes in India the lack of accessibility for wheelchair bound students restricts their basic education. Designing wheelchair for stairs climbing can be a solution for autonomy in mobility for wheelchair users. By negotiating stairs with a stairs climbing wheelchair, a huge number of buildings in India would be accessible to wheelchair users just like any other user. These will open doors for many opportunities like better education, job and better quality of life. It is an safe, user friendly and efficient stair climbing manual wheelchair.

23) FABRICATION OF VEHICLE SAFETY USING POWER WINDOW MECHANISM

We have seen how severe is bus disasters on fire, accident etc, to avoid causalities and human lives here we are proposing power window mechanism. On sensing any danger in the form of fire and smoke the window automatically will slide down making way for passenger way out from the vehicle. This cool device is the heart of a power-window system. The window lift on most cars uses a really neat linkage to lift the window glass while keeping it level. A small electric motor is attached to a worm gear and several other spur gears to create a large gear reduction, giving it enough torque to lift the window. An important feature of power windows is that they cannot be forced open -- the worm gear in the drive mechanism takes care of this. Many worm gears have a self-locking feature because of the angle of contact between the worm and the gear. The worm can spin the gear, but the gear cannot spin the worm friction between the teeth causes the gears to bind.

24) OVER SPEED INDICATION AND AUTOMATIC ACCIDENT AVOIDING SYSTEM FOR FOUR WHEELER

This system is used to monitor speed of the vehicle and to avoid the accident by using the proximity sensors. This over speed indication and automatic accident avoiding system senses the opposite vehicle by the ir proximity detector and stops both the engines and applies auto braking thus preventing the accident. This system is used to read and control the data from the vehicles. And then process it by using microcontroller. The lcd module displays the rpm and the speed of the vehicle. For over speed the alarm raises and alerts the driver.

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