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RANE POYTECHNIC TECHNICAL CAMPUS

LATEST BATTERY TECHNOLOGIES FOR E -VEHICLE

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ABSTRACT

This essay focuses on researching the batteries used in electric vehicles. Recent improvements in EVs emphasise energy storage as a key component. So today's battery research and developments are emerging.it also discusses a standard bicycle converted to a battery-powered electric cycle. I use 24 volt battery, 12 volt pmdc motor, chain drive controller, throttle switch, key, and headlight make up this project. Approximately 6 km of pedalling each day should be reduced.

INTRODUCTION

ELECTRIC VEHICLE

A EV is defined as a vehicle that can be powered by an electric motor that draws electricity from a battery and is capable of being charged from an external source.

HYBRID ELECTRIC VEHICLE

A hybrid electric vehicle is a type of hybrid vehicle that combines a conventional internal combustion engine system with an electric propulsion system. The presence of the electric powertrain is intended to achieve either better fuel economy than a conventional vehicle or better performance**.**

HYBRID ELECTRIC CYCLE

An electric bicycle is a motorized bicycle with an integrated electric motor used to assist propulsion. Many kinds of e-bikes are available worldwide, but they generally fall into two broad categories: bikes that assist the rider's pedal-power and bikes that add a throttle, integrating moped-style functionality.

PARTS USED

1. 24V 250 WATTS MOTOR
2. Battery: 24V, 12 AH
3. Load RPM: 3000
4. Rated Wattage: 250W
5. Reduction Ratio: 9.78:1
6. Chain
7. Size: Pitch 0.5in
8. Roller Diameter 0.3in
9. Roller Width 0.16in

WORKING

- Power is converted from the DC battery to AC for the electric motor
- The accelerator pedal sends a signal to the controller which adjusts the vehicle's speed by changing the frequency of the AC power from the inverter to the motor
- The motor connects and turns the wheels through a cog
- When the brakes are pressed or the car is decelerating, the motor becomes an alternator and produces power, which is sent back to the battery

ADVANTAGE

Low Noise Pollution

Low Speed and Range

Low Price on Selling

REDUCTION OF REJECTION IN RACK PISTON LINE IN AN AUTOMOBILE MANUFACTURING LINE

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ABSTRACT:

The Automobile industry in India has made considerable progress during the lost decades. Today it is one of the most vibrant sectors of the economy. Steering systems are the most important part of an Automobile. There are multiple components to be Machined and processed to assemble a steering system. This paper takes into consideration reducing rejections in rack piston lines. We have several processes starting from Rack teeth milling to heat treatment followed by grinding and assembly. The teeth machining process is carried out by three machines. All these three machines are experiencing quality-related issues in 4 components for every 100. In this regard, we are going to use QC tools to reduce this rejection and to improve its quality.

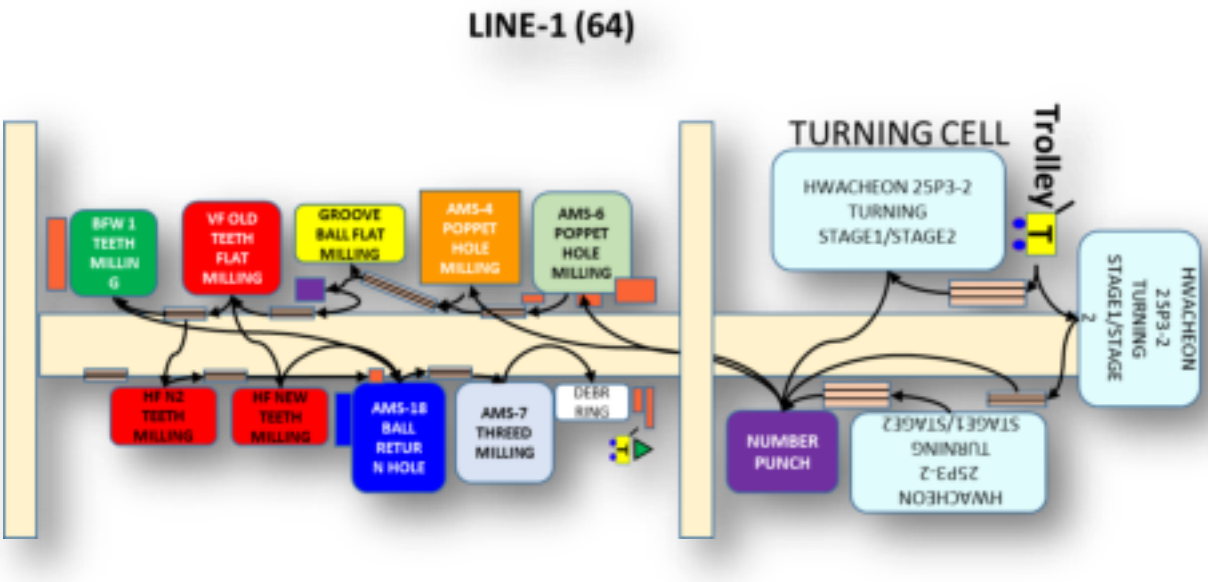
FIG GEAR

FIG GEAR Is also called fully integrated gear.

FIG GEAR COMPONENTS

- VALVE SLEEVE
- RACK PISTON
- WORM SHAFT
- SECTOR SHAFT
- INPUT SHAFT
- DRIVE RING

ASSEMBLY LINE DIAGRAM:



RACK PISTON MAKEING OPERATION:

- OD Turning
- Poppet hole making
- Ball return hole flat milling
- Teeth side flat milling
- Teeth milling
- Ball return hole drilling
- Thread milling
- Deburing

RACK PISTON MAIN PROBLEMS:

- Clamping pressure low
- Centre height variation
- Turret head not index
- Drill broken
- Cutter & insert problem
- OBD problem
- Teeth position problem
- Spindle noise
- Worm thread position problem
- Cutter change to first off inspection not ok

PROBLEM SOLUTION:

- Standardization of sleeves according to the cutter model. Standardization the sleeves which are required for positioning and the sleeves are fitted as per the sequence only, whenever re-sharpened cutter fitted into the machine spindle.

- To reduce the OBD problem, the height and thickness of the cutter teeth are measured before and after re sharpening.
- Measure the variation of the height and thickness of the milling cutter before and after re sharpening.
- Raise, adjust the machine work piece table exactly to match the variation.

ADVANTAGES:

- Maintain the Quality of an Assembly Line
- Increase Productivity & Reduce the Scarp

HYBRID VECHICLES

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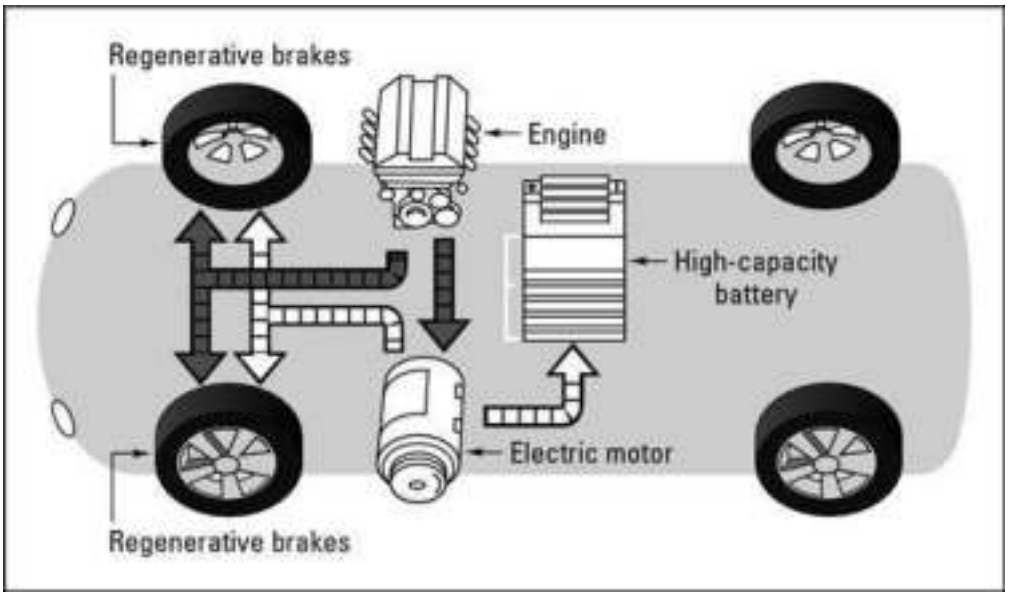
INTRODUCTION

Quite simply, a hybrid combines at least one electric motor with a gasoline engine to move the car, and its system recaptures energy via regenerative braking. Sometimes the electric motor does all the work, sometimes it's the gas engine, and sometimes they work together. The result is less gasoline burned and, therefore, better fuel economy. Adding electric power can even boost performance in certain instances.



With all of them, electricity comes from a high-voltage battery pack (separate from the car's conventional 12volt battery) that's replenished by capturing energy from deceleration that's typically lost to heat generated by the brakes in conventional cars. (This happens through the regenerative braking system.) Hybrids also use the gas engine to charge and maintain the battery.

Car companies use different hybrid designs to accomplish different missions, ranging from maximum fuel savings to keeping the vehicle's cost as low as possible.

PARALLEL HYBRID

In this most common design, the electric motor(s) and gasoline engine are connected in a common transmission that blends the two power sources. That transmission can be an automatic, a manual, or a continuously variable transmission (CVT). One very popular hybrid transmission is a power-split CVT, which is used by the Toyota Prius and Chevrolet Volt. Transmission type and the size of the gasoline engine are the main factors that determine how a parallel hybrid will accelerate, sound, and feel. Brands that use the parallel design include Toyota, Lexus, Hyundai, Kia, Ford, Honda, Lincoln, Nissan, and Infiniti.

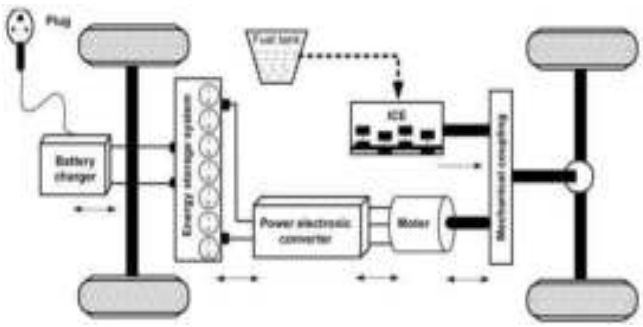
SERIES HYBRID

In this design, the electric motor(s) provides all the thrust, and there is never a physical mechanical connection between the engine and the

wheels. The gasoline engine is just there to recharge the battery. This results in a driving experience that's more indicative of an electric car, with smoother, powerful acceleration. There's typically less vibration when the gasoline engine engages. However, that engagement doesn't always happen in concert with what your right foot is doing (remember, the battery is making the demands), so the engine might be revving up while the car is cruising at a steady speed. Some find this behavior disconcerting. The BMW i3 with the range extender is an example of a series hybrid.

Plug-In Hybrid

A plug-in hybrid enhances the conventional hybrid concept with a much larger battery pack that, like an electric car's, must be fully recharged using an external electricity source—from your home, office, or public charging station. This greater amount of energy storage is like a larger gas tank: It allows for extended all-electric driving (between 15 and 55 miles depending on the model) and can significantly reduce fuel consumption. In fact, if you have a short commute and recharge nightly, you'll be running on electricity most of the time. Should you deplete the all-electric range, the car basically reverts to being a conventional parallel hybrid. The Chrysler Pacifica plug-in hybrid (shown above) is an example of the plug-in breed.



Mild Hybrids

All of the above are considered "full hybrids," which means that the electric motor is capableof moving the car by itself, even if it's for a short distance. In a "mild" hybrid, it cannot. Just as in a full hybrid, a mild hybrid's electric motor is there to assist the gasoline engine for the purposes of improving fuel economy, increasing performance, or both. It also serves as the starter for the automatic start-stop system, which shuts down the engine when the car comes to rest in order to save fuel.

Advantages	Disadvantages
Mechanical decoupling of the ICE and wheels. Allows the ICE working point to be chosen for high efficiency.	Requires a large traction motor as it is the only torque source. Has to be designed for peak power.
Simple speed control due to a single torque source connected to the wheels.	The many energy conversion leads to a low overall system efficiency.
Using an electric machine as the only torque source eliminates the need for a multi gear transmission.	Needs two electric machines and two sets of power electronics.
Simple packaging as the ICE and the generator can be mounted separately from the traction motor.	

OLED

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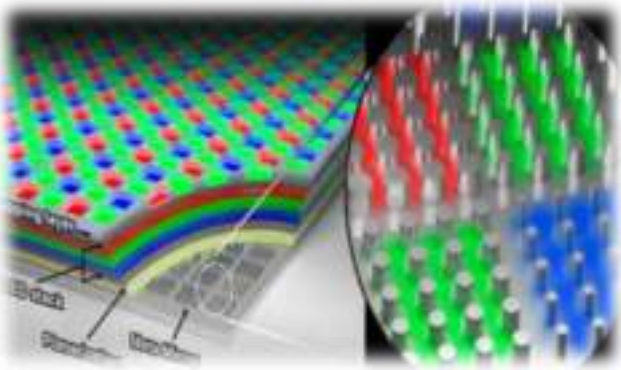
INTRODUCTION

A new OLED display from Samsung and Stanford can achieve more than 10,000 pixels per inch, which might lead to advanced virtual reality and augmented reality displays, researchers say.

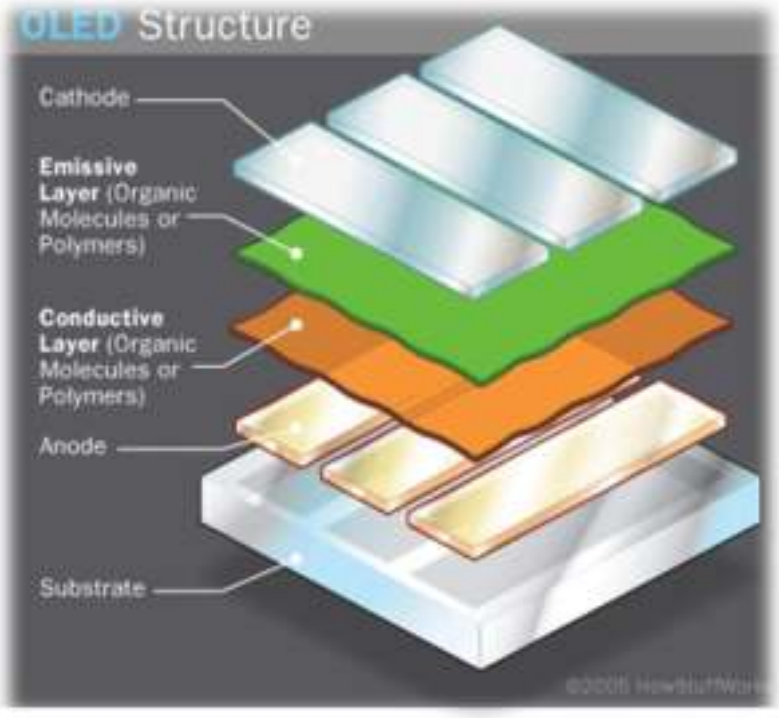
An organic light-emitting diode (OLED) display possesses a film of organic compounds that emits light in response to an electric current. A commercial large-scale OLED television might have a pixel density of about 100 to 200 pixels per inch (PPI), whereas a mobile phone's OLED display might achieve 400 to 500 PPI.



HOW DO OLED WORK

The main component in an OLED display is the OLED emitter - an organic (carbon- based) material that emits light when electricity is applied. The basic structure of an OLED is an emissive layer sandwiched between a cathode (which injects electrons) and an anode (which removes electrons).

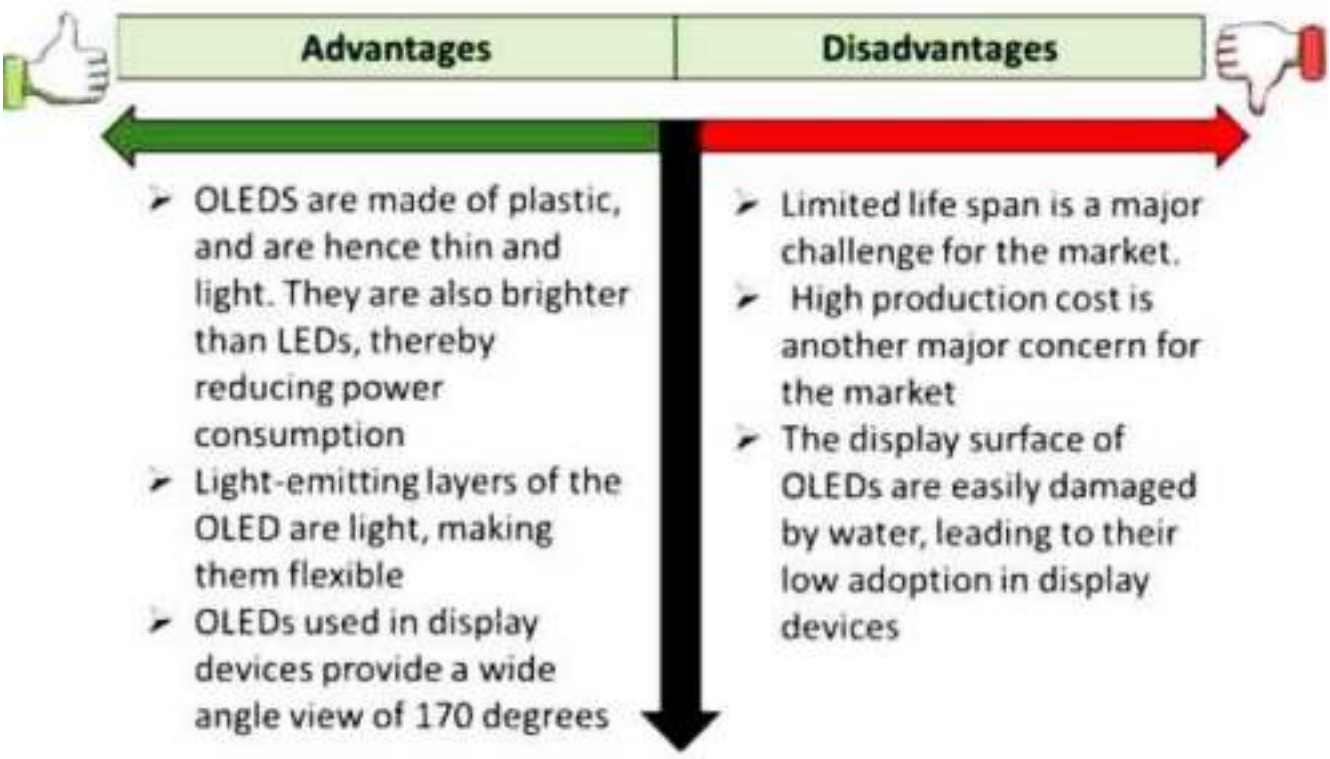
Modern OLED devices use many more layers in order to make them more efficient and durable, but the basic functionality remains the same.



An OLED panel itself is made from a substrate, backplane (electronics - the driver), front plane (the organic materials and electrodes as

explained above) and an encapsulation layer. OLEDs are very sensitive to oxygen and moisture and so the encapsulation layer is critical. The substrate and backplane of an OLED display are similar to those of an LCD display, but the front plane deposition is unique to OLEDs. There are several ways to deposit and pattern the organic layers. Currently most OLED displays are made using vacuum evaporation, using a Shadow Mask (FMM, Fine Metal Mask) to pattern. This is a relatively simple method but it is inefficient (a lot of material is wasted) and very difficult to scale up to large substrates.

Some OLED materials are soluble, and these can be deposited using printing methods - mostly ink-jet printing. OLED makers hope that ink-jet printing may be a scalable, efficient and cheap way to deposit OLEDs.



	OLED	AMOLED
What it is	It is used to create digital displays on devices such as smartphones, televisions, and computer monitors	A type of OLED display technology that provides more vibrant and vivid colors compared to regular OLED devices
Name	Organic Light-Emitting Diode	Active Matrix Organic Light-Emitting Diode
Year Developed	1987	2006
Popular Devices	LG C2	Samsung Galaxy S22
Flexibility	Limited flexibility	Highly flexible
Power Consumption	Consumes more power than AMOLED devices	Consumes less power than OLED devices
Cost	Often cheaper than AMOLED	More expensive than OLED


Application
Car electronics
Consumer electronics
Communications and data transmission
Mobile and PDAs
Application
Security equipment
Energy manage equipment
Ad industry
Sale and electronic sale

Scientist study the world as it is,

Engineers create the world that never has been.

- Theodore Van Karmant

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