NextGen Tech Initiatives Pvt Ltd

HYBRID ELECTRIC DRIVE SYSTEM FOR A VEHICLE

"Revolutionizing Sustainable Mobility"

LICENSING OPPORTUNITY

About NextGen Tech

Founded in 2013, NextGen Tech Initiatives Pvt Ltd envisions transformative changes in the mobility sector, particularly in the field of sustainable mobility. Established by two visionary engineers, the company is deeply committed to fostering and advancing ‘economically viable’ and ‘inclusive’ sustainable mobility solutions and is dedicated to re-shaping the future of transportation, by substantial reduction in GHG emissions per mile. Under the able guidance from an industry veteran with more than four decades of rich engineering experience in multinational engineering companies, several patents have been granted to Company in India, many IP’s in the advance stages in other countries like the USA, relevant trademarks in India and few functional prototypes under testing with promising data, the dream of cleaner mobility seems achievable much sooner.

ABSTRACT

Components of the Hybrid Electric Drive System:

1. Electric Drive: This consists of an electric motor, controller and battery system.

2. Epicyclic Gear System: An epicyclic gear system, also known as a planetary gear system, is a type of gear arrangement where gears rotate around a central gear.

3. Propeller Shaft: This is a shaft that transmits rotational power from the hybrid system to a rear axle (for rear wheel drive) or to a front axle (for front wheel drive).

4. Internal Combustion (IC) Engine Assembly with Gearbox: This includes a traditional combustion engine along with a gearbox for controlling speed and power being given to a propeller shaft.

Configuration and Functionality:

The hybrid electric drive system is positioned between the IC engine assembly, gearbox, and the rear axle differential of the vehicle, in case of rear wheel drive; and close proximity to the final drive coming out of the IC engine, gearbox in case of the front wheel drive vehicle.

It serves a dual purpose:

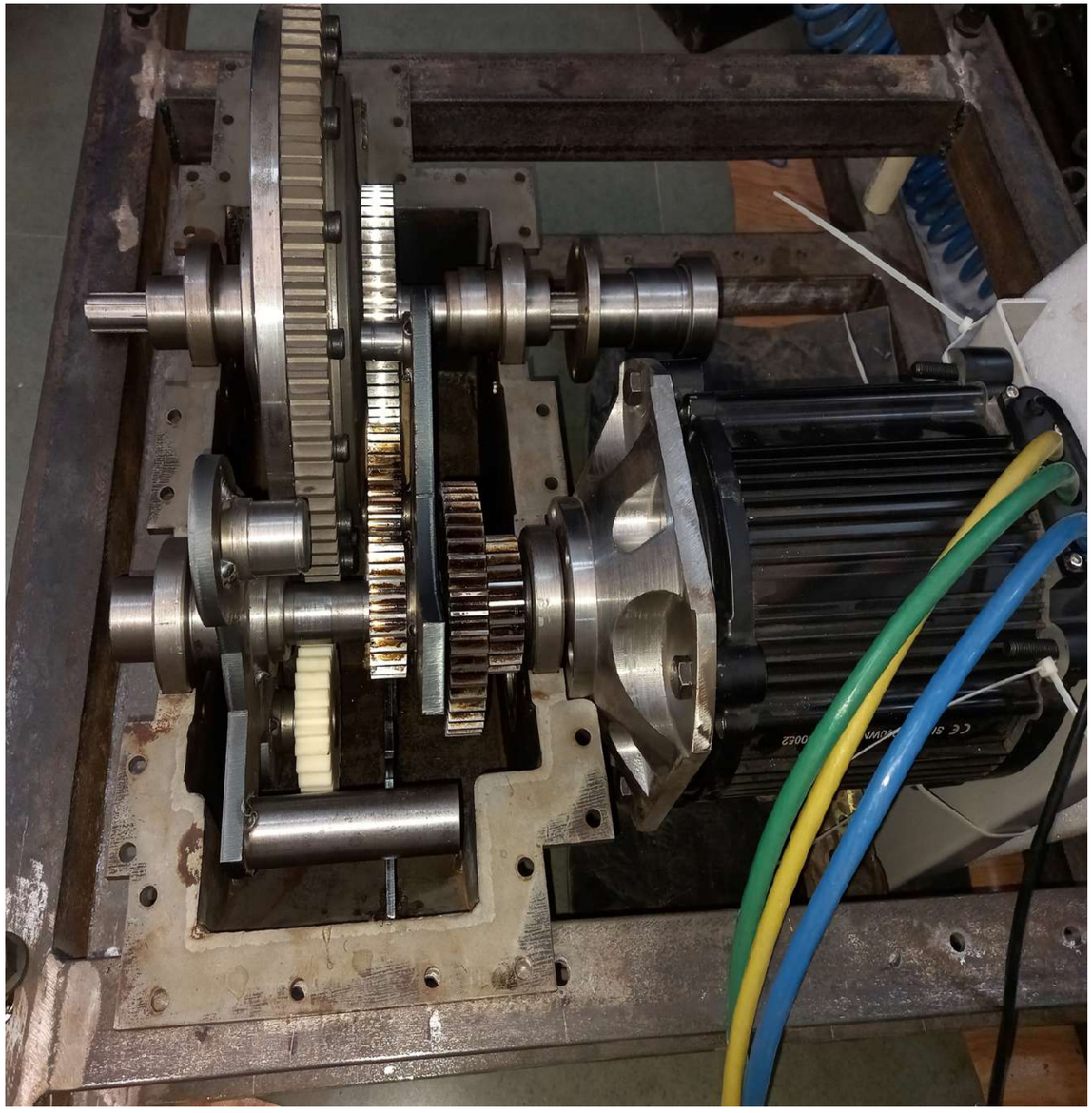
1. Individual Transmission to Wheels: It allows the transmission of power individually from each powertrain (electric motor and IC engine) to the wheels. This means the vehicle can be powered by either the electric motor or the internal combustion engine separately.

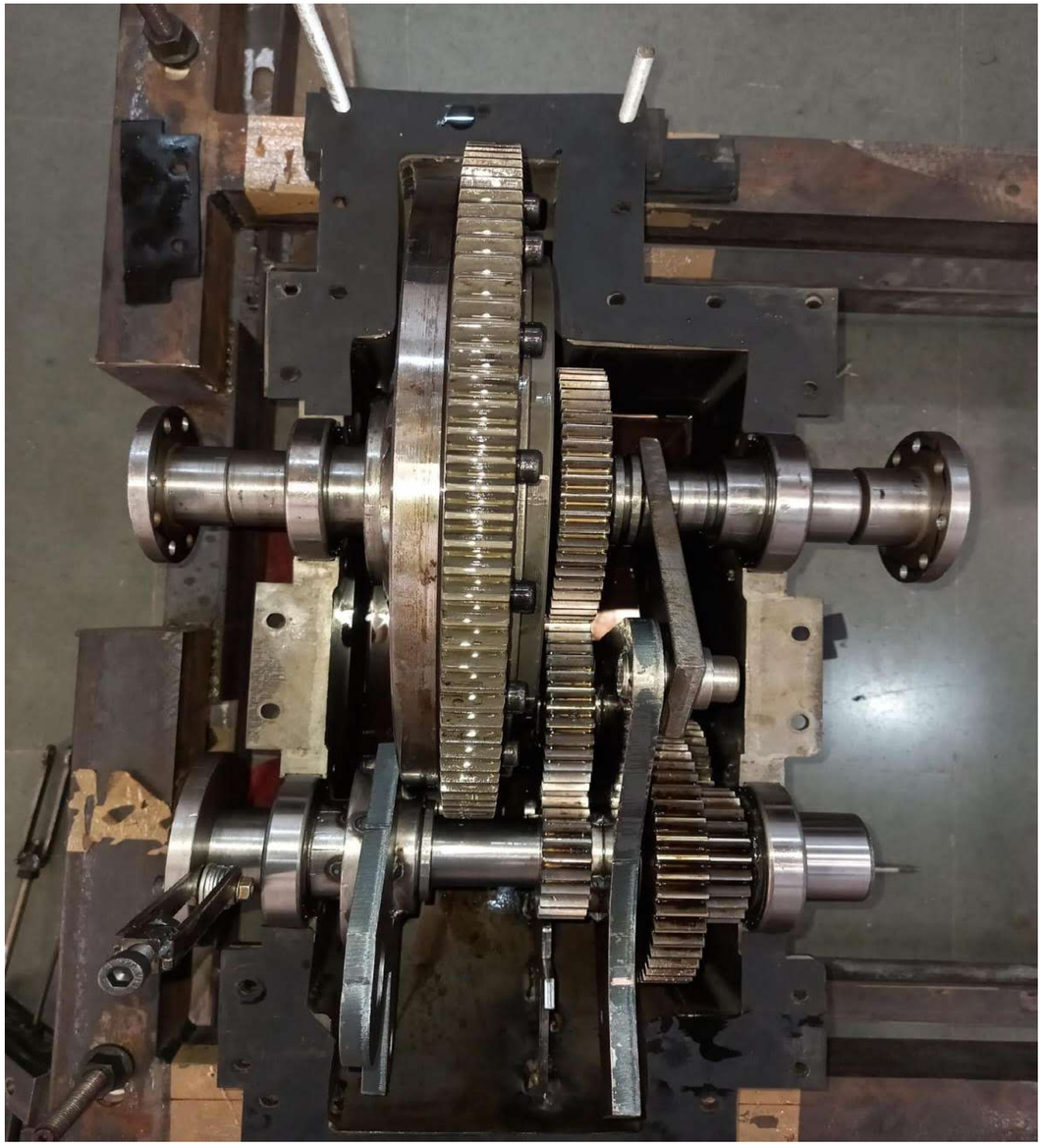
2. Combined Transmission: It combines the power from both the electric motor and the internal combustion engine, seamlessly transmitting it to the vehicle's wheels. This is likely for situations where additional power is needed, such as during acceleration or climbing hills.

Power Transmission Mechanism:

The power generated by both ie the IC engine and the electric drive system is transmitted to the axle(s) through the said hybrid drive system. In simpler terms, this NextGen hybrid electric drive system is a sophisticated mechanism that efficiently manages the power generated by both the electric motor and the traditional internal combustion engine, for both the front wheel as well as rear wheel drive systems. It allows the vehicle to operate on electric power alone, traditional fuel-powered engine alone, or a combination of both, depending on the driving conditions and power requirements. This kind of system is designed for optimal energy efficiency and flexibility in various driving scenarios.

FEW PICTURES & VIDEOS OF KEY ELEMENTS OF OUR SYSTEM





PATENT DETAILS

Patent # 396873 along with Patent(s) of addition(s);

Granted by Indian Patent Office

PCT Application #: IB2022 / 060089; Status: Published

USPTO: 2023/0173908 A1; Status: Published

WHY THE HYBRID DRIVE SYSTEM?

- Higher Fuel Efficiency; Reduced Emissions; Increased early adoption by consumers because of absence of range anxiety factor, due to re-chargeable plug-in hybrid type of vehicles & better economic viability
- High Impact, Low Cost, Easy to Implement
- Dual Powertrain Flexibility; Seamless Power Integration, Regenerative Breaking and Energy Recovery
- Adaptability for existing **huge number of on-road** vehicles; if policy driven from Govt / OEM's through after-market; this has huge economic potential
- Industry Inclusive Approach – agnostic to fuels used in ICE
- Game-changing catalyst for Sustainable Mobility, by increasing early adoption of PHEV's thereby resulting in extremely high green miles driven Vs. slower standalone EV adoption

COMPARING EXISTING HYBRIDS vs. NHS PHEV

Sr. No.	Factor	Existing Hybrid Systems in Market	NextGen Hybrid System (Patented)
		Toyota Hybrid System (THS)	**NextGen Hybrid System (NHS)**
1	External Charging Ability	Prius, Toyota Hyrider, are only HEV's. Those can not be charged externally and have to burn fossil fuels to charge the battery	NHS is a system for a PHEV's which can be charged externally
2	Ability to install bolt-on hybrid system in existing vehicles	N/A: THS can NOT be installed in existing on-road vehicles, as it uses a completely different architecture for IC Engine and two motors	NHS is a system that can be installed in Front Wheel Driven as well as Rear Wheel Driven Systems
3	Passenger Vehicles Vs Commercial Vehicles	These can be used only for passenger vehicles, that too a small percentage of those based on THS (few thousand only)	These can be used for all existing passenger vehicles as well as light/commercial vehicles (volume in tens of millions of vehicles)
4	Retrofitability: Compatibility in after-market on-road vehicle volume	Not Compatible for retrofits into existing on-road vehicles	Fully Compatible with Retrofit solutions for existing on-road volumes which run into tens of millions in number
5	Range Extension & addressing range anxiety of users	Very limited & incremental range extension; battery can be charged only by burning fuel in IC Engine	Extremely high and scalable range, with ability to charge externally and no requirement of burning fuel in IC Engine to charge the batteries unlike THS/HEV's
6	Target Segment (Total Addressable Market)	Only THS based front-wheel driven vehicles (volumes in few thousands only in India)	All types of passenger & commercial vehicles (incl. Front Wheel Driven & Rear Wheel Driven) , whether on manufacturing line or existing on-road vehicles, both combined runs into tens of millions of vehicles
7	Autonomy for driver to Select Modes of Operations	Does not exist	NHS allows the driver to use EV mode, ICE mode or Combined mode; however, we can regulate these aspects through programmable control unit
8	Source of Energy in Charging On-Vehicle Battery	In THS, Battery is charged by Generator Motor which is run by burning fuel in Internal Combustion Engine; thereby, increasing tailpipe emissions per km	In NHS, the battery is charged by external electricty source as it's a plug-in hybrid; and has the ability to run the vehicle only in EV mode for long range, unlike THS

PAYBACK PERIOD CALCULATION

Payback calculation Vs ICE Vehicle				
	Hybrid NHS			ICE
Daily Run	150.00		Daily Run	150.00
Wt. avg. cost per Km in Hybrid	7.08		Cost Per Km (On ICE fuel run)	11.00
Total Cost	1,062.00		Total Cost	1,650.00
Savings in Hybrid Mode Per Day	588.00			
Annual Savings (Assuming 25 days running per month & 12 months per Year)	176,400.00			
Cost of Conversion using NHS Bolt-On System	307,500.00			
Payback Period in Years	**1.74**			
Reduction in ICE operating time under NHS PHEV vehicle as compared to that under ICE only vehicle (and consequently reduced tailpipe emissions)	**49%**			

ADVANTAGES FOR LICENSEES

- Access to a very relevant ‘need of the hour’ technology with huge commercial potential due to sheer high numbers under the target segment(s); with shorter payback period for individual end-users making the target market highly lucrative for the licensee
- Early-Mover Advantage in PHEV Sector
- Substantial Environmental & Economic Returns for the country with reduction in oil imports, cleaner air & extremely efficient up-cycling opportunity and savings in precious resources; thereby creating a huge goodwill opportunity for the licensee to collaborate with the Central Government through appropriate policy making for promoting NextGen PHEV Systems in order to achieve the said benefits
- Strong Consumer Appeal & Positive Public Relations for the licensee OEM’s;
- Adaptability for Existing ON-ROAD Vehicles & Compatibility with all vehicle types such as front wheel drive or real wheel drive vehicles; as well as across passenger or commercial; as well as newly being manufactured or bolt-on retrofit solution for huge on-road vehicles;
- Technological Leadership and Competitive Advantage for the Licensee;

LICENSING OPPORTUNITY

Join Us in Revolutionizing Sustainable Mobility
Mutual Collaboration and Benefits

NextGen Tech Initiatives Pvt Ltd

THANK YOU FOR YOUR TIME & INTEREST

Let's schedule a virtual meeting to explore the exciting potential of our innovative hybrid electric drive system for your organization.

Let's Shape the Future of Sustainable Mobility Together