**General Description**

A cutaway model or demo section of a hybrid vehicle powertrain system.

**Mounted Configuration**

- Mounted on a durable steel frame with lockable wheels
- Transparent protective covers for moving parts and high-voltage areas
- Full-color labeling and backlit diagram panel showing energy flow

**Powertrain Components**

**Internal Combustion Engine (ICE):**

- 3-cylinder or 4-cylinder engine (petrol, optionally diesel)
- Transparent or open-view cylinder head section
- Visible intake, exhaust, cooling, and lubrication subsystems

**Electric Motor:**

- Permanent Magnet Synchronous Motor (PMSM) or AC induction motor
- Connected to the transmission for parallel hybrid function

*Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.*

**Power Split Device:**

- Planetary gearset or eCVT simulation (Toyota Prius-style)
- Manual rotation feature for internal visibility of torque split

**Transmission:**

- Automatic or CVT cut-section
- Gears labeled and optionally motorized to demonstrate shifting

**Battery and Electrical System**

- **High-Voltage Battery** (simulated or real, deactivated for safety)
- Lithium-ion or NiMH, with BMS (battery management system) emulator
- Battery cutaway or see-through casing

**Inverter/Converter Unit:**

- Cut-section of actual hybrid inverter
- Demonstrates DC-AC conversion and regenerative braking
- 12V Auxiliary Battery System

**Instrumentation & Control**

**Working Model (Optional):**

- Electrical simulation of hybrid drive operation via touchscreen
    - Simulates:
        - EV mode (battery only)
        - Hybrid mode (engine + motor)
        - Regenerative braking
        - Charging and discharging cycles

**Display/Control, HMI or Data Screen Panel:**

- 7–10” touchscreen or LED display
- Real-time or simulated indicators for RPM, battery status, power flow

*Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.*

**Diagnostic Port (OBD-II):**

- For CAN Bus scanning and educational diagnostics

**Educational Features**

- Annotated schematic diagram of hybrid architecture
- Fault simulation switches (e.g., battery fault, inverter fault)
- Instructor control panel with adjustable load/resistance
- Color-coded cabling and fluid paths
- Multilingual educational material and operation manual
- Modular approach for different hybrid systems (series, parallel, plug-in)
- Partially functional model with electrical simulation (non-running ICE)

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