Truck ECM Course Topics (In English)

1. How to Open ECM and Basic Knowledge of ECM
2. Introduction of Multimeter
   a. How to Measure AC/DC Voltage?
   b. How to Measure Current?
   c. How to Measure Resistance?
   d. How to Use Continuity Mode in Multimeter?
3. Introduction of Basic Electronics
   a. Series/Parallel Circuits
      - Functions and Workings of Series/Parallel Circuits
   b. AC/DC Current
      - Understanding AC/DC Current
   c. AC/DC Voltage
      - Understanding AC/DC Voltage
   d. Resistance
      - Role of Resistance in an electrical circuit
   e. Capacitance
      - Importance of Capacitance
4. Component Knowledge
   a. Resistor
      - Introduction of Resistor and its Functions
   b. Capacitors (Polar/NonPolar)
      - Introduction of Capacitors (Polar/NonPolar)
   c. Inductor
      - Role of an inductor in an electrical circuit
   d. Diode (Single/Dual Diode)
      - Applications and Functions of Diode
   e. Transistor
      - Importance of Transistor
   f. MOSFET
      - Introduction of MOSFET, its Application and Uses
   g. Dual MOSFET

- Understanding Dual MOSFET, its Application and Uses

h. Regulator
- Functions and Workings of Regulator

i. Crystal Oscillator
- Introduction and Application of Crystal Oscillator

5. SMD Rework of Small Components
   a. Diode
      - Process for reworking a diode on an SMD board
   b. Resistor
      - How to rework a small SMD Resistor
   c. Non-Polar Capacitor
      - How to rework a nonpolar capacitor
   d. Etc.
6. SMD Rework of Medium Components
   a. Faulty Transistor
      - Rework of Faulty Transistor on SMD Board
   b. MOSFET
      - Understanding of Rework of MOSFET
   c. Regulator
      - How to rework a Regulator
   d. Removing and Reworking of Small ICs (EEPROM, Regulator ICs, Etc.)
   e. Replacing an SMD Capacitor
   f. Etc.
7. SMD Rework of Multi Components
   a. Understanding Rework of 2 Side Legs ICs
   b. Understanding Rework of 3 Side Legs ICs
   c. Reworking Large ICs on an SMD Board
   d. Reworking an MCU
8. Basic Knowledge of ECM Hardware Offline Tracking
   a. Introduction of Ignition Circuit, Its Workings and Functions
   b. Understanding Communication Protocol Circuit
      - CAN High
      - CAN Low
      - K-Line

c. 5V Reference Circuit
   - Importance of 5V reference circuit in ECM Operations

d. Sensor Lines
   - Rail Pressure
   - Crankshaft Position Sensor
   - Camshaft Position Sensor
   - Accelerator Position Sensors 1 and 2
   - Water in Fuel Sensor
   - Oil Pressure Sensor
   - Coolant Temperature Sensor, Etc.

e. What are Actuator Lines?
   - Fuel Pump
   - Radiator Fan
   - Fuel Pump Actuator
   - Engine Indicator Lamp Circuit
   - Injector Circuit
   - AC Compressor Relay
   - Main Relay, etc.

f. 24V Circuit
   - How to diagnose issues in 24V circuit

g. Odometer Gauge Signal from ECM Circuit

9. Identification and Analysis of Common Hardware Related Issues
10. Techniques for Repairing Damaged or Faulty Circuit Boards
11. Basic Knowledge of ECM Hardware Offline Tracking
    a. How to Measure Onboard Voltages (Injector High Voltage, 5V, 3.3V, 2.5V, 1.5V, etc.)
12. Explanation of Hardware in Different Working Sections
13. Explanation of ECM Pin-out and Online Tracking
14. ECM Data Read and Write
    a. K-Tag
    b. SM2 Pro
    c. BITBOX
    d. KT200
    e. PCM FLASH
15. On Table ECM Testing

16. On Table ECM Diagnosis
17. Explanation of ECM Calibration
18. Explanation of JEMAT Tool & Use of Diagnostic Software

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Truck ECM Course Topics (In Hindi)

1. ECM को कैसे खोलें और ECM की मूल जानकारी
2. Multimeter का परिचय
   a. AC/DC Voltage को कैसे मापें
   b. Current को कैसे मापें
   c. Resistance को कैसे मापें
   d. Multimeter में Continuity Mode का उपयोग कैसे करें
3. Basic Electronics का परिचय
   a. Series/Parallel Circuits
      - Series/Parallel Circuits के कार्य और कामकाज
   b. AC/DC Current
      - AC/DC Current को समझना
   c. AC/DC Voltage
      - AC/DC Voltage को समझना
   d. Resistance
      - Electrical Circuit में Resistance की भूमिका
   e. Capacitance
      - Capacitance का महत्व
4. Component Knowledge
   a. Resistor
      - Resistor का परिचय और इसके कार्य
   b. Capacitors (Polar/Nonpolar)
      - Capacitors (Polar/Nonpolar) का परिचय
   c. Inductor
      - Electrical Circuit में Inductor की भूमिका
   d. Diode (Single/Dual Diode)
      - Diodes के अनुप्रयोग और कार्य
   e. Transistor
      - Transistors का महत्व
   f. MOSFET

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- MOSFET का परिचय, इसके अनुप्रयोग और उपयोग

g. Dual MOSFET
   - Dual MOSFET को समझना, इसके अनुप्रयोग और उपयोग

h. Regulator
   - Regulators के कार्य और कामकाज

i. Crystal Oscillator
   - Crystal Oscillators का परिचय और अनुप्रयोग

5. छोटे Components का SMD Rework
   a. Diode
      - SMD बोर्ड पर एक Diode का Rework करने की प्रक्रिया
   b. Resistor
      - एक छोटे SMD Resistor का Rework कैसे करें
   c. गैर-ध्रुवीकृत Capacitor
      - एक गैर-ध्रुवीकृत Capacitor का Rework कैसे करें
   d. आदि
6. मध्यम Components का SMD Rework
   a. ख़राब Transistor
      - SMD बोर्य पर ख़राब Transistor का रीवकय
   b. MOSFET
      - MOSFET का Rework समझना
   c. Regulator
      - एक Regulator का रिवर्क कैसे करें
   d. छोटे ICs (EEPROM, Regulator ICs, आदि) को हटाना और उनका rework करना
   e. SMD Capacitor को बदलना
   f. आदि
7. बहु-Components का SMD Rework
   a. 2 side लैग्स वाले ICs का Rework समझना
   b. 3 side लैग्स वाले ICs का Rework समझना
   c. SMD बोर्ड पर बडे ICs का Rework
   d. MCU का Rework

8. ECM Hardware Offline Tracking की बुनियादी जानकारी
   a. Ignition Circuit का परिचय, इसकी कार्यप्रणाली और कार्य
   b. Communication Protocol Circuit को समझना
      - CAN High
      - CAN Low
      - K–Line
   c. 5V Reference Circuit
      - ECM Operations में 5V reference circuit का महत्व
   d. Sensor Lines
      - Rail Pressure
      - Crankshaft Position Sensor
      - Camshaft Position Sensor
      - Accelerator Position Sensors 1 और 2
      - Water in Fuel Sensor
      - Oil Pressure Sensor
      - Coolant Temperature Sensor, आदि
   e. Actuator Lines क्या हैं?
      - Fuel Pump
      - Radiator Fan
      - Fuel Pump Actuator
      - Engine Indicator Lamp Circuit
      - Injector Circuit
      - AC Compressor Relay
      - Main Relay, आदि
   f. 24V Circuit
      - 24V circuit में समस्याओं का निदान कैसे करें
   g. ECM Circuit से Odometer Gauge Signal
9. सामान्य Hardware Related Issues की पहचान और विश्लेषण
10. Damaged or Faulty सर्किट बोर्डों को Repair करने की तकनीकें
11. ECM Hardware Offline Tracking की बुनियादी जानकारी
    a. OnBoard वोल्टेज को मापने का तरीका (Injector High Voltage, 5V, 3.3V, 2.5V, 1.5V, आदि)

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12. विभिन्न कार्य सेक्शन में Hardware का Explanation
13. ECM Pin-out और Online Tracking का Explanation
14. ECM Data Read और Write
    a. K-Tag
    b. SM2 Pro
    c. BITBOX
    d. KT200
    e. PCM FLASH
15. PCM FLASH Table पर ECM Testing
16. Table पर ECM Diagnosis
17. ECM Calibration का स्पष्टीकरण
18. JEMAT Tool का स्पष्टीकरण और Diagnostic Software का उपयोग

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Details of the Course

Fees – Rs.85, 000/ including GST

Hostel facility – 7,000/ Per Month including food

Duration – 30 Days (Minimum)

Location – JustAuto Solutions Pvt. Ltd., Plot No: B1, B2, B3/15, Electronics Estate, GIDC, Sector 25, Gandhinagar, Gujarat

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