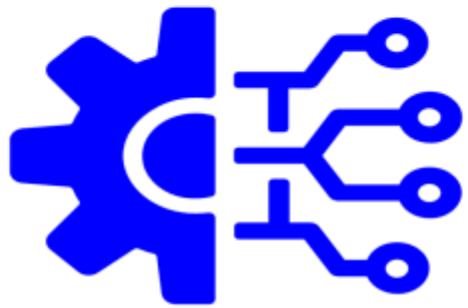
LOGO CREATION, DIGITAL FACTORY IDEAS AND EV CHARGER

SUBMITTED BY

U.SWEETLIN

LOGO DESIGN

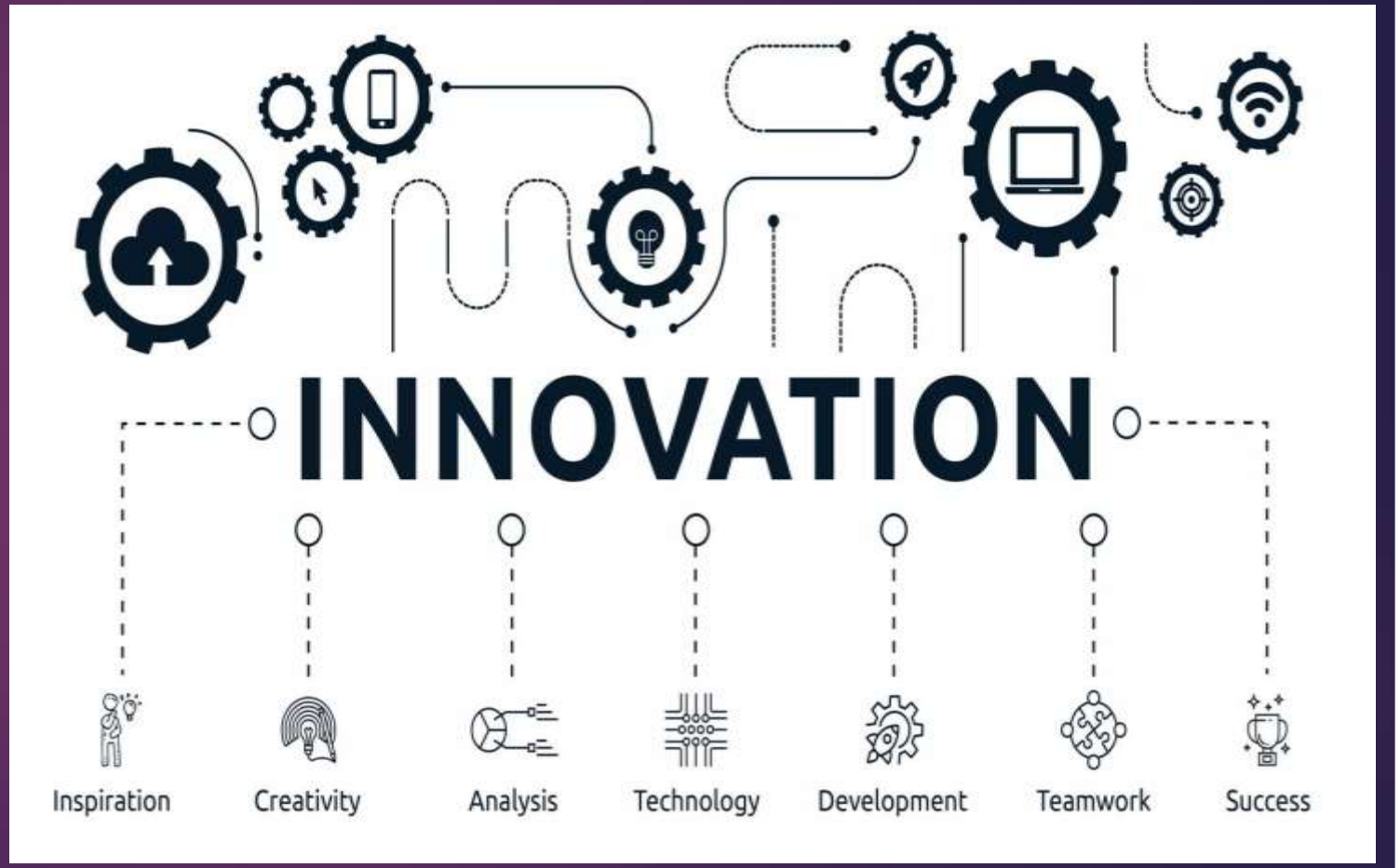


Digital Technical Engineer Team

Innovate, Design, Deliver

THEME

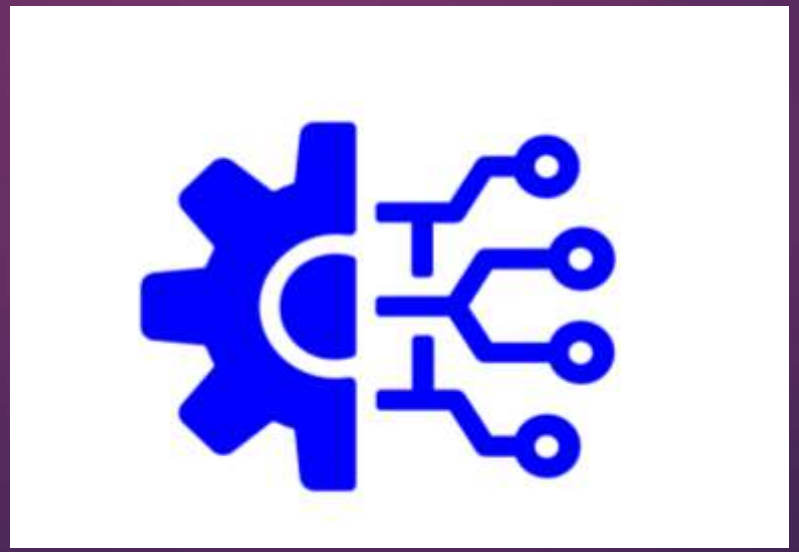
INNOVATION TO EXECUTION



MEANING

LEFT SIDE (GEAR) : REPRESENTS ENGINEERING AND MECHANICAL INNOVATION.

RIGHT SIDE (CIRCUIT) : SYMBOLIZES DIGITAL TECHNOLOGY, ELECTRONICS AND INNOVATION.



DIGITAL FACTORY

A **DIGITAL FACTORY** Is an integrated network of software tools, data systems, and digital processes that replicate and enhance the traditional factory environment. It uses **industry 4.0 technologies**—such as iot (internet of things), AI (artificial intelligence), cloud computing, and digital twins to:

- Design and simulate production systems virtually.
- Monitor and control operations in real-time.
- Predict maintenance and optimize performance.
- Improve product quality, reduce waste, and lower costs.

In essence, a digital factory connects every part of the production lifecycle, from product design and engineering to production, supply chain, and customer delivery.

1. UNIFIED AI DEVICE FRAMEWORK

We are developing a **unified AI device framework** to integrate sensors, controllers, edge devices, and cloud analytics into one cohesive system. This enables seamless data exchange, real-time insights, and rapid decision-making on the factory floor.

2. SMART MANUFACTURING MODULES

Our platform includes key modules that address core manufacturing functions:

- **BILL OF MATERIALS (BOM)**: Create, edit, and manage boms dynamically.
- **JOB ORDERS & JOB CARDS**: Plan, assign, and track jobs with status updates.
- **INVENTORY & DEMAND FORECASTING**: Use AI models to predict raw material requirements and minimize stock-outs.

3. DIGITAL TWIN INTEGRATION

We are integrating **digital twin technology** to mirror real-world assets and processes in a virtual space. This enables simulation, testing, and optimization without interrupting actual production lines.

4. REAL-TIME DATA MONITORING

Using **iot-enabled devices**, we capture live metrics like machine uptime, temperature, energy consumption, and performance kpis. These metrics are then visualized in dashboards that empower shop-floor managers and engineers to act swiftly.

5. HUMAN-MACHINE COLLABORATION

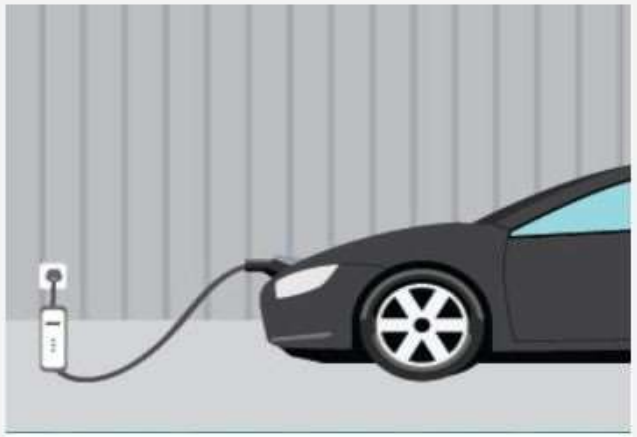
Our system is designed to **empower people, not replace them**. With intuitive dashboards, alerts, and mobile apps, we ensure operators are always in control and informed.

EV CHARGER

- An EV charger, also known as Electric Vehicle Supply Equipment (EVSE), is a device that delivers electricity from the power grid to the battery pack of an electric vehicle (EV) to recharge it. It's essentially the equipment that allows you to "plug in" and recharge your EV, similar to how you plug in a smartphone charger.

EV CHARGING LEVELS

Level 1



VOLTAGE:
120V 1-Phase AC

AMPS:
12-16 Amps

CHARGING LOAD:
1.4-1.9 kW

CHARGING TIME:
3-5 Miles per Hour

Level 2

VOLTAGE:
208V or 240 V 1-Phase AC

AMPS:
12-80 Amps (Typ. 32 Amps)

CHARGING LOAD:
2.5-19.2 kW (Typ. 6.6 kW)

CHARGING TIME:
12-60 Miles per Hour

DC Fast Charge

VOLTAGE:
208V or 480V 3-Phase AC

AMPS:
>100 Amps

CHARGING LOAD:
50-350 kW

CHARGING TIME:
60-80 Miles in 20 Minutes

EV CHARGING CONNECTORS

Level 1 Charging	Level 2 Charging	DC Fast Charging
 J1772 Connector	 J1772 Connector  J3400 (NACS) Connector	 CCS Connector  CHAdeMO Connector  J3400 (NACS) Connector

EV CHARGING STATIONS IN COIMBATORE

1. **Tata Power – SR Tranzcars**
   - 🔑 1142-A, Mettupalayam Rd, Saibaba Koil
   - 🔌 CCS-II, CHAdeMO
2. **Zeon Charging – Brookfields Mall**
   - 🔑 B1 Parking, Brookefields Mall, Dr Krishnasamy Mudaliyar Rd, Ram Nagar
   - 🔌 CCS-II
3. **Tata Power – Thalappakatti Hotels, Neelambur**
   - 🔑 145/1A-D, Avinashi Road, Neelambur
   - 🔌 CCS-II, AC Type 2
4. **Tata Power – Zone by The Park**
   - 🔑 33/3, Avinashi Rd, Puliakulam
   - 🔌 CCS-II, AC Type 2
5. **Tata Power – MG PPS Motors**
   - 🔑 No. 138, Avinashi Road, Chinniyampalayam
   - 🔌 CCS-II

6. **Tata Power – Santhi Social Services**
   - 🔑 Indian Oil Dealers, SF No.128, Trichy Road
   - 🔌 CCS-II, Bharat DC-001
7. **Ather Grid – Patel Road**
   - 🔑 357, Patel Road, Ramnagar
   - 🔌 AC Type 2
8. **Ather Grid – Saravanampatty**
   - 🔑 Saravanampatty
   - 🔌 AC Type 2
9. **Ather Grid – Race Course Road**
   - 🔑 Race Course Road
   - 🔌 AC Type 2
10. **IOCL – Tsr Agencies**
    - 🔑 SF No 179/2, Panickampatti, Palladam Anuppapatti
    - 🔌 CCS-II

11. **HPCL – Shanmuga Charging Station**
    - 🔧 Chettipalayam, Podanur Rd
    - 🔌 CCS-II
12. **Vari Energy – Narasimhanaickenpalayam**
    - 🔧 7/4C, Mettupalayam Rd, Narasimhanaickenpalayam
    - 🔌 CCS-II
13. **Coco Chengapalli – Indian Oil Swagat Ro**
    - 🔧 NH 544, Vadamugam Kangayampalayam Village, Uthukuli Tk, Tirupur District
    - 🔌 CCS-II, Bharat DC-001
14. **Ather Grid – Sulur**
    - 🔧 Sulur
    - 🔌 AC Type 2
15. **Ather Grid – Richy Rich**
    - 🔧 Nesavaalar Colony, Saibaba Colony
    - 🔌 AC Type 2

EV CHARGER MANUFACTURERS IN INDIA

1. **EXICOM**
2. **DELTA ELECTRONICS INDIA**
3. **CHARGE+ZONE**
4. **TATA POWER EZ CHARGE**
5. **FORTUM CHARGE & DRIVE**
6. **MASS-TECH**
7. **OKAYA**
8. **EVRE**
9. **MAGENTA CHARGEGRID**
10. **NUMOCITY (TECH PROVIDER)**

INTEGRATION IN EV CHARGER SYSTEM

EV charger company in coimbatore (like **zeon charging** or **startups/oems**) wants to build a level 2 or level 3 charger.

STEP 1: HARDWARE BASE

- Use PHYTEC system on module (som) with processors (e.G., I.Mx 6ul).
- Add phyverso evcs for 2-port AC/DC charging.
- Plug these into a custom PCB with sensors, relays, and connectors.

STEP 2: SOFTWARE STACK

- Linux OS runs on the som.
- Use everest charger stack (pre-installed in phyverso) for:
  - Charging control logic
  - V2G communication
  - Smart grid interactions

STEP 3: OCPP COMMUNICATION

- Integrate OCPP stack (via python, C++, or EVEREST) to connect with central CMS (charging management system).
- This allows real-time billing, user management, and remote diagnostics.

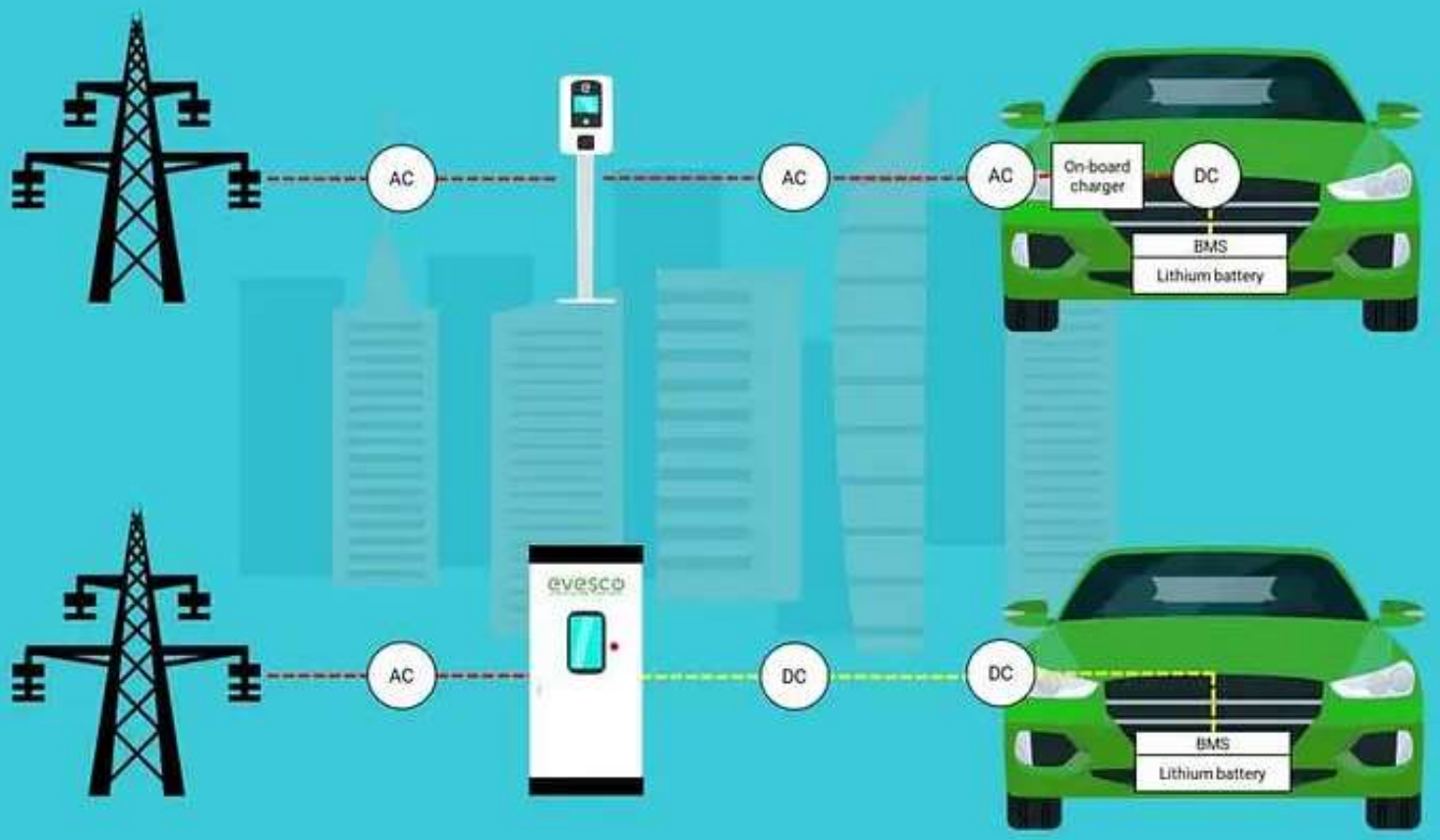
STEP 4: APP INTEGRATION / UI

- Develop a local touchscreen UI or web interface using python (flask) or node.Js.
- Communicate with cloud/mobile apps via rest api or mqtt.

AC AND DC CHARGING

AC charging
AC power is supplied by the charging station to the EVs on-board charger, which converts the power into DC power and charges the battery

DC fast charging
AC power is converted to DC power in the charging station, which then supplies DC power directly to the EV battery.



DC FAST CHARGER

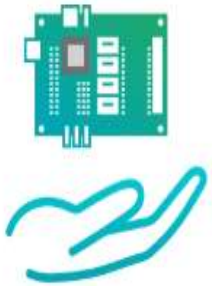
- A DC fast charger is an electric vehicle charging station that delivers electricity directly to the EV's battery using direct current (DC) for faster charging times.
- There are three types of DC fast charging:
  - CHAdeMO
  - Combined Charging System (CCS)
  - Tesla Supercharger.

PHYTEC PRODUCTS FOR EV CHARGER

2-port charging controller phyVERSO EVCS

- ✓ For AC/DC charging
- ✓ Linux operating system
- ✓ Pre-configured for EVerest Charger Stack
- ✓ Supports V2G, PLC, OCPP
- ✓ Customer-specific adaptation possible

Individual base boards CHARGE SOM



- ✓ Modular SBC+ development
- ✓ Fast & cost-effective
- ✓ Prototype in 10 weeks
- ✓ Comprehensive software

System on modules for charging solution

- ✓ Processors: i.MX6UL, i.MX 93, AM62x
- ✓ Adapted Linux operating system
- ✓ Advance payments for security, updates, etc.
- ✓ Commissioning guarantee
- ✓ Extensive design-in support

HOW PHYTEC PRODUCTS ARE USED IN DC EV CHARGING

1. PHYVERSO EVCS – 2-PORT CHARGING CONTROLLER

This is the **heart of the EV charger**, responsible for communication, control, and charging logic.

ROLE IN DC CHARGING:

- **CHARGE CONTROL**: Manages charging session, current/voltage limits, and safety checks.
- **PROTOCOL HANDLING**: Supports **OCPP** (open charge point protocol) for backend communication.
- **VEHICLE COMMUNICATION**: Interfaces with the EV using **PLC (power line communication)** for protocols like ISO 15118 (used in DC chargers).
- **V2G READY**: Enables **vehicle-to-grid** communication for bidirectional power flow.
- **DUAL PORT SUPPORT**: Allows simultaneous DC charging for two vehicles.

EXAMPLE: If you're building a 60kw DC charger, the phyverso EVCS acts as the controller between your **power electronics** (DC power modules) and the **vehicle + cloud**.

2. CHARGE SOM – BASEBOARD FOR CUSTOM DESIGNS

This is ideal for **rapid development and customization**.

ROLE IN DC CHARGING:

- Used as a **motherboard** for the charger controller.
- Interfaces with relays, sensors, metering units, touch displays, etc.
- Accelerates **prototyping of dc charger logic boards** (cost-effective, modular).
- Ideal for companies designing **their own charging controller**.

EXAMPLE: A startup designing its own DC fast charger can use CHARGE SOM to quickly test different hardware configurations and software stacks.

3. SYSTEM ON MODULES (SOMS) – I.MX, AM62X-BASED CPUS

These modules run the **embedded linux OS** and handle higher-level software functionality.

ROLE IN DC CHARGING:

- Run **linux-based charging firmware** and GUI.
- Communicate with backend (ocpp over wi-fi/4g).
- Control touchscreen uis on dc fast chargers.
- Handle **diagnostics, fault logging, and updates**.
- Interface with evse peripherals like rfid readers, printers, and energy meters.

EXAMPLE: I.Mx8-based soms can run a full linux stack with **everest**, allowing developers to integrate billing, dashboards, and more.

DC EV CHARGING STATIONS IN COIMBATORE

1. **ZEON CHARGING – BROOKEFIELDS MALL**
    - **Location**: Dr. Krishnasamy Mudaliyar Rd, Brookefields, Ram Nagar
    - **Charger Type**: 3 x 24kW DC CCS2, 3 x 7.4kW AC Type 2
2. **STATIQ – WELCOMHOTEL COIMBATORE**
    - **Location**: 1266/14, West Club Rd, Race Course
    - **Charger Type**: 60kW DC + AC chargers
3. **TATA POWER – SR TRANZCARS**
    - **Location**: 1142-A, Mettupalayam Rd, Saibaba Koil
    - **Charger Type**: CCS-II, CHAdeMO
4. **TATA POWER – MG PPS MOTORS**
    - **Location**: No. 138, Avinashi Road, Chinniyampalayam
    - **Charger Type**: CCS-II.

5. **PSV EV Point – Plugzmart**
   - **Location**: ARR Complex, Saravanampatti
   - **Charger Type**: 30kW DC
6. **Kazam – Junior Kuppanna**
   - **Location**: 1/69, Junior Kuppanna, Madukkarai
   - **Charger Type**: CCS-II
7. **IOCL – Koppanna Perumal**
   - **Location**: Kottamangalam, Udumalpet Amanthakadavu
   - **Charger Type**: Bharat DC-001
8. **Statiq – ibis Coimbatore City Centre**
   - **Location**: Lakshmi Mills Junction
   - **Charger Type**: DC and AC chargers

THANK YOU