



Department of Electronic & Telecommunication Engineering

Topic Name:	Industrial Visit to PreciTech Weighing System
Name of the Person:	Mr. Dhilen Vora
Organization/Institution:	PreciTech Weighing System Vasai East
Date & Time	7 th Feb 2026, 10 am to 1 pm
Number of Students:	16

Programme Summary / Details:

During our industrial visit to the weighing machines manufacturing industry, we were given an opportunity to observe the complete process of designing, assembling, and testing different types of weighing machines. The visit provided us with practical exposure to electronic circuit design, Arduino-based systems, load cell technology, and soldering techniques.

Types of Weighing Machines Observed

We saw various types of weighing machines manufactured in the industry, such as:

- Digital platform weighing machines
- Tabletop weighing scales
- Industrial heavy-load weighing systems
- Waterproof weighing machines
- Arduino-based smart weighing systems

The company manufactures weighing machines for commercial shops, industries, laboratories, and agricultural use.

Load Cell and Measurement System

We learned that the main component of a digital weighing machine is the **load cell**.

- The load cell converts mechanical force (weight) into electrical signals.
- These signals are very small and are amplified using an amplifier circuit.
- The amplified signal is then processed by a microcontroller (Arduino or other controller).
- Finally, the processed value is displayed on an LCD or LED display.

Engineers explained how strain gauges inside the load cell change resistance when weight is applied.

Arduino-Based Weighing Machines

One of the most interesting sections was the Arduino-based weighing machine system.

We observed:

- Arduino microcontroller boards
- HX711 load cell amplifier module



- LCD display units
- Calibration process using software

The technicians demonstrated how:

- The load cell is connected to the HX711 module
- HX711 is connected to the Arduino board
- The Arduino code converts analog signals into digital weight readings
- The final weight is displayed on the screen

We also saw the programming part where the Arduino chip was coded to calibrate the weight measurement accurately.

Waterproof (Wet Environment) Circuits

In the waterproof weighing machines section, we learned how circuits are protected from water and moisture.

They explained:

- Use of waterproof casing
- Proper insulation of wires
- Use of sealants and rubber gaskets
- PCB coating (protective layer to avoid short circuit)

We observed how circuits are tested to ensure they function properly even in wet conditions.

PCB Design and Soldering Process

Another important part of the visit was the PCB (Printed Circuit Board) assembly section. We saw:

- PCB boards
- Electronic components (resistors, capacitors, ICs, microchips)
- Soldering stations

The soldering process included:

1. Placing components on PCB
2. Heating soldering iron
3. Melting solder wire to fix components
4. Checking for loose connections
5. Testing completed circuit

Technicians demonstrated how the Arduino chip and other ICs are carefully soldered onto the PCB without damaging the components.

They also explained the importance of:

- Proper temperature control
- Avoiding dry solder joints
- Cleaning flux residue

Testing and Quality Control

After assembly, every weighing machine undergoes:

- Calibration using standard weights
- Accuracy testing
- Display testing
- Load endurance testing



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Only machines that meet quality standards are sent for packaging and distribution.

Learning Outcomes

From this visit, we learned:

- Practical application of load cells
- Arduino programming in real-world systems
- PCB designing and soldering techniques
- Importance of waterproofing in electronics
- Quality control and calibration process

The visit helped us understand how theoretical concepts from electronics and microcontroller subjects are applied in industrial manufacturing.





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