

SMART PARKING SYSTEM USING L.V.D.T

PROJECT SUPERVISOR: DR. ASHISH KUMAR SINHA (DEPT. OF EE/EEE, BCET)

**STUDENTS: RAAMANUJ BHATTACHARYA, SONALI KUMARI RAJAK, PRERNA SINGH,
RAJDEEP BHOWMICK, SUSMITA SHARMA
(DEPT. OF EEE)**

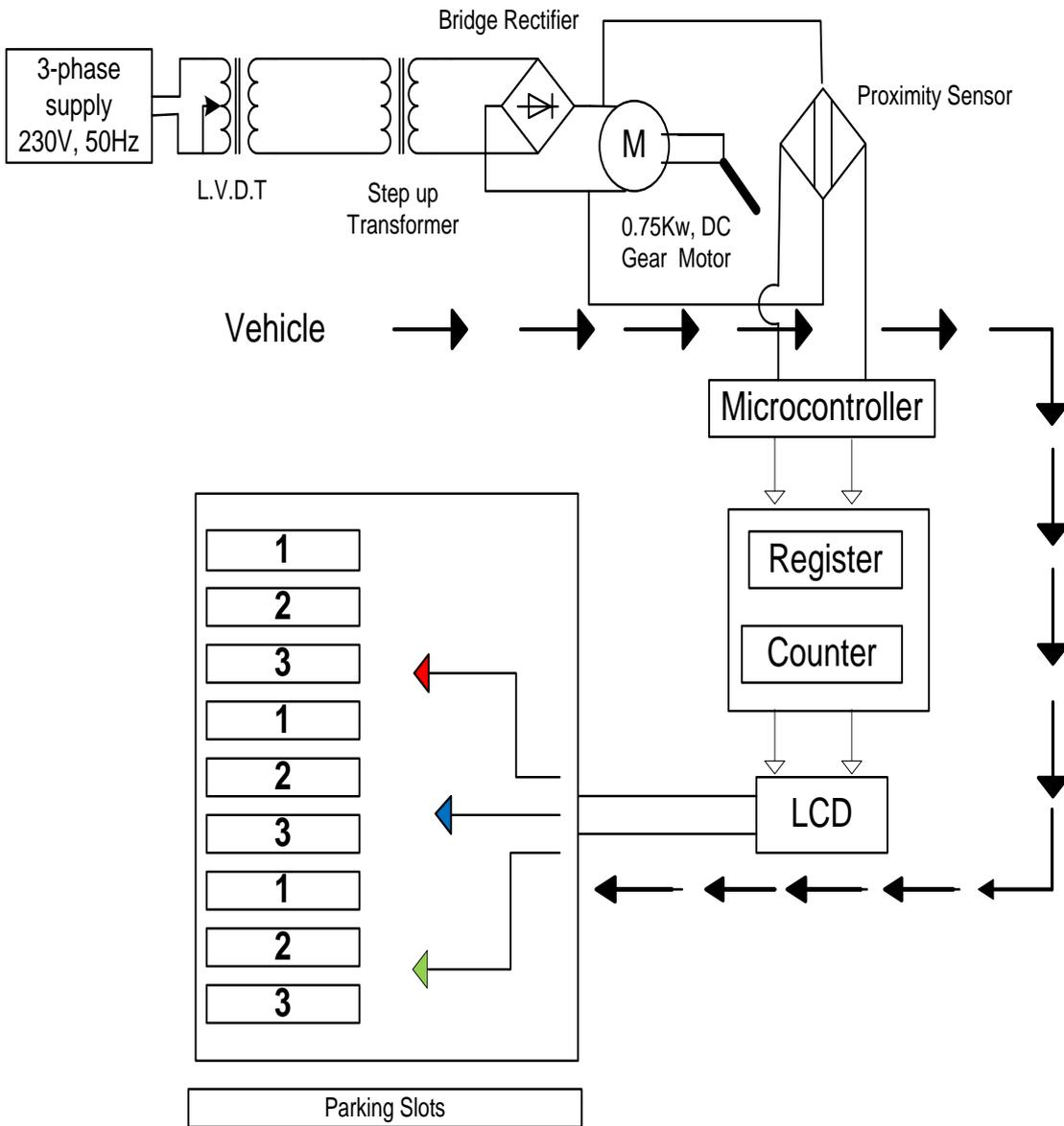
Space, time and fuel deficiency constraints have, in recent times enthralled the manufacturing of various mechanisms to overcome the same. Smart parking system are the need of the hour towards the overcoming of the abovementioned deficiencies.

LVDT forms the corner stone of the proposed smart parking system. It works in conjunction with the universal motor, proximity sensor, and microcontroller-based registers and counters so as to direct the prospective drivers and riders with regards to the viable parking slots, thereby saving essential time, manpower and fuel.

The use of weight as the determining factor for the vehicle parking has been the building block of this project. Also, use of specific sensors and microcontroller programming has proved to be the appropriate tools for the slot arrangement during parking.

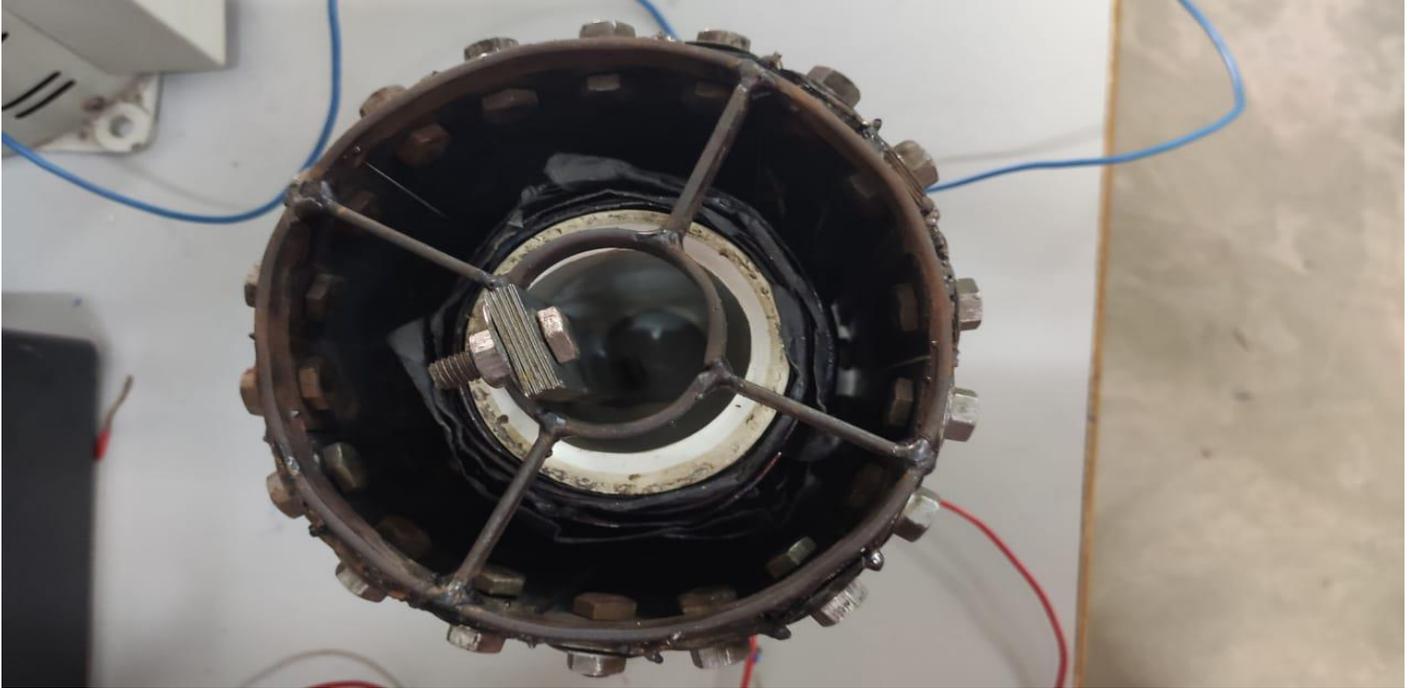
While there has been widespread use of L.V.D.T, proximity sensors, microcontrollers and universal motors for various applications, their use in conjunction for the purpose of smart and man-less parking is a rather under cultivated area of research. Therein, in the opinion of the authors, lies the novelty of the proposed research work.

2.4 Schematic Diagram of Smart Parking System Using L.V.D.T



2.5 Equipment Diagram

2.5.1 Top view of L.V.D.T



2.5.2 Side view of L.V.D.T



2.5.3 Overall L.V.D.T setup



3.Results and Discussions

- **Input/output voltage curve of L.V.D.T:**

The output voltage varies linearly with the displacement of the core. The curve obtained here is in phase.

- **L.V.D.T output vs. transformer input (T_2):**

- **Transformer output vs. Rectifier output:**

During the positive half cycle of the input (transformer output) diodes D1 and D2 are forward biased and conduct current, D3 and D4 diodes are reverse biased.

During the negative half cycle of the input (transformer output) diodes D1 and D2 are reverse biased and conduct current, D3 and D4 diodes are forward biased.

The direct current thereby obtained the output curve is not pure but it is in the form of ripples.

- **Motor current vs. torque curve:**

The output curve reveals the dependence of torque as the square of the motor current.

- **Motor speed vs. barricade operating time:**

Motor speed is directly proportional to the operating time of barricade, which show the linear nature.

1. Conclusion

Chronic parking problems have long been the Achille's Heel of the modern-day urban civilization setup. This has often led to prolonged traffic jams and in extreme cases into fatal accidents. Therefore, a viable solution to this problem has long been the need of the hour. Keeping the aforementioned problem in consciousness, the present work intends to devise a smart parking system which shall reduce the existing problems by substantially reducing the operating time from the point of entry of the vehicle to its ultimate parking in the designated area. It is seen from detailed experimentation that the average time taken from the point of entry to the point of parking in the designated area is about This is substantially lesser as compared to the general and manned parking areas which exists in the present day. Furthermore, the compact design of the parking area shall substantially reduce the probability of a prospective traffic jam. Moreover, introduction of microcontroller-based information recording setup shall ensure abolishment of any prospective chances of a cash fraud.