

## Hectronic : Fuel Management System

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**Abstract**— In this concept of Fuel Management System, we introduce a complete & proven solution for fuelling with companies and industries having very high fuel consumption. This system provides an end to end real time data bringing visibility and improved control to ensure fuel optimization automatically resulting in reduction of losses like pilferage/theft. It consists of complete fueling solution from receipt till dispensing of fuel into your respective equipment giving accurate data / reports in your Back Office. It aims at providing effortless and hassle free solution in field of fuelling equipments and its working is different from the current system which contains manual data feeding and recording. The Hectronic system is based on the concept of authorization & accountability. This concept of authorization works with the help of RFID Tags which are installed on the equipments. The system works by creating an authorization process between the system and these tags. This whole process is controlled, maintained and managed using software. This leads to refueling of only authorized equipments preventing illegal processing of refueling. Besides authorization, the other concept involved in this system is for the accountability for the fuel. This is done by installing special flow meters and various other sensors which can provide data related to the fuel quantity, quality and various other factors related to fuels along with the transmission of data wirelessly into the system. In general, there is a complete control on the fuel expenses for companies using heavy earthmoving and other equipments which have tremendous fuel consumption.

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### I. INTRODUCTION

The interest in Fuel Management Systems has seen tremendous growth due to the fuels being an exhaustible and non-renewable source of energy. Humans are very much depended on the fuels for their day to day activities directly or in directly. Dependability of humans on these sources is so high that expenditures on these fuels are increasing tremendously day by day. Even after spending huge amount of money, there is no accountability on these fuels. Practically, after spending hefty amount, there are numerous losses like theft, pilferages, etc. going on during the logistics, consumption, dispensing and various other transit processes in fuels. Humans eventually land up in a condition where they are wasting a very considerable amount of money because of all these losses. Furthermore, with the increase of the energy consumption worldwide, it is becoming even more urgent to find ways of using the existing energy resources as efficiently as possible. Thus, systems that can help to manage these activities are preferred for a wiser energy management.

In developed economies, there is automation in every segment of fuel handling. The human intervention is totally eliminated in this case. Hence there are considerable savings in terms of labour, pilferages, thefts and money. However, in India, this kind of approach is never done. Hence, Hectronic plays a crucial role in introducing such an automated system in India. Hectronic was the first firm to launch a Fuel Management System in India in the year of 2006. By then, it has done tremendous research in the Indian market analyzing its operational concepts and eventually developed a highly efficient system for fuel management.

The Fuel Management solutions offered by Hectronic are:-

- Decantation Management System for Stationary UG Tanks
- Wet Stock Management for UG Tanks
- Fuel Management System for Stationary Dispenser
- Fuel Management System for Bowser Application
- High Speed Top Fuel Filling System for Bowser Applications
- Vehicle / Equipment Kilometre / Engine hour capturing solution to provide accurate information on fuel consumption.

### II. WORKING

The working of each of the solution of Hectronic is as follows:

#### 1) Decantation Management System For Stationary Underground/Over Ground Tanks

The decantation management system in combination with Hectronic Auto Fuel Terminal and compatible PD flow meter precisely measures exact fuel quantity being decanted into the fuel storage tanks.

#### 2) Wet Stock/Inventory Management For Underground Tanks

The Optilevel in connection with the software module shows real time tank contents making it the best choice for fuel station. Optilevel is a probe which is installed in the tank. Visually it is similar to very traditional dipstick. However, this gauge helps in determining the fuel quantity within the system. It can also send alerts keeping few litres of fuel as dead stock and alerting the concerned person to stock up the fuel. Furthermore, it can sense the water content within the fuel, temperature inside the tank, etc.

#### 3) Fuel Management System for Stationary Dispenser

Stationary fuel management system has Hectronic Auto Fuel Terminal configured with the system for authorized vehicle fuelling and to capture each transaction with vehicle details. It has got an RFID tag reader mounted on the nozzle for the authorization purpose. The RFID reader reads the tag on the tank of equipments and sends the data to its system thereby authorizing it for refuelling purpose. As soon as the nozzle is removed, the tag disconnects with the reader and the fuel flow is stopped. Furthermore, the system has also got a provision for a supervisory card which can be used to refuel unauthorized vehicles in case of emergency. However, the card is configured in the name of a person and the transaction details will be under his name.

#### 4) Fuel Management System For Bowser Application

This section is the heart of the system which takes care of the entire fleet of refuelling upon only authorization, records every refuel transactions and stores it in the system automatically. The stored data/transactions can be pulled to back-office PC Software instantaneously.

Vehicle tags and automatic vehicle reorganization system collectively called as PetroPoint, ensures secure and fast refuelling with accurate date recording with transmission making it unmatched in instances of high vehicle throughput, higher security requirements, controlling valves and flow metres for accurate fuel measurement and for exact consumption analysis.

#### 5) High Speed Top Fuel Filling System For Bowser Application

High speed fuel management system ensures speedy refuelling of bottom loading/top loading via flow meter with accurate fuel data recording which ensures quick turnaround time for bowser from fuelling station to site areas.

#### 6) Hecpoll Software

Hecpoll software can be configured to form a closed loop logistic system, a complete fleet management system or a user friendly invoicing system. With its unique client/server architecture, the software can be shared over different computers. The report generation can be made in various formats making it easy to share. Also it makes the fuel audit easier by presenting all the reports of various locations available on a single system.

### III. EXISTING SYSTEMS

Hectronic India being the first company to introduce a full fledge fuel management system in India played a crucial role in bringing transparency in fueling and fuel handling operations. While handling fuels, transparency & accountability are a major factor which are lacking behind in other existing systems. There have been several of such systems available in this country working in the fuel

management sector. However, no other existing system has been able to bring the amount of transparency and accountability Hectronic Fuel Management System has performed. This makes Hectronic India the most challenging player in India and abroad into this sector.

### IV. BENEFITS

- 1) Safe Fuelling
- 2) Accountability for every liter dispensed
- 3) Fueling to only authorized assets
- 4) Wet stock monitoring & analysis
- 5) Rapid vehicle throughput
- 6) 100% transparency in refueling process
- 7) Fuel consumption optimization
- 8) Wireless data transfer
- 9) Optimization of fuelling process
- 10) Can be integrated to SAP / ERP system easily
- 11) No human interference for data recording
- 12) Elimination of thefts/pilferages

### V. LIMITATIONS

- 1) Consumption details are not received/recorded in this system.

### VI. CONCLUSION

Fuel being an exhaustible source of energy, it is very meaningful to term fuel as a "Liquid Cash". Just like there is an ATM machine which authorizes your card and then only allows you to withdraw the cash, Hectronic Fuel Management System also works on similar authorization to manage all the fuelling activities. This system helps in eliminating losses like thefts, pilferages, etc and helps to maintain a complete accountability and transparency in fuel handling.

### VII. FEW OF THE EXISTING CUSTOMERS

Number of companies in Infrastructure & mining along with other sectors have installed and are relying upon this system. Few of them are namely Monte Carlo Limited, HCC, Shree Cement, Ultratech Cement, Sadbhav Engineering, MEP Infradeveopert Limited, Vedanta Group, Adani Pwer, Reliance Power, JSW, Tata Steel, DP World and many more.

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### IX. REFERENCES

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