**1Tracking And Checking Cargo Containers Pilferage Using Electronic Lock**

*“ISLAMABAD: In a bid to hush up Rs50 billion scam of pilferage of thousands of containers of Afghan Transit Trade (ATT), the Federal Board of Revenue (FBR) has reinstated over 22 suspended staff in grade 14 to 18 apparently after pressure from the Supreme Court of Pakistan was released ,it is learnt.*

*The apex court of the country has taken suo moto notice of pilferage of containers scam causing billions of rupees loss to the national kitty. The FBR was under pressure at that time that resulted into suspension of officials of customs in grade 14 to 18 mainly at Karachi Port to settle down the dust for the time being. When contacted, Acting Chairman FBR Mehmood Alam who is also looking after the affairs of Customs because*

*of Member Customs went abroad, told The News on Wednesday that legal opinion of FBR’s team were sought before instating the suspended officials because no one could be suspended for an indefinite period.”*

Above news article shows the loss of huge sum of money due to pilferage from the Cargo containers which is used in transporting huge amount of manufactured product or raw material from one place to another. In the course of transportation the pilferage or employee theft is done and all the authorities involved whether guilty or not comes under the light of suspicion .This results in culminate loss of the industry and people involved in the process of transportation.

Present technologies of locking and monitoring the Cargos does not provide effective solutions for the situation. A little corruption among the employees can easily deceive the whole security system. Since these Cargos contains material of high value and in high quantity , therefore these containers are more

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| prone to the pilferage and to protect the material we need a sound technique which minimizes the loss due to |

involvement of the corrupt employees.

This project aims at providing a sound mechanism to prevent the pilferage in the Cargo containers by implying an electronic lock and minimizing the human interference in the security of the Cargo containers.

This mechanism secures the containers by a electronic lock which will requires a series of security check during opening of the lock. The lock is controlled and monitored by the base station.

WORKING :-

After loading the materials in the containers the electronic lock is activated. This lock continuously monitors the global positioning coordinates of the container and send the data to the base station if requested. During the course of the journey the electronic lock cannot be open as it requires a series of security check before opening.

At the destination the driver has to press a button to acknowledge the completion of journey. When the switch is pressed the lock sends the current GPS coordinates to the base station. At the base station the received coordinates are compared with the database to confirm whether the container has reached the right destination or not. If confirmed correctly it will send the password and ID number of the driver to the lock and the password to the driver via GSM. Then the driver has to prove his identity to the lock by producing a RFID card. After verifying the correct ID number the lock will ask for password and after verifying the correct password it will open the electromagnetic lock.

Any activity of pilferage in between the journey can be tracked by sending the GPS coordinates and activation of alarm immediately.

The whole routing of the journey of the container can be traced by viewing GPS coordinates on the PC at base station using GOOGLE EARTH.

We can extend this project by installing RFID readers to the container which will count and log the quantity of material coming inside or going inside of the container at any particular time

This project will facilitate the understanding of the following topics:

* 89C51 Hardware Designing
* Coding in C
* Interfacing GPS with microcontroller
* Interfacing GPS with PC
* Interfacing GSM with microcontroller.
* Interfacing GSM with PC.
* PCB designing and concepts.
* UART
* RFID
* Maintaining of database in MySQL or Microsoft Access.
* Controlling and driving mechanism of relays to drive electromagnets.
* VB.net for front end.
* Keypad interfacing.
* LCD

BLOCK DIAGRAM :-

**ELECTRONIC LOCK**

**Microcontroller**

**89C51**

**GPS**

**MODULE**

**GSM**

**MODULE**

**SIM300**

**KEYPAD**

**RFID READER**

**16x2 LCD**

**BUZZER**

**ELECTROMAGNETIC**

**LOCKING**

**MECHANISM**

**BASE STATION**

**PC**

**GSM**

**MODULE**

**SIM300**