



REAL TIME TRACKING & SENSING

CEMENT MANUFACTURER TRACKS DUMPERS, LOCO AND OTHER MINE EQUIPMENTS IN REAL TIME WITH ACTIVE RFID AND GPS

Company- One of the largest cement manufacturing company in India

Application- Vehicle Tracking in Open Cast Mine and Cement Plant

Challenges- Geographically sparse area of tracking and harsh environmental conditions.

Solution- Active RFID based Real Time Locating System and GPS-GSM based tracking system with PervTrack System Solution

Benefits-

- 1. Overall production capacity improvement*
- 2. Asset utilization rate improvement*
- 3. Faster bottleneck removal*

The Problem – Real time visibility of enterprise asset and their performance are of cardinal importance for operational efficiency in manufacturing industry. Timely and accurate information on the location, movement, status, and identity of units and equipments can improve the resource utilization by a great extent.

The Cement industry consists of a manufacturing plant and an expanding open cast mine to extract limestone. The limestone, which is used as raw material for producing cement, is carried by the locos from the mine to the plant about 10 kilometers away. The dumpers operate in the mining area to unearth the limestone and carry the earthly debris. Tracking the dumpers, the locos, and vehicles inside the plant area in real time is critical and necessary to optimize their performance, hence improve the cement plants overall production. The disjoint location of the tracking area and harsh environmental conditions provide a daunting challenge to provide real time asset visibility using only RFID based wireless mesh network. However, the availability of the GSM network through out the plant and the mining zone opens up the possibility of integrating Active RFID based wireless mesh network with public GSM architecture to ensure seamless location awareness of vehicles which are geographically far apart.



CASE STUDY

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The Solution: Requirement for tracking is evident in three different geographical areas for the Dumpers, Locos, and Vehicles in the cement plant.

1. Tracking vehicles inside the plant: Strategically placed PervTrack Localizers inside the plant would form a wireless mesh network. The PervTrack Gateway is connected to the central control station computer, where the PervTrack Software Suite is running. Each vehicle inside the plant that requires to be tracked would be equipped with the PervTrack Locator Tags. As the vehicles move the Locator Tags would send a beacon, which will be captured by the nearest Localizers and ultimately forwarded to the Active Gateway G-101 in multi-hop. The PervTrack Software suite would enable real time observation of the movements of each vehicle in a map based view; also logging the movement information for generating reports on previous activity of each vehicle.

2. Loco tracking: Locos carry the load of Limestone dug from the open cast mine in the wagons attached. The location of the Locos can be tracked in three different places; the mine, the mine office, and the plant. In this solution the Locos will be attached with PervTrack Locator Tags to signify their presence through periodic beaconing. When the Loco will leave the mine carrying wagon full of Limestone or reach the mine with empty wagons, it will transmit a beacon about its location to the PervTrack Localizers placed in the control office in the mine. The Localizer will in turn be connected to a computer which will send the location information through the public GSM infrastructure. Thus at the central control station, the real time positioning of the Locos will be available through PervTrack Software System.

3. Dumper tracking inside the mining zone: Each dumper will be equipped with a GPS Device interfaced with a GSM modem having the capability of sending SMS to a particular station without human intervention; in this case the central control station where the PervTrack System Software is running.

Upon receiving the SMSs from the dumpers in the mine the PervTrack software will visually present the actual position of the dumpers in terms of Latitude and Longitude with their speed and time stamp. A comprehensive MIS report can be generated from the logged information. The inherent nature of the public GSM network allows both way communications, which can be used to alert the drivers for optimized usage of the vehicles during its operational hours.

“There is a critical need for tracking the vehicles operating in the open cast mines in real time”

*- Manager
Cement Company*



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"It is absolutely essential to establish a closed loop control over the operating vehicles to manage and improve their performance"

-CEO
Cement Company

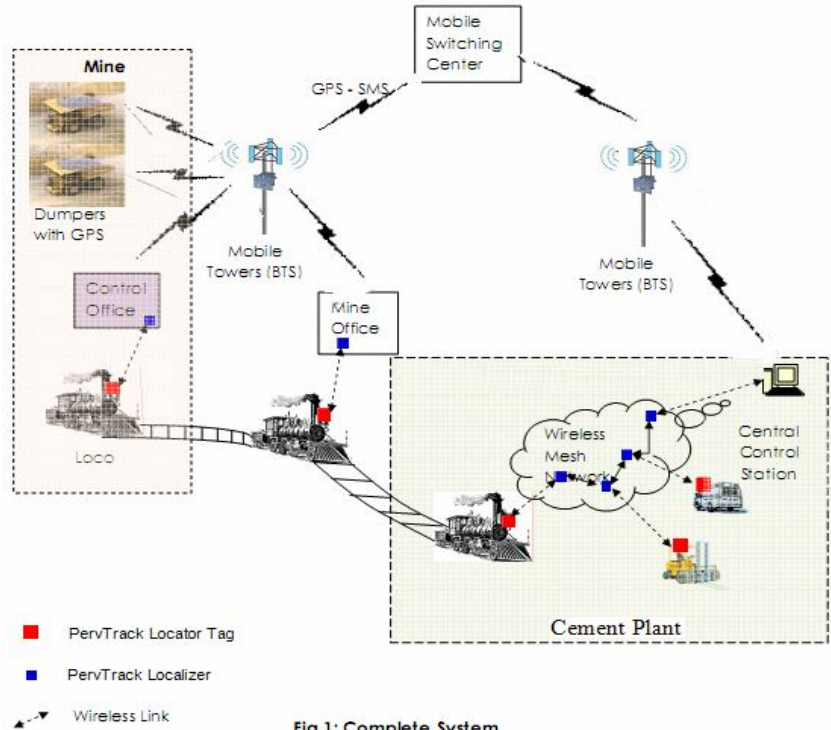


Fig 1: Complete System



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