GPS and Control Centre Implementation at HZL

Introduction

Hindustan Zinc Limited (HZL) was created from the former Metal Corporation of India on January 10, 1966 as a PSU. In April 2002, Vedanta took over majority stake and became part of the Vedanta Group.

In order to regulate and automate truck movement, HZL is interested to implement GPS based vehicle tracking system. The project is planned to be implemented movement of coal from port/source to Zawar, Dariba and Chanderiya and Internal Movement.

Business requirements

The business is looking for 100% GPS device installation in all vehicles coming from ports or sources of Coal/ Fuel. The current requirement is as follows

Intimation: HZL to give 7 days prior information in writing for vessel arrival/quantum/distribution plan from ports to plants with daily envisaged plan from

Kandla Port :

Navlakhi Port:

Dahej Port :

Any other new Port /source: as per HZL requirement

Inventory of GPS

Inventories on 24x7 availability basis - Buffer for 3 days

VENDOR to provide GPS devices for free to Coal Security Agency as engaged by HZL

COAL OPERATIONS

1) Office & adequate staffing
2) Vehicle visits Port for loading and will visit the sealing station for sealing
3) Vendor will install GPS system on the vehicle
4) Sealing of GPS device
5) Vendor team will consolidate the vehicle details – Vehicle No, GPS Device IMEI, Destination and weights as per WB slip, Seal No etc.
    a. Daily Consolidated Email report will be sent to HZL staff with all vehicle, trip and weight details
6) Control Centre (CC) will monitor the movement of the truck for any exceptions and will update CLEAN/UNCLEAN status of the vehicle as per SOP

7) Once the vehicle reports at Plant Geo-fence, the vehicle details plus reporting time will be pushed to HZL's SAP system using a PI Bridge and stored in a Vehicle Details Table (VDT) or Transaction Table
8) ITMS 2.0 integration
9) Allow Slip is created on ITMS 2.0 by HZL's Gate staff upon reporting at plant
    a. If vehicle is reporting for the first time, vehicle is created on Masters and vehicle's CLEAN/UNCLEAN status is updated as per VDT
    b. If vehicle's status is Clean, the Allow Slip is generated containing details of In Plant Route ID, Item Details, Purpose etc. and goes towards Allow Slip Approval
    c. If vehicle's status is Unclean, due to GPS related issue, Vendor team will evaluate and rectify the issue before changing the status to CLEAN
    d. If vehicle's Unclean status is due to Non-GPS related issue, the HZL Business Team is informed and after inspection can change the status to CLEAN
10) Once Allow Slip Approval is received, In Plant Trip of the vehicle is created on Vendor's system and Control Centre starts monitoring In-Plant movement of the vehicle
11) Control Centre will update CLEAN/UNCLEAN status of the vehicle as per exceptions / violations generated inside the plant
    a. Route Violation
    b. Weight Event violation
    c. Speed Violation
12) ITMS 2.0 will push data of vehicle crossing RFID readers placed at Material Entry, Weigh Bridge, Material Exit Gate and any other readers to Vendor's systems
13) Once vehicle crosses Weigh Bridge entry, the weight event (Time, Weight etc) is generated in ITMS 2.0 and pushed to Vendor
    a. In case Vehicle crosses the WB Geo-fenced area without Vendor receiving Weight Event, CC will raise an alarm and immobilize the vehicle
    b. In case Vehicle crosses the WB Geo-fenced area after receiving a "Successful Weight Not Done" Event, CC will raise an alarm and immobilize the vehicle
    c. Vehicle whose first weight is not done should not go inside plant.
    d. Vehicle whose first weight is done should go inside plant but cannot move out of plant.
    e. Vehicle whose final weight is done, should not be able to go inside plant for reloading.
14) Vehicle continues on its in-plant route, unloads and returns to the Weigh Bridge where Point 10 is repeated
15) Vehicle's Allow Slip is closed upon crossing the Material Exit Gate / entering PP
16) Vendor team uninstalls the GPS system from the vehicle
17) Integration with Coal Security Agency
18) GPS removal or discussions...immediate
19) Integration of CRA ,SAP ,ITMS ,WB of HZL for Coal/ Fuel

MIS Reports –

Management Dash Board
100% GPS enabled movement
Exceptions report

Trip details
Any other trip related information will be developed on Vendor portal
Transshipment not allowed
Stock in Transit report with Additional reports: as required, then to be dug out from VENDOR
System generated own MIS

Transit time over run.

Route deviation...other than defined routes
GPS blackout

Penalty:

To be imposed by HZL, if lapses in alerts/reports/non availability of GPS device

Contract Manager

Single coordination with HZL representative for alerts/deviations

CHAs/Transporter appointed by HZL shall return back the GPS device and if not returned, then VENDOR to bring to HZL notice within 24 hrs

Device Capability and working philosophy

The devices will have mechanism to lock the device to the truck using a plastic tie with serial number and the same will be made available in our web application and in SAP also.

To streamline the process VENDOR will provide a web interface to create requirements. The requirement will be used as a input to VENDOR team to mobilize the resources.

The VENDOR team on the ground will install GPS devices, secure the device to the truck using a pre-printed serial numbered tie belt. This information will be made available in VENDOR website and SAP with few minutes in normal circumstances and with 8 hours in case of network failure at the ports which happen frequently.

HZL will enter any deviation if they find during any day so that all the vehicles of that day are minutely examined by the VENDOR team to find a possible trend.

To ensure that the security forces are properly doing the patrolling across the route , VENDOR will provide them a application which will help HZL trace them . It will also have the feature for the security team to photograph different vehicles they are chasing during a day . All photo graphs taken by this application will be having time stamp and location details taken using GPS in the phone .

VENDOR will conduct a GAP analysis session for HZL For 3 days after the signing of the PO based on availability of HZL stake holders .

All required changes will be done by VENDOR team . Any change required in gap analysis will be done by VENDOR without any extra cost . HZL holds the right to ask for changes in the first 30 days of signing the PO .

Any change required in the software after expiry of these 30 days will be billable irrespective of the size of change. Any kind of effort required apart from tracking the vehicles will not be rendered . HZL will have to use the website to see reports in graphical format apart from reports which will come daily in email .

HZL will provide 7 days prior information before starting a port .

Device Tampering and loss of device / SIM card

In case a device is purposefully made to fail by cutting the device wire , injecting water into the device or any process to forcefully spoil / stop the device from working properly will be considered as tampering.

As device tampering can lead to major system failure and wrong reporting hence it is very important to heavily discourage drivers from doing such activities. To be brought in notice with immediate effect.

Device warranty

The Device should carry a warranty of 3 year from the date of delivery to the customer . Any manufacturing defect is covered under warranty. Any device problem due to tampering or accident is not covered under warranty.

Minimum contract per month/per trip cost

No Minimum Guarantee for devices installed or in inventory, however for estimation purpose Total numbers of trucks are around 110-130 per day with **No minimum Guarantee.**

Contract Period

The contract will be 36 Months,

1) **IUT Operations**

2) **Stores Operations**

3) **Emergency Status**

4) **Clean / Unclean Status Changing SOP**

5) **Integration Guidelines**

6) **Exceptions List**

@ ***Source Plant***

1) Allow Slip is created on ITMS 2.0 by HZL's Gate staff upon reporting at plant
    a. If vehicle is reporting for the first time, vehicle is created on Masters and asked to report to Vendor team for installation
        i. Vehicle Details – Vehicle No, GPS Device No, CLEAN/UNCLEAN status are pushed to SAP using PI bridge upon first time installation
    b. If vehicle's status is Clean, the Allow Slip is generated containing details of In Plant Route ID, Item Details, Purpose etc. and goes towards Allow Slip Approval
    c. If vehicle's status is Unclean, due to GPS related issue, Vendor team will evaluate and rectify the issue before changing the status to CLEAN
    d. If vehicle's Unclean status is due to Non-GPS related issue, the HZL Business Team is informed and after inspection can change the status to CLEAN
2) Once Allow Slip Approval is received, In Plant Trip of the vehicle is created on Vendor's system and Control Centre starts monitoring In-Plant movement of the vehicle
3) Control Centre will update CLEAN/UNCLEAN status of the vehicle as per exceptions / violations generated inside the plant
    a. Route Violation
    b. Weight Event violation
    c. Speed Violation
4) ITMS 2.0 will push data of vehicle crossing RFID readers placed at Material Entry, Weigh Bridge, Material Exit Gate and any other readers to Vendor's systems
5) Once vehicle crosses Weigh Bridge entry, the weight event (Time, Weight etc) is generated in ITMS 2.0 and pushed to Vendor
    a. In case Vehicle crosses the WB Geo-fenced area without Vendor receiving Weight Event, CC will raise an alarm and immobilize the vehicle
    b. In case Vehicle crosses the WB Geo-fenced area after receiving a "Successful Weight Not Done" Event, CC will raise an alarm and immobilize the vehicle

6) Vehicle continues on its in-plant route, loads and returns to the Weigh Bridge where Point 5 is repeated
7) ITMS 2.0 will push Invoice No / Allow Slip No / other unique no and “TOBETRACKED” flag for identifying Unloading Plant, and other invoice details
8) Vehicle’s Allow Slip is closed upon crossing the Material Exit Gate / entering PP
9) Trip to Unloading Plant is started upon exit from Plant Geo-fence
10) Control Centre (CC) monitors the movement of the vehicle until it reaches Unloading Plant and evaluates exceptions / violations.

*@ **Unloading Plant***

11) Once the vehicle reports at Unloading Plant Geo-fence, the vehicle details plus reporting time will be pushed to HZL’s SAP system using a PI Bridge and stored in a Vehicle Details Table (VDT)
12) Upon reporting at Unloading Plant, Vehicle’s Clean/Unclean status is pushed to ITMS 2.0 by Vendor
13) Allow Slip is already generated on ITMS 2.0 when the vehicle reports at plant.
14) Once Auto Allow Slip Approval is received, In Plant Trip of the vehicle is created on Vendor’s system and Control Centre starts monitoring In-Plant movement of the vehicle
15) Depending on the CLEAN/UNCLEAN status of the vehicle on ITMS 2.0, the following actions are taken
    a. If vehicle’s status is Clean, the vehicle continues inside plant
    b. If vehicle’s status is Unclean, due to GPS related issue, Vendor team will evaluate and rectify the issue before changing the status to CLEAN
    c. If vehicle’s Unclean status is due to Non-GPS related issue, the HZL Business Team is informed and after inspection can change the status to CLEAN
16) Control Centre will update CLEAN/UNCLEAN status of the vehicle as per exceptions / violations generated inside the plant
    a. Route Violation
    b. Weight Event violation
    c. Speed Violation
17) ITMS 2.0 will push data of vehicle crossing RFID readers placed at Material Entry, Weigh Bridge, Material Exit Gate and any other readers to Vendor’s systems
18) Once vehicle crosses Weigh Bridge entry, the weight event (Time, Weight etc) is generated in ITMS 2.0 and pushed to Vendor
    a. In case Vehicle crosses the WB Geo-fenced area without Vendor receiving Weight Event, CC will raise an alarm and immobilize the vehicle
    b. In case Vehicle crosses the WB Geo-fenced area after receiving a “Successful Weight Not Done” Event, CC will raise an alarm and immobilize the vehicle
19) Vehicle continues on its in-plant route, unloads and returns to the Weigh Bridge where Point 18 is repeated
20) Vehicle’s Allow Slip is closed upon crossing the Material Exit Gate / entering PP
21) MIS Reports to monitor Exceptions, Trip details, In Plant TVendor, and any other trip related information will be developed on Vendor portal

STORES OPERATIONS

1) Once the vehicle reports at Plant Geofence, vehicle reports to Vendor team to get GPS installed
2) Vehicle details plus reporting time will be pushed to HZL's SAP system using a PI Bridge and stored in a Vehicle Details Table (VDT)
3) Allow Slip is created on ITMS 2.0 by HZL's Gate staff upon reporting at plant
    a. If vehicle is reporting for the first time, vehicle is created on Masters and vehicle's CLEAN/UNCLEAN status is updated as per VDT
    b. If vehicle's status is Clean, the Allow Slip is generated containing details of In Plant Route ID, Item Details, Purpose etc. and goes towards Allow Slip Approval
    c. If vehicle's status is Unclean, due to GPS related issue, Vendor team will evaluate and rectify the issue before changing the status to CLEAN
    d. If vehicle's Unclean status is due to Non-GPS related issue, the HZL Business Team is informed and after inspection can change the status to CLEAN
4) Once Allow Slip Approval is received, In Plant Trip of the vehicle is created on Vendor's system and Control Centre starts monitoring In-Plant movement of the vehicle
5) Control Centre will update CLEAN/UNCLEAN status of the vehicle as per exceptions / violations generated inside the plant
    a. Route Violation
    b. Weight Event violation
    c. Speed Violation
6) ITMS 2.0 will push data of vehicle crossing RFID readers placed at Material Entry, Weigh Bridge, Material Exit Gate and any other readers to Vendor's systems
7) Once vehicle crosses Weigh Bridge entry, the weight event (Time, Weight etc) is generated in ITMS 2.0 and pushed to Vendor
    a. In case Vehicle crosses the WB Geofenced area without Vendor receiving Weight Event confirmation, CC will raise an alarm and immobilize the vehicle
    b. Weigh Bridge Event is not Mandatory
8) Vehicle continues on its in-plant route, unloads and returns to the Weigh Bridge where Point 7 is repeated
9) Vehicle's Allow Slip is closed upon crossing the Material Exit Gate / entering PP
10) Vendor team uninstalls the GPS system from the vehicle
11) MIS Reports to monitor Exceptions, Trip details, TVendor, and any other trip related information will be developed on Vendor portal

PLANT EMERGENCY STATUS

1. In Case “Emergency Status” is declared inside a plant by the Plant SPOC, Vendor will “Flag” off all In-Plant Vehicle Validations
    a. Hooter
    b. Immobilization
2. Exceptions and Violations will still continue to get generated and monitored by Control Centre
3. When “Emergency Status” is called off by Plant SPOC, the “Flag” will be reversed and validations will resume

CLEAN / UNCLEAN STATUS CHANGING SOP

1) A vehicle’s Clean status can be modified by any of the following parties
    a. Control Centre
    b. HZL Business Staff
    c. HZL Security / Gate Staff
2) All Status changes will happen on Vendor’s Portals
3) Any new vehicle’s default status will be CLEAN
4) A vehicle’s status can be changed to Unclean by Control Centre on the basis of exceptions which are detailed in another section
5) A vehicle’s status can be changed to CLEAN by Control Centre after verifying the GPS system and rectifying it only
    a. In case GPS system was tampered with, the status will not be changed by CC
6) HZL Business Team has the right to change CLEAN/UNCLEAN status as per their understanding.
7) All Clean/Unclean changes document to have logs and remarks

INTEGRATION GUIDELINES

- Vendor will push data through PI Bridge to HZL SAP on following triggers
    - Coal Vehicle reporting at Plant Premises
        - Vehicle and Trip Details and TAT

EXCEPTIONS AND VIOLATIONS

In Plant Exceptions

1) Route Deviation
2) Speed Violation
3) Weigh Bridge Missed
4) GPS Tampered
5) GPS Not Working

Out-of-Plant Exceptions

1) GPS Not Working
2) GPS Tampering
3) TAT Violation
4) Unauthorized Stoppage
5) Destination not Hit
6) Speed Violation
7) Transshipment not allowed

HZL Scope

1. Access to PI System
2. Access to SAP Development Environment
3. Access to ITMS 2.0
4. Access to Location Premises for Vendor's developer(s)
5. Seating for Vendor's developer(s) for duration of SAP Integration
6. Consultancy and Assistance from HZL's SAP Expert
7. VPN and Network Access
8. List of Dedicated Vehicles
9. Location for establishing Control Centre within CLZS premises with Electricity and other basic amenities
10. Storage space for GPS Devices and Waiting space for installers at each Location and Port
11. Access for installers to enter the premises where device installation / repair needs to happen
12. Periodic meeting with IT and Business Team to review and streamline operations