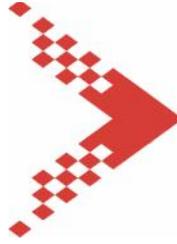




RFID Based Weighbridge Automation in India



RFID CASE STUDY: Weighbridge Automation in Bhushan Power & Steel Limited

Customer:

Bhushan Power & Steel Limited (BPSL), is a fully integrated 2.8 Million TPA Steel Making Company having turnover of INR 9517 Crores (USD 1752 Million) FY13. The Company is certified to ISO 9001:2008 & TS-16949 Quality Standards and ISO 14001:2004 Environment Management Standards.

These plants manufacture value added products covering entire steel value chain right from Coal Mining to manufacturing Pig Iron, DRI, Billets, HR Coils, CR Coils, GP/GC Sheets, Precision Tubes, Black Pipe/GI Pipe, Cable Tapes, Tor Steel, Carbon and Special Alloy Steel Wire Rods and Rounds conforming to IS and international standards.

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The Concern

Weighbridges continue to play an increasingly vital role in the process and related industries, acting as critical control points for vehicles arriving and leaving sites.

Vehicle Identification and Data Collection from Weighbridge using Radio Frequency Identification is a secure and convenient solution for vehicle management at industries, providing authentication and accurate weight data for incoming and outgoing vehicles.

Truck drivers are identified via contactless RFID cards and IP cameras assuring the access only to authorized drivers.



Gross1 Weighbridge with Cameras on the respective poles

Challenges

The average log size in many parts of the world is getting smaller and it is becoming increasingly time consuming and expensive to individually scale each log.

A credible automatic weight system is essential for any industry using the measurement of weight as a benchmark for sale of a product.

Manual Inaccuracy in payload weights can be created by either inaccurate gross weights or variability between the tare weight of the truck and the actual weight of the truck (gross weight minus payload) at the time of gross weighing.

A busy Industrial Plot should have an automated, efficient monitoring system that allows for accurate vehicle identification as well as an easy measuring system for the load.

The requirements and ever increasing demands of the mining industry is its core competence towards safety and productivity. Our solution is well tailored to meet these core standards of the power, steel and mining industry.



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The Solution

We recommended HF based Passive RFID with IP Cameras for automatic Data Capturing from Weighbridge, providing a complete industrial solution for **Bhushan Power & Steel Limited**.

Each Weighbridge is equipped with **HF RFID Reader** and **IP Cameras**.

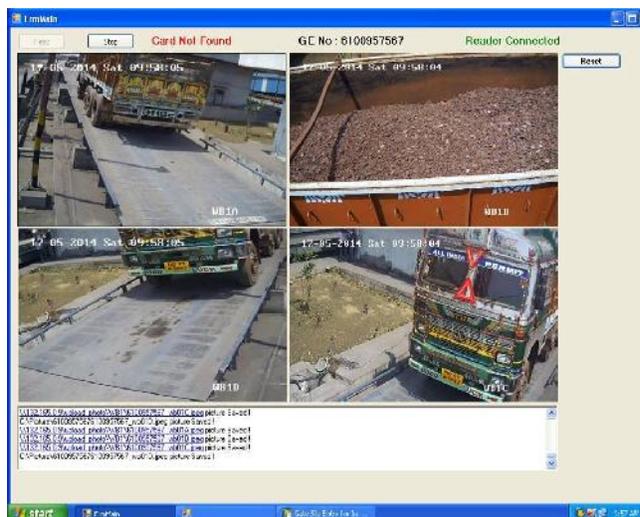
There are 8 weighbridges with 8 HF Readers and 24 IP Cameras.

Each and every authorized Truck Driver has a passive RFID tag. The HF Card type tag is a high performance tag that is ideal for harsh and dirty environment.

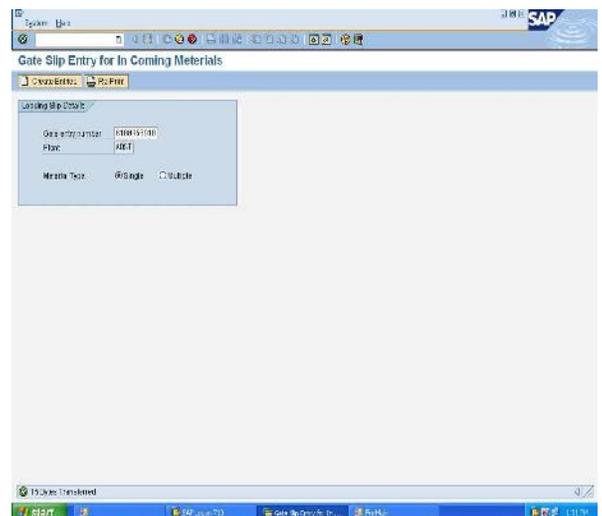
Whenever a Truck arrives at the entrance of Gross1 weighbridge, the driver is supposed to pass the card to the guard standing there.

He shows the Card to the RFID Reader mounted at each of the weighbridges.

The RFID system is integrated with software systems for billing, reporting, and revenue collection, that provides even greater cost and time efficiency to operators.



4 side image capturing of the loaded trucks



SAP from where GE Number is generated against which RFID Cards are issued for each trucks



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As soon as the card is displayed, the cameras are triggered for capturing images of respective trucks.

At the same time the weight along with the **GE (gate number)** is inserted in the **SAP**.

The same process is repeated in **Gross2 Weighbridge** for verification and curbing any kind of residual error from **Gross1 Weighbridge**.

Same process is repeated in **Tare1 & Tare2** and hence **NET WEIGHT** is calculated.

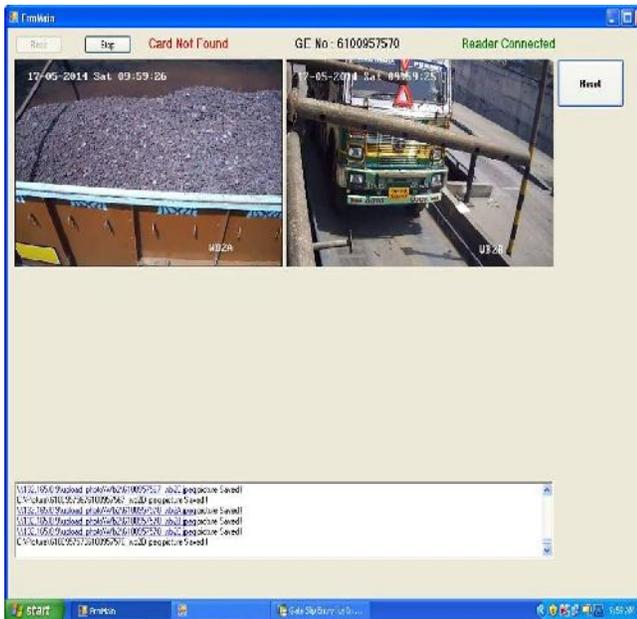
The screenshot shows the SAP 'Gate Slip for IN Coming Material (Single)' form. It includes a 'MANDATORY ENTRY' section with fields for GATE ENTRY NO (5100956910) and KANTA NO (22). Below this is the 'WEIGHT OF TRUCK (in Kg's)' section, which is divided into two parts: KANTA 'A' and KANTA 'B'. Each part has fields for Slip No, Date, Time, Kanta No, Gross Weight, Tare Weight, GROSS WT, TARE WT, and NETT WT. There are also buttons for 'Get GW' and 'Get TW'. At the bottom, there is a table for Vendor information.

Vendor No	Vendor Name	CITY
0000203235	MCL, ANANTA COLLIERY	SAMBALPUR



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Rollout of System is quick and easy and can be used in conjunction with existing systems.





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Bhushan Power & Steels Ltd achieves rapid ROI with RFID

1. Average Truck passage in the industry: 1,500 trucks/day
Weight of load in each truck: 16 TNs

Total weight entering the industry in form of coal: $1,500 * 16$
= 24,000 TNs/day

Average price of coal per TN = Rs 1,500

Hence total revenue for 1,500 trucks = $24,000 * 1,500 * 30$
= Rs 1,08,00,00,000/month

Amount saved after automation of weighbridges, as a result of Theft prevention =
2% of 1,08,00,00,000 = **Rs 2,16,00,000/month**

2. Earlier at an Average 1000 trucks were processed in a day and rest have to wait for their turn
Now RFID Automation lowers the processing time resulting an increase of 500 trucks being processed = **Rs 72,00,000/month**

3. Reduced Manpower :

For 8 weighbridges earlier they were using 8 people each having a salary of Rs 10,000
= **Rs 80,000/month**

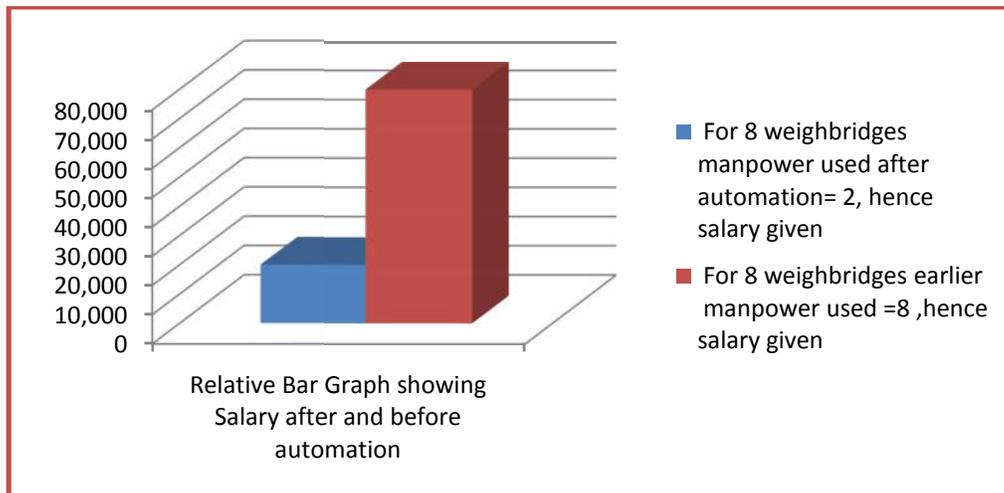
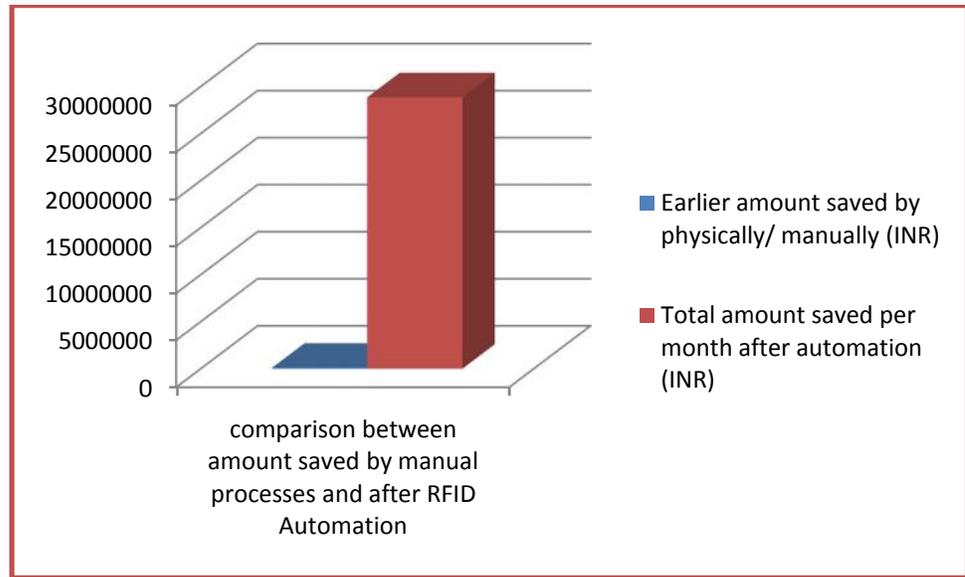
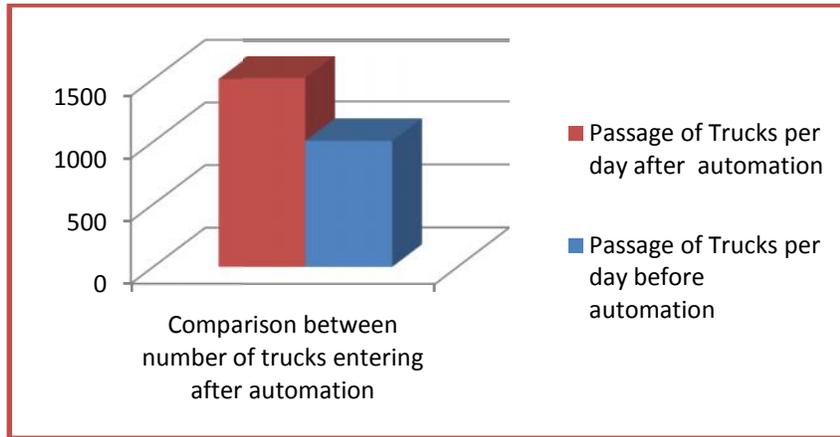
Now for 8 weighbridges, only 2 people are used

Hence salary saved = **Rs 60,000/month**

Total amount saved after automation = $Rs 2,16,00,000 + Rs 72,00,000 + Rs 60,000$
= **Rs 2,88,60,000/month**

Earlier amount saved by physical/ manual processes = 0.01% of the total revenue
i.e. - 0.01 % of 1,08,00,00,000 = **Rs 1,08,000/month**

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Benefits of the solution

- * Our System will eliminate the repetitive job of staffs at weigh station.
- * He does not need to rekey truck license plate number every time when the truck is on the weighbridge.



Weighbridge waiting for trucks to arrive-Software showing No Cards Found

- * These processes are operated manually.
- * At the end of weighing, it is needed to repeat doing data entry into ERP system for further process.
- * These operations are not only waste of time but also tend to have high error rate because of human intervention.
- * This also opens room for manmade fraud which can cause financial loss to any enterprises.

* Simultaneously, this can protect the problem of cloning truck.

* As a result the problem of duplicating or artificial weighing can be removed completely.

* Delivery materials through weighbridge require many operation steps starting from queuing, registration for weighing, pre and post loading.



Side View of the RFID Reader installed at entrance of weighbridge



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- * Our solution can both enhance the efficiency of the operation and protect human mal-practice on weighing.

- * At the end several reports can be generated and the systems can be used for costing and calculation of billing for each vehicle.

- * Our Solution can be used for unmanned weighing operations.

- *Secure, reliable, reduced labor costs, Streamline operations.

- * Flexible system to fit individual customer requirements for distance, speed, and budget.

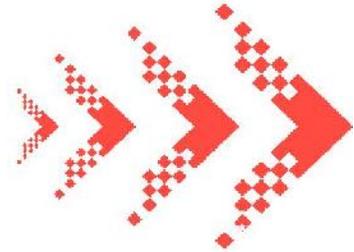
- * Reduced emissions because vehicles pass through gates and entrances without stopping and restarting, or waiting in lines with engines idling.



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About Eco Tracksys Ltd

Started by a team of IIT'ians in the year 2013, Eco Tracksys Ltd is a World class RFID System Integration & Solution Design Company based out of Delhi (India). Our team is in the field of offering solutions in AIDC (Auto Identification and Data Capture) vertical for over 10 years and has a deep understanding and domain knowledge in RFID technology.



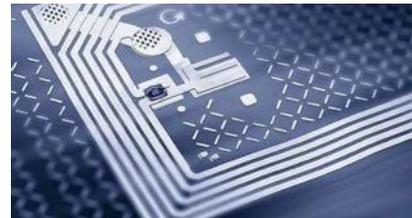
SYSTEM INTEGRATOR



DATA ANALYST



SOLUTION ARCHITECT



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