

RFID Vehicle Management SOLUTION FOR Sugar Mills



Preface

During the harvest season, each sugar mill has a continuous flow of vehicles carrying fresh sugarcane for crushing onsite. A cumbersome manual system is used for maintaining a record of all these vehicles. This required one person at the gate to record the number of vehicles entering, along with the number of trailers attached to each vehicle. A second individual at the gate issued tokens to each vehicle, while a third was required to issue receipts.

Challenges in the present system

- Due to the heavy traffic volume, the manual entry system is extremely time-consuming and inefficient, causing higher processing and queue times, overpayments, delays and more.
- There is scope for many human interventional errors to occur in a manual system that is hard-pressed for time.
- Difficulties occur in payment distribution due to the varied number of trailers attached to the vehicles.

Proposed Solution

RFID solution automates the vehicle tracking and data updates in near-realtime, and generates receipts at the point of entry for farmers bringing in their sugar cane.

- **Vehicle Registration & Tagging:** Vehicle details such as vehicle type, registration number, owner etc are fed in to the system. RFID tags are affixed to various types of vehicle used to transport harvested sugarcane from the farms to the mill such as trucks, tractors and trailers. If a tractor got multiple trailers, RFID tags will be fixed on each trailer.
- When a registered vehicle passes through the entry gate, RFID reader fixed at the entry gate reads the tag and checks whether the tag is registered or not. Only a registered tag entry logs into the database. If tractor with multiple trailers passes, the trailer count is also logged in the database. A receipt is then automatically generated.
- The automated RFID based Vehicle Management System does not require a token to be issued and the vehicle owner does not have to wait in line for a manual entry to be made in the records.

- Traffic is managed efficiently and a receipt generated automatically to facilitate easy payment distribution. The system administrator checks the automated report and gets a list of all vehicles with their trailer count.
- After transporting the sugarcane to the crushing mill, the vehicle exits from the gate. The RFID reader at the gate reads the tag and automatically makes an outgoing entry for the vehicle.
- System reports provide details such as vehicles, owners, current vehicles in the mill premises, number of vehicles entering or exiting, and the trailer count. These reports make vehicle management easy as there is automated generation of data. The administrator can ensure that vehicle queue is maintained and payment is accurately distributed.



Advantages

- ✓ Reduction in manpower deployment.
- ✓ Time saving process.
- ✓ Efficient management of traffic and automated generation of slip without having to issue a token to each vehicle, eliminating the token giving process.
- ✓ Reduction in manual entry work eases maintenance, finding of records and payment distribution.
- ✓ Automated reports are instantly available providing correct vehicle and trailer information.
- ✓ Automated system greatly reduces the scope for human error.
- ✓ Accurate and automatic generation of receipts for each vehicle.

Suggested Items

Item	Image	Description	Application
Confidex Survivor Metallic Tag		Size : 224 x 24 x 8 mm Frequency : 865-869 MHz - ETSI (EU) Protocol : ISO18000-6B, EPC G2 Memory : 240 bit EPC + 512 bit Read range(2W ERP) : up to 11 m / 36 ft	For fixing on vehicle metallic side body
Confidex Windshield Label		Non-transferable, tamper-evident windshield label for automatic vehicle identification. Size : 92 x 26 x 0.2 mm Frequency : 865-869 MHz - ETSI (EU) Protocol : ISO18000-6B, EPC G2 Memory : 496 bit EPC + 128 bit Read range(2W ERP) : up to 8 m / 26 ft	For fixing on vehicle windshield
STA IR0507E Integrated Reader		UHF middle-distance integrated reader Processor :ARM CORTEX M3 100M Memory :RAM 16Kbits + FRAM 32Kbits. Frequency : 860MHz-868MHz(CE) Protocol : ISO18000-6B, EPC G2 Interface : RS232, RS485, TCP/IP GPIO : 1 Relay output, 2 TTL outputs, 2 TTL inputs Reading Range : 5 - 8 m Power Consumed : DC+9V/12V	For fixing on entry exit gate
Vehicle tracking software		Vehicle/Owner management RFID vehicle tag management Vehicle permissions Vehicle movement reports	Application software