

RFID Technology in Inventory Inspections

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Author’s Biography



Nicholas Levenstein is the president of Mongoose Capital, Inc., a secured lender in San Francisco. He has a BA (cum laude) from Yale University and an MBA from UCLA. In addition to his experience in finance, he was a management consultant for twelve years. nick@mongoosecapital.com. His hobbies are French horn, piano, Karate and Yoga.

Introduction

Information technology is critically important to secured creditors in the independent auto dealers’ industry. Much attention has been paid to technologies affecting the quality of notes receivable (retail installment contracts) such as starter interrupt devices and GPS. However, technology can also improve inventory tracking and inspections.

My firm has recently discovered and implemented technology that can dramatically increase the quality of inventory accounting and inspections and reduce opportunity for fraud. The technology is called “RFID.” “RFID” stands for Radio Frequency Identification. The technology has received press coverage in manufacturing and retailing with early adopters such as Daimler Chrysler¹ and Wal-Mart.²

¹ Among client list provided by EID, Ltd. of Santa Barbara, CA

² *New York Times*, November 30th, 2003

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The Use of “RFID” Technology in Inventory Inspections

Genesis of the Idea to use RFID

Collateral Agent Role

My firm was engaged in November of 2003 to act as a “Collateral Agent” for an institutional fund that advanced an inventory secured loan to a larger franchise and independent dealership group in the North East. Our role was to register vehicle titles on behalf of the secured party as well as to conduct regular inventory inspections.

Worrisome History

We met our client, the secured party, in a bankruptcy proceeding for the dealership that we eventually were hired to inspect. The bankruptcy was caused by massive inventory fraud in which several million dollars worth of automobiles had been sold out of trust.

The employees who had not been fired showed a remarkable lack of remorse and unwillingness to change procedures. The inspector who been hired was an alcoholic ex-policeman. We were told that he rarely conducted inspections, and simply initialed all of the inventory entries and faxed them in.

Worrisome Start

My firm began to spot check two of the five lots on a weekly basis. 20% to 30% of the inventory would be missing regularly. Dealership personnel always explained that the cars were in transit or located on another lot. Many vehicles were additionally located in random service locations.

Some trucks were, for lack of a more scientific term, road monsters. Frequently, cars were on lifts. It was impossible or intimidating for our 5’1” female employee to see the VIN or distract employees in a hot noisy environment to let her in to the vehicles. The windshield may have been 14 feet in the air at times.

It was clear that one of two things were occurring:

1. It had become impossible for the Dealership Management to keep tabs on moving inventory on multiple lots and service locations. <or>
2. There was actual fraud occurring again.

We needed a solution to inspect all, not some, lots faster with incontrovertible machine generated results and photo documentation. Nothing less would have made me comfortable that no fraud were occurring.

Bar Codes Verses “RFID”

My initial thought was to bar code the vehicles. We decided against this technology for three reasons:

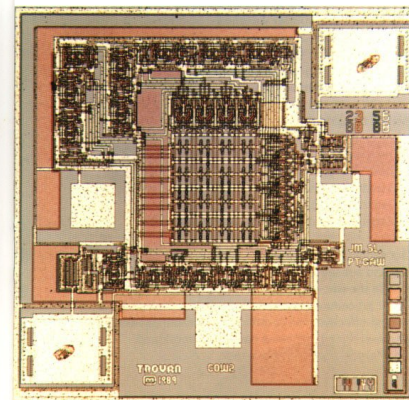
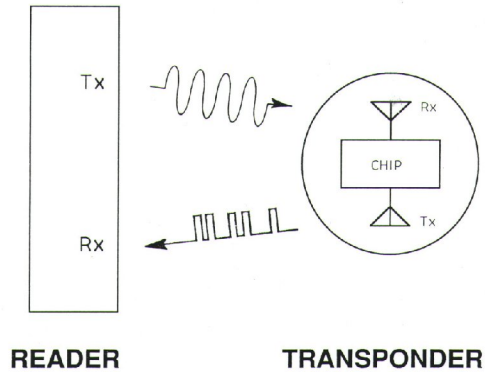
1. The line of sight requirement might have been impossible for the shorter female who most often conducted our inspections due to large vehicles and vehicle on lifts.
2. Dirt or some other obscuration might have prevented a clean read.
3. We thought it would be unsightly to bar code luxury used cars or new vehicles.

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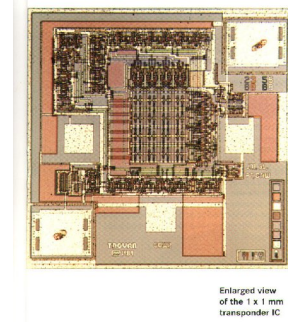
The RFID chips (see below) are relatively inconspicuous. They do not need line of sight reads to function and can be read through metal or glass. The chips cost \$2 to \$4/unit. This cost is not material in the cost basis of an \$8,000 (book value) car. The chips can be recycled. From our experience, RFID tags are virtually indestructible.

HOW RF/ID WORKS



Enlarged view
of the 1 x 1 mm
transponder IC

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Intended Consequences

Specific Goals

My goals were that every inspection would be documented by:

1. A machine generated electronic code of vehicles found
2. Photo documentation proving that the inspector had actually visited the premises
3. Visits to **all** lots and **all** service locations.

Results

The best part has clearly been an objective read on what inventory was missing. No messy handwriting, no swearing contests between Dealership employees and our employees, just numbers. Here a section of the report:

Code	Date	Time	Lot
0000A52293	07/22/2004	6:26:52	1
000053D004	07/22/2004	6:27:52	1
00005854C0	07/22/2004	6:28:04	1

We do an electronic comparison between the readout from the scanner (above) and the inventory list generated from the Dealership's accounting system to produce results.

We include in each report a digital photo of the inspector with the day's newspaper.



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In the same time that it took us to inspect two lots, we are covering five lots and two service locations with the electronic scanner.

Unintended Consequences

Data analysis rather than technology ended up solving the much of the problems. With the new electronic reports 10% of the inventory on all lots was still missing regularly. Dealership personnel explained that the cars were still in transit.

Producing a report of cars that were missing two weeks in a row solved this problem. What were the chances that the same car was traveling two weeks consecutively at the same time? The value we could not track down dropped from about \$500,000 to \$90,000 on a weekly basis. Without the electronic data reports, this comparison would have been too time consuming to tabulate.

Other positive effects have included:

1. The dealership adopting our system for tracking inventory, which has been much cleaner and easier for them.
2. Discovery of some accounting irregularities. Apparently some problem existed with revenue recognition in the accounting system. There were examples of cars that should and should not be inventory producing ‘missing’ inventory due to system quirks.
3. The dealership looking into missing inventory and finding several expensive cars in the city impound.

Negative effects included:

- I. My firm’s becoming a tech support resource for low-level dealership employees. This has been a huge drain on time we did not anticipate.
- II. Frequent accusations that we ‘missed’ cars with the scanner. Investigation has shown the missing inventory to be a result of data entry errors on the dealership personnel’s part.

Issues in Implementation

The resources required for by my firm for system integration, management and programming were relatively minor. This project was completed and tested within 4 weeks. The most severe problems have been caused by dealership employees neglecting to tag the cars or enter codes correctly.

Summary

For us the implementation of RFID technology in inventory inspections has been remarkably satisfying. Our work is more accurate, better documented, less time consuming and cheaper. I have peace of mind now compared to when our work was completed using manual checklists.

At this point I would not allow my firm to do inspection work nor would we advance funds secured by inventory unless the dealerships were willing to use RFID chips to identify their cars.

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