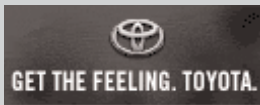


Toyota - Faultless Service Thanks to Radio Frequency Technology



My Car = My Freedom

My car = my freedom. So far, so good, but what if your car cannot be repaired due to non-availability of the spare parts? There goes your freedom, your happiness.

At Toyota, such situations are unacceptable, and so this leading manufacturer wants to do everything in its power to prevent this from happening.

Toyota has therefore established a Parts Center in Diest. Spare parts are supplied to all European distributors from this distribution center. For Toyota, it's imperative to be service minded and to deliver orders efficiently without mistakes. Toyota uses radio frequency communication to accomplish this objective.



In 1991, Toyota started the construction of its European Distribution Centre in Diest. The operations officially started in January 1993. Originally, the warehouse space was 37,700 m². Because of the successful business in Europe, it soon became clear that TPCE (Toyota Parts Centre Europe) had to consider expansion of its warehouse floor space. In 1999, the total warehouse space floor was expanded to 67.700 m².

Toyota's Distribution Centre delivers to 28 European distributors on a daily basis. Since April 2001, TPCE delivers directly to 170 Belgian dealers.

Luc Croes, Manager Operations Development, explained the process as follows: "Our total logistics concept is based upon Just-in-Time deliveries and service, service, service. The Belgian dealers can send orders until 17h00, and the parts are delivered to them before 09h00 the next morning. The European distributors are directly connected with the distribution centre in Diest. They can, as a matter of speaking, have a direct look in TPCE's warehouse. and have a complete overview of what is in stock at that particular moment. Via modem, the European Distributors are connected to our

computer system and they can even reserve parts "on-line". Thanks to our wireless RF communication system, everyone always has the correct information."

Because of the expansion of the distribution centre and the growing number of parts, TPCE had to look for a way to continue to guarantee service, efficiency and faultless deliveries.

RF (radio frequency technology) appeared to be the only possible solution. RF offered quite a number of advantages, compared to batch processing, where the data is temporarily saved on the terminal and only afterwards sent through to the central computer of the host. The on-line and real-time information that is available through RF is invaluable.

"Furthermore, the Distributors are no longer required to make forecasts, while the European Distribution Centre does not even make forecasts anymore for the mother company in Japan", says Luc Croes. "Forecasts have become unnecessary because of the transparency and the data flow that is created by the RF system. All this is done without wasting paper! Only in the case of special campaigns, are forecasts still required."



the United States, although some adjustments were necessary, because of customs procedures and dealer network.

All warehouse operations are completely paperless! Information is printed out on paper only upon the specific request of distributors and dealers, dealers.

In the past, all kind of reports were printed out weekly. Now, the Toyota mainframe has a Management Information System. Everybody can look up any kind of information at any time, as every department desires different information. The Marketing department, for example, will want to convince dealers about faster and more accurate deliveries.

After a thorough study of the market on technical as well as on ergonomic level, LXE was chosen as Toyota's RF partner. The decisive factor here was the Spread Spectrum technology which LXE offers, and the user friendly and ergonomic terminals. The IT department at TOYOTA also requested a transparent and open protocol where no controllers would be needed.

The LXE solution fulfills these needs as it works with the universal TCP/IP protocol, the standard network protocol.

Thanks to an open standard communication protocol of LXE, everybody can connect to this system. The Spread Spectrum Technology also sends order lines through faster, increasing the number of orders that can be sent in comparison with a Narrow Band system.

Over 250 people work at Toyota Parts Centre Europe, divided into 2 shifts. These people are responsible for the receiving of goods coming from Japan, the physical distribution of these parts all over Europe and for the inventory of stock quantities. For this purpose, some 120 LXE RF computers are in use: portables as well as terminals installed on fork-lift trucks. All incoming goods are immediately scanned. TPCE receives 6 containers from Japan daily. The scanned boxes are sorted and transferred to the relevant locations via fork-lift truck. When the parts are picked to be sent to the distributors, they are scanned again. Up-to-date stock information is therefore available at any time.

After loading a truck, a correct bill of lading and the correct invoice are handed over to the truck driver. For every truck, a bill of lading is issued, as all loaded goods are scanned. Everything is done online and in real time: by the time the truck leaves to collect the papers at the office from the exit, all papers are ready.

At the distribution centre, a highly sophisticated system of barcodes has been introduced. Almost every item in the warehouse has a barcode: every part, every box, and every rack. The barcodes don't represent much information or symbology. If you need more information related to a specific part, you can always get this from the AS400. All software is developed internally. The distribution center in Diest is therefore a true copy of the distribution centre in



The Toyota workers preferred the LXE terminals because of the good ergonomics of the equipment: the LXE2330, the MX1, the LXE1380 and the LXE1390. The LXE2330 and its successor, the MX1, are lightweight hand held computers. They have a good grip, are robust at the same time, and can stand rough handling.

The LXE1380 and LXE1390 were mounted on the forklift trucks and order pickers in the warehouse. These vehicle mount computers are easy to fix, have a convenient and clearly readable keyboard, and are ultimately suitable for industrial use.

A wireless barcode scanner was fixed on all computers. This offers a lot more freedom of movement than a cabled scanner.

In the beginning, the users' reaction was somewhat divided to the

new paperless way of working in the warehouse. The word "computer" was, to some, already a little bit frightening initially. However, all co-workers now are very satisfied with the R/F system.

TOYOTA's management is also very satisfied. It was a big step to invest in a wireless RF data communication system. The return on investment was calculated over a little more than one year, which turned out to be correct. The paperless distribution centre now works much more efficiently. Before, everybody was walking through the warehouse with papers, listings needed to be printed, labels to be attached. Moreover, there is a direct check, as the error message in a RF system is done immediately. With the batch terminals, the error message was only given while downloading the data to AS400: the complete order then needed to be re-

checked. With RF, the error correction is done in a much shorter period of time resulting in improved efficiency. This also means that more orders can be processed daily. A very important issue for a company with a logistics concept that is based on Just In Time deliveries and service, service, service.

About LXE Inc.

LXE Inc. has over 30 years' experience in the design and manufacture of wireless products and solutions, which it applies to improve the productivity, control, and accuracy of supply-chain execution and logistics. LXE's broad wireless-based product line includes rugged mobile computers and IEEE 802.11b, OpenAir 2.4GHz, 900MHz and narrowband backbone solutions for logistics and material handling, manufacturing, maintenance and intermodal applications.

Based in Norcross, Georgia, the company also offers a full range of turnkey services, including project management, network design, installation management, customer call center support, technical support, and repair services for customers worldwide. LXE, a wholly-owned subsidiary of EMS Technologies, Inc. (NASDAQ: ELMG), has offices throughout the United States, Europe, and the Pacific Rim. For more information, visit the company online at www.lxe.com.

