

MANUFACTURING SOLUTIONS

**VOLVO POWERTRAIN**

REFERENCE CASE

**Mobile hand-held computer technology for the shop floor.**

Hand-held computer technology with the Pocket PC operating system has proven to provide excellent opportunities for creating mobile applications with low costs for development and maintenance.

Today at the Volvo Powertrain plant in Skövde, a simple web-based application is used for ordering materials for the plant's assembly lines, and more applications are in the conceptual stage.

The equipment selected can also be used for other mobile applications – all of this at a cost equivalent to that of conventional technology based on wireless scanners.

The results have included a modified logistics process, and most notably, large profits have been made with reduced stock.

**Starting point.**

For several years now, wireless terminals have been utilised to order materials for the assembly lines at Volvo Powertrain's Skövde plant. To communicate with the host material system, these terminals need access to special software for the various wireless technologies that are available. It was desirable to avoid this and instead make use of standard components.

Because Volvo Powertrain was planning a new assembly line for a new engine product at the end



Both instructions and orders for materials are distributed at the plant using advanced computer systems.



Hand-held computers with a wireless LAN are used to make the handling of materials at the plant faster, safer and more efficient.

of the 1990s, enquiries were made about mobile equipment for ordering materials.

Simultaneously, a flexible display interface was sought for the assembly-worker, since engines can vary a great deal – engines are manufactured for trucks, boats, generators etc.

In addition, it was also desired to give the assembly-worker access to other daily information, such as instructions and e-mail.

For the past few years, a wireless network based on the IEEE 802.11b standard has been gradually installed at the plant. It is normally utilised by the terminals associated with the fork-lift trucks in the plant. The network infrastructure also proved to be suitable for use with mobile equipment when

maintenance costs and operational safety were taken into account.

The plant also has access to a smoothly functioning material ordering system for its internal logistics. This system has been developed and gradually tuned over the past ten years. The challenge was to connect the mobile technology to this system in order to prevent high development costs.

### **The job.**

Volvo Powertrain selected Volvo IT as its development partner in light of previous co-operation in the area of process control and a solid understanding of host systems, as well as thorough competence with applications on the shop floor.

Volvo IT's process control department works with everything from complete production sections, storage systems and transport solutions to "small" applications, such as ordering applications on a hand-held computer.

### **Implementation.**

Work on the project began by gathering requirements, after which suitable hardware was identified. Volvo IT researched the market for hand-held computers in order to find robust models suitable to an industrial environment. Various tests were performed in connection with this search.

In parallel to this, several conventional scanners and terminals were also tested. An evaluation and assessment was then performed, whereby the alternatives could be compared in terms of both their technology and economy. In this context, it was important to look at the overall cost in light of the hardware, development and maintenance costs.

Volvo Powertrain soon realized the advantages of hand-held computer technology, since it turned out that the level of costs for this hand-held computer technology was in line with the costs for conventional technology.

Work continued for a total of about six months. The solution was tested at the plant for one month with good results. It was then decided that a total of 25 hand-held computers would be used to start with.

### **Results.**

The project was implemented within the framework of its budget and timeline. With the help of the purchasing department at Volvo, the price of the selected hand-held computers could be brought below the budgeted level.

The benefits for Volvo Powertrain are primarily in its modified logistics processes, in which the hand-held computer is an important link in the chain. Even lead times and quality have been positively affected. But the biggest benefits are due to the reduced stock, and nowadays these new logistics processes are a reality in every part of the plant.

Positive reactions have come from operators using these hand-held computers in their everyday activities. They have been the source of ideas about new areas of application in many instances. These will be able to contribute additional benefits. Thus, the project applying hand-held computers to ordering materials seems to be generating unanticipated "spin-off" effects.

### **Experience.**

Technical development in the area of hand-held computers is proceeding at a frenzied pace.

Solutions based on the Pocket PC operating system, together with .NET technology, will provide many new opportunities. Because of this, it's important not to become obsessed with the idea of using technology from third party suppliers

Existing system solutions represent an extensive and collective understanding of the logic and rules of the business. They constitute a significant asset and are one reason for conducting business in the first place. Thus, major efforts should be devoted to managing "the legacy" and instead supplement existing systems with new technology for mobile access and display. It is often possible to connect systems relatively easily with limited costs of development.

But one requirement is that there is a deep understanding of the existing systems and that a well-planned architecture is available for system integration.

### **The future.**

Several hand-held computers adapted to the industry have surfaced on the market, which hopefully means that the price level will continue to drop. This will result in the identification and development of additional applications.

In the future, the mobile operator on the shop floor will have access to all sorts of information about his or her daily work, from material orders, alarms, instructions and e-mail.

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