Turbine Monitoring System

Secure Remote Access Delivers Increase in Sales

By utilising Open Source Software (OSS) for its embedded vibration monitoring system, Prosig have delivered improved efficiency to power plant maintenance companies by providing remote access to the analysis of on-site information via the Internet. This reduces end user costs and effectiveness and meets the needs of the rapidly changing, global power industry where the maintenance organisation is often no longer local to the power station.

PROSIG Ltd produces noise, vibration & harshness (NVH), acoustic, vibration, health & condition monitoring and refinement solutions for the scientific and engineering applications. The product range encompasses systems for noise, vibration & harshness (NVH) tests, data acquisition, vehicle & product refinement, digital signal processing, turbine & plant monitoring, environmental testing, vibration monitoring, structural test & animation, rotating machinery analysis, and shock & vibration measurement. The company supplies the aerospace, automotive, military, and power generation industry sectors.

Prosig Ltd	
Employees	32
Turnover	2.5 M Euro
Industrial Sector	Instrumentation for measurement – NACE code 3320
Technology Introduced	Embedded Internet using Open Source Software

ECONOMIC BENEFITS
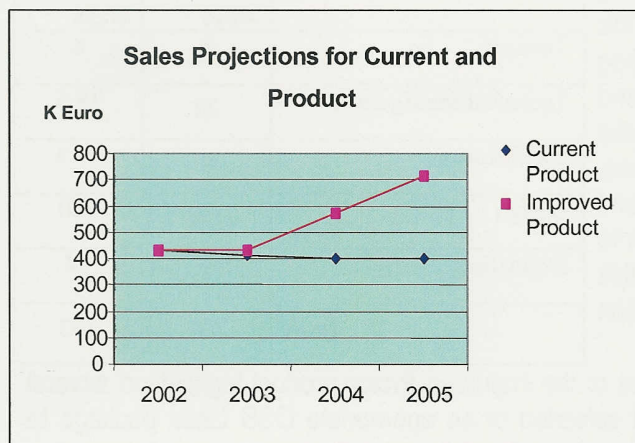
The increasing cost pressures amongst Power Generation companies combined with changes in the supply for power generation monitoring equipment has resulted in static / declining sales for the company's current product. The introduction of embedded Internet capability offering highly secure access to power generation monitoring information provides a market leading technology edge for the company, which has opened up new export opportunities. The improved product performance will enable the company to increase sales in a highly competitive international market place, and will generate a return on investment of over 133% in 2.5 years.

PRODUCT IMPROVEMENTS

The introduction of embedded Internet technology based on OSS has delivered:

- Worldwide access to critical process data using secure Virtual Private Network (VPN) facilities.
- E-mail generation of alarms and status information to users and maintenance engineers.
- Remote re-configuration of the system.
- Remote graphical access of online or archive information.

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How to go about it

The previous version of the Protor equipment was based on transputer technology, and was not suitable for the next generation product because of the threat of obsolescence. The company therefore required that a new embedded processor and software solution be developed that met the following key criteria: low cost to improve competitiveness, high reliability, and high levels of maintainability and support.

The company implemented an embedded Pentium processor with solid-state disk technology (DiskOnChip) and USB capabilities to provide the main processing platform for the improved Protor equipment. The selection of an the Linux OS was influenced by the need for high reliability and data availability, access to OS standards which meant that the system development was based on a stable design solution, and the access to source code which provided the company with the capability to investigate any reported issues in detail during operation if required.

TECHNICAL IMPLEMENTATION

The company undertook the product development using largely its own in-house design capabilities, with the knowledge gathering and development process being assisted by review of texts, internet publications and support from various OS forums. The major design tasks included the analysis of various embedded Linux options, and the development of drivers for the disk on chip and USB interfaces. The implementation of the VPN solution to provide secure Internet access was undertaken as this offered a very secure and relatively simple implementation solution for this critical feature.

Task	Planned Days	Actual Days
Training	8	8
Technical Management	20	18.5
Specification	40	41.5
Design	150	160
Evaluation	50	64
Total	**268**	**292**

The company's positive experiences in the development of the improved Protor product highlighted several lessons. These included the importance of the careful selection of an appropriate OSS Linux package to facilitate real time options, the benefits of using VPN secure system links, and the importance of accessing various OS web sites to gain further information and guidance during the design process. The importance of gaining this in-house technical knowledge is considered crucial to allow future system developments and maintenance.

BENEFITING FROM BEST PRACTICE

EC IST Programmes aim to improve the competitiveness of European enterprises by promoting the adoption of under deployed or emerging technologies. This will enable these enterprises to increase their competitiveness and enhance their economic growth. The demonstrator described here is one example of the many Best Practice projects undertaken.

Further details of projects covering a wide span of applications, industry sectors and technologies can be found on www. eujoin.org

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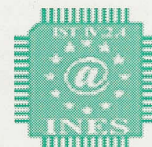
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