

At a Glance

Celtrak is a leading provider of **INTELLIGENT TRANSPORT SOLUTIONS (ITS)**, utilising telemetry technology to create enhanced value propositions for corporate clients in key industrial sectors, such as utilities, construction and climate control transportation.

The aim of this project was to reduce the environmental burden of the Celtrak GPS tracking system by using less raw material, using more benign WEEE compliant raw materials, reducing energy use during the product's life cycle, incorporating an optional solar powered module, and extending the life cycle of the product by leasing it and designing it to be up-cycled/ upgraded.

Both environmental and economic benefits were achieved, for example:

- A new GPS tracking unit is less than 20% of the weight of the original, using less than 50% of the energy in use and sleep mode
- 24% of GPS units sold in the "Track & Trace" market in 2006 were taken back from the market and upgraded
- The product life cycle has been extended by enabling the product to be upgraded remotely during its lifecycle and has been designed to be backward-compatible to extend the life of units
- Environmental awareness of staff has improved and a green procurement policy is being implemented in Celtrak
- The units that were upgraded cost the company approximately 50% of the price of a virgin unit to supply, the new unit is smaller and can be concealed in vehicles more easily thus increasing the attractiveness to customers.

CGPP3 2005/3

Celtrak - Extended Life Cycle of GPS Tracking System



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Celtrak is a services company that provides end-to-end telematics-enabled business information solutions to thousands of vehicles for more than 200 business customers in a wide range of industries. Celtrak leverages GPS (Global Positioning System) and GPRS (General Packet Radio Service) tracking systems and information exchange technology with internet-based software applications to add value to information being presented to the client. Celtrak GPS and GPRS devices provide customers with critical management information on the utilisation of their remote assets (e.g. vehicles, plant, and other equipment) so they can optimise their use and performance.

Aim of this Project

The aim of this project is to reduce the environmental burden of the Celtrak GPS tracking system by using less raw material, using more benign WEEE compliant raw materials, reducing energy use during the product's life cycle, incorporating an optional solar powered module, and extending the life cycle of the product by leasing it and designing it to be up-cycled/ upgraded. Celtrak undertook this redesign project with economic and environmental considerations as its drivers including WEEE legislative compliance. The following objectives were set for the redesign of the GPS tracking device to extend its life cycle:

- Reduce raw material content
- Instil and internalise transferable eco-design principles
- Reduce the housing size and weight of the GPS tracking device
- Design more environmentally benign materials into the product
- Reduce energy consumption of the unit and consider alternative energy sources

- Redesign the product for disassembly, reuse and upgrade
- Deliver environmental awareness training to staff and design and implement a company green procurement policy
- Demonstrate effective use of eco-indicators to measure improved performance
- Extending the life cycle of the Celtrak GPS product.

Project Description

This project commenced in January 2006 for a period of 18 months. Shane Mooney from SPeco Services Ltd. was employed as Project Manager. Celtrak commenced the project by having a brainstorming session for a half day off-site chaired by the Project Manager and attended by relevant stakeholders from various business units including Business Development, Research & Development, and Environmental Management. In the first instance, potential environmental projects with CGPP benefits were identified. A list of these projects was generated and incorporated into a matrix. The matrix scored the various projects for feasibility against a set of criteria including: process modification, product modification, material substitution/ elimination/reduction, energy management, recycling, and transferability. It was agreed to submit a plan to undertake a redesign to extend the life cycle of the GPS Tracking System taking economic and environmental considerations as its drivers, including WEEE legislative compliance, though RoHS compliance proved more applicable.

The Project Manager and a cross-functional team undertook management of the project with representatives from Business Development, Hardware Design, Software Design and Finance, for the duration of the project (18 months). Eco-Design training took place at the start of the project and it was repeated for new engineers towards the end of the project.



CT Unit to be upgraded

Achievements

The project has been successful at two levels **environmental benefits and economic and cost-saving** achievements.

The range of **environmental** benefits:

- A new GPS tracking unit is less than 20% of the weight of the original
- A new unit uses less than 50% of the energy in use and sleep mode which extends the duration that the unit can work on typical vehicle battery up to 3.5 months
- Celtrak staff have been trained in eco-design principles
- 24% of GPS units sold in the "Track & Trace" market in 2006 were taken back from the market and upgraded
- There are benefits to the environment and profitability by upgrading old units rather than manufacturing virgin units
- The product life cycle has been extended by enabling the product to be upgraded remotely during its lifecycle
- The new product has been designed to be backward-compatible to extend the life of units that are currently in use
- Environmental awareness of staff has improved and a green procurement policy is being implemented in Celtrak.

The range of **economic** and cost-saving achievements:

- The units that were upgraded cost the company approximately 50% of the price of a virgin unit to supply
- The new unit is smaller and can be concealed in vehicles more easily thus increasing the attractiveness to customers
- The extended life cycle, due to the remote software upgrade feature of the product, improves the return on investment for the customer thus making the product more competitive in the market
- The enhanced processing power of the new unit enables more processing of data and fewer communications with the base thus reducing communication and running costs of the unit for the client.

Observations

Participation in the CGPP project was very positive for Celtrak. The project focused efforts to save material, energy, and reject components by taking a holistic approach to the product life cycle. The knowledge on eco-design has become embedded in the skills-set of the engineers. The external support from the consultant who assisted in the project management transferred knowledge in-house to Celtrak relating to Directives and sources of information. The



New CT Unit designed and operational

provision of a Green Procurement Policy was a collaboration between the Finance Department and external consulting assistance. Overall, the level of knowledge on Cleaner Technologies, and the responsibilities of companies under the environmental regulations, has come to the fore in the minds of management. The company is currently in communication with some customers on the subject of environmental design and reduced environmental impact and this is seen as a potential market differentiator.

Lessons

The balancing of resources in an SME is a challenge for all projects and ensuring adequate resource provision for the duration of the project is important. Given that SMEs tend to have more limited budget scope compared to larger organisations, attaining funding and resource commitment for projects such as this can be challenging. However, projects that are strategically aligned to business goals and which demonstrate a return on investment and positive benefits for the customer should face less challenges in getting internal funding and buy-in. Also, it is important to undertake extensive research at the start of the project to establish if all elements can be delivered upon.

Further Information

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Cleaner Greener Production Programme

The Cleaner Greener Production Programme (CGPP) of the EPA was funded under the National Development Plan 2000 – 2006. The CGPP was launched in 2001 as a grant scheme to Irish organisations to implement cleaner greener practices while achieving significant cost savings.

Cleaner Greener Production is the application of integrated preventive environmental strategies to processes, products and services to increase overall efficiency and reduce risks to humans and the environment.

- Production processes: conserving raw materials and energy, eliminating toxic raw materials, and reducing the quantity and toxicity of all emissions and wastes.
- Products: reducing negative impacts along the life cycle of a product, from raw materials extraction to its ultimate disposal.
- Services: incorporating environmental concerns into designing and delivering services.

The programme aims are focussed on avoiding and preventing adverse environmental impact rather than treating or cleaning up afterwards. This approach brings better economic and environmental efficiency.

Under Phase 3 of CGPP, a number of organisations were funded from a variety of sectors (e.g. chemicals, food, metals, electronics, service etc.). Major achievements such as reductions in environmental impacts, energy savings, economic savings, increased competitiveness and patent applications resulted from Phase 3.

The programme will continue to be funded by the EPA in the NDP 2007-2013.

This case study report is one of the reports available from the companies that participated in the third phase of the Cleaner Greener Production Programme. A summary of all the projects and CD containing all the reports are also available.

More information on the programme is available from the EPA:

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