

At a Glance

The Dublin-based SME MicroPro has designed and manufactured a zero-waste, high-specification PC. **iameco** is the product of a year-long R&D effort aimed at upgrading the already significantly environmental MicroPro XPc into the first PC system to meet the stringent requirements of the European Eco-Label for Computers. The **iameco** prototype is undergoing a series of technical tests that will allow accreditation as Europe's 1st genuine Green Computer.

The PC uses only reusable components, can be dismantled by a single worker in 11 minutes, is energy-efficient, and free of hazardous materials, such as brominated flame retardants, PVCs and heavy metals like lead, cadmium and mercury that have been regularly used in computer manufacture for years.

The PC housing is manufactured from recycled aluminium. This maximises energy saving, as minimal additional energy is required for re-manufacture. No plastic is used in the computer housing. The parts and components have been carefully selected to meet RoHS requirements and to minimise electricity consumption, electromagnetic emissions and noise.

Reusable materials and recyclable packaging are also used, resulting in zero waste. These computers are one third the size of standard computers and have been designed to last up to three times longer than traditional PCs, with fully upgradable Intel motherboards which uses a third less power than a mainstream computer. Modular design, allows you to take out and replace an individual part when it fails, as opposed to the whole machine, maximising the options for upgrading and reuse of the PCs.

CGPP2004/12

Zero Waste Personal Computer (ZWPC) Project



*MicroPro Computers,
98 Nutgrove Avenue, Rathfarnham, Co. Dublin*

Multimedia Computer Systems Ltd. (MicroPro Computers) was set up by Paul Maher and Anne Galligan in 1991, and is inspired by a strong environmental ethos. Today, MicroPro is a wholly Irish-owned SME employing 22 staff. It is a company certified to ISO14001 and 9001 quality standards. The company manufactures and retails its own range of computer systems (carrying the Guaranteed Irish Logo), software packages, networking and peripherals. It also provides a repair and maintenance service, which helps to extend the operational lifetime of equipment sold.



MicroPro Directors, Paul Maher and Anne Galligan

Aim of this Project

The aim of the project was to design and manufacture a prototype computer that would meet the stringent requirements of the European Eco-Label for computers, that is not to say that the prototype would not exceed these standards, or that it would not also meet other standards. However, the Eco-Label represents a "bottom-line" criteria that MicroPro believes should be met, before any European computer can call itself "green".

To achieve this, it was necessary to redesign the conventional computer, based on extending the operational life of the hardware via an upgradable chassis with modular interface port design, using raw materials and assembly techniques to increase the recycling and reuse options at end of life and increasing energy efficiency. In order to establish the rationale behind the actions taken to achieve this, it was

necessary to examine what the environmental impacts associated with computers actually are. This provided the context to the changes implemented to not only the computer itself but also the recommendations on business practice to those involved in the selling of computers.

Project Description

In 2003 MicroPro joined the Project HEATSUN partnership, and began the preliminary work required to develop the iameco Prototype. This mainly involved an ongoing dialogue with other project partners, aimed at agreeing the criteria that should apply to the new Prototype. Project HEATSUN commissioned additional R&D support from the University of Limerick, Department of Electronic and Computer Engineering, and from KERP, Centre of Excellence in Electronic Recycling and Eco-Design, based in Vienna.



Duncan Stewart interviews Paul Maher for the RTE environmental programme, Eco-Eye

In 2004, MicroPro was awarded funding under the Cleaner Greener Production Programme to implement the design and manufacture of the Prototype Zero Waste Personal Computer. The new Prototype was to be based on the European Eco-Label criteria, but also incorporate best practise derived from previous manufacturing and marketing experience.

The development of the iameco Prototype included research, design and development to achieve the following advances on conventional PC design with:

The housing was designed for manufacture from recycled aluminium, thereby exceeding the reuse and recycling requirements of the Eco-Label criteria. This approach maximised energy saving, as minimal additional energy is required for re-manufacture with recycled aluminium. No plastic is used in the computer housing.

Parts and components were carefully selected to meet RoHS requirements and to minimise electricity consumption, electromagnetic emissions and noise. They contain no hazardous materials such as PVCs, flame-retardants, and heavy metals. The use of an upgradable chassis

and modular internal port design maximises the options for upgrading and reuse of the PCs.

Monitors keyboards and mice are mainly made of wood from renewable forests, with a choice of ash, beech or sapele. One planned improvement is the substitution of all peripheral plastics in either bio-plastic (made from a waste by-product of paper production) or recycled plastics.

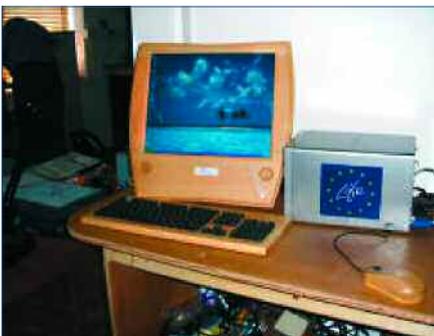
The **iameco** PC's are up to one third the size of standard computers and have been designed to last up to three times longer, with fully upgradable Intel motherboards which uses a third less power than a mainstream computer.

The modular design is aimed at ensuring that you can take out and replace an individual part when it fails (as opposed to changing the whole machine) maximising the options for upgrading and reuse of the PCs using recyclable materials, and reducing energy consumption by up to 90% in relation to earlier PC's, without any noticeable effect on functionality and processing power. To ensure superior performance, iameco is supplied with a 160MB hard drive and have 512MB of RAM plus a dual layer DVD burner.

Testing of the iameco Prototype for the Eco-Label is underway. iameco aims to comply with the Energy Using Products (EuP) Directive. The specific PC standards for this Directive have not been published at the time of writing. It is expected that they will be consistent with Eco-Label standards. Test documentation will be submitted to the NSAI for accreditation under the Eco-Label criteria, as soon as they are completed. After this, the iameco range will be in line for a major market expansion, as the first certified European Green Computer.

Achievements

Thanks to the Cleaner Greener Production Programme and the LIFE Environment Programme for their support. MicroPro has designed and developed the first PC to meet the criteria of the European Eco-Label for computers.



iameco PC

iameco also incorporates a new approach to PC design and service. In addition to the superior environmental specification, the high level of upgradability and life extension of the product will make it possible for users to

upgrade the product without having to dispose of the equipment. It is, in effect, practically waste-free. It's a space-saver in people's homes as well as saving on raw materials protecting the environment and the resources of the world today.

Observations

iameco has been positively received at seminars in Ireland and throughout Europe, including a European Commission energy conference, a meeting of the United Nations' StEP (Solving the E-Waste Problem) Campaign and a presentation at the European Commission Delegation in Vienna. Besides these seminars many other events were organised to promote and disseminate the experiences and conclusion of the Project, including a generic web site (www.iameco.com).

Lessons

The development and manufacture of environmentally aware products by a small and local company is possible, as long as they receive adequate support from local, national and European partners, and additional funding to finance R&D and Project Management, which they cannot afford to finance from ordinary commercial income. The ZWPC Project is a good example of how the European Commission, Government agencies and SME's can create a genuine opportunity for growth and competitiveness, on the basis of environmental innovation.

More Information

For more information on this project please contact:

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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 2 of CGPP, 22 organisations were funded from a variety of sectors (e.g. chemicals, food, metals, electronics, service). The total achievements from the projects for the participating organisations included annual reductions of 250,000 tonnes in input/output streams (water/waste water), 660 MWh energy reduction and €1.6m cost savings.

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 second 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:

Ms. Lisa Sheils or Dr Brian Donlon,
Environmental Protection Agency,
Richview, Clonskeagh Rd., Dublin 14, Ireland.
www.epa.ie/researchandeducation/research/

Programme Managers...

The Clean Technology Centre (CTC) at Cork Institute of Technology was appointed to manage the programme. Established in 1991, the CTC is now nationally and internationally regarded as a centre of excellence in cleaner production, environmental management and eco-innovation across a range of industrial sectors.

