PORTABLE BLOOD FLOW MONITOR

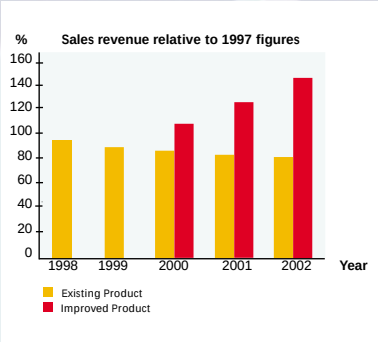
mixed ASIC technology improves clinical assessment and boosts sales

Huntleigh Diagnostics successfully adopted mixed signal application specific integrated circuit (ASIC) technology to improve its blood flow diagnostic product range. The new ASIC-based portable Dopplex Assist product with its advanced vascular assessment features will enable the company to improve its competitive position and increase its annual sales revenue of the product by 60% within 3 years. The new product allows Huntleigh Diagnostics to compete with expensive desktop systems and penetrate new markets.

Huntleigh Diagnostics Ltd designs, develops, manufactures and distributes electronic medical diagnostic equipment in the healthcare market. The company's products include a range of Doppler ultrasound handheld instruments, for cardio-vascular and foetal assessments, and a range of foetal monitors. These products are aimed at the healthcare market, including primary care suppliers. Huntleigh Diagnostics markets its products world-wide.

HUNTLEIGH DIAGNOSTIC LTD	
Employees	130
Turnover	9 M€/year
Industrial Sector	Medical instruments NACE code: 33
Technical expertise before the project	Microcontroller
Technical expertise at the end of the project	Mixed signal ASIC

SIGNIFICANT ECONOMIC BENEFITS



The adoption of ASIC technology has enabled Huntleigh Diagnostics to improve its vascular assessment products which were coming under increasing competition and price pressures. The ASIC-based Dopplex Assist product with its innovative features and diagnostic capabilities will not only compete with portable products, but will enable the performance of clinical assessment tasks which were only possible with expensive laboratory based equipment. This will enable the company to strengthen its competitive position, penetrate new markets, especially in the primary healthcare segment, and increase its sales as shown in the chart. The prototype development was funded under the FUSE programme at a cost of 174 K€. The increased sales will allow the company to recover these costs within 12 months. The return on investment is estimated at 340% over 4 years of sales. The industrialisation costs were 150 K€.

PRODUCT IMPROVEMENTS

Huntleigh's existing portable Dopplex range of products were based on microcontroller and digital signal processor (DSP) technologies. These products did not have sufficient features to differentiate them from the competition and provide the necessary diagnostic capabilities demanded by clinicians. The ASIC was incorporated in the vascular module of the Dopplex Assist new product which can also host foetal monitoring and other diagnostic modules.
The utilisation of mixed ASIC technology enabled the company to introduce significant vascular diagnostic features and product enhancements including:

- Fast digital signal processing to produce a full sonogram illustrating blood flow profile over time.
- Colour display of sonogram enabling improved clinical diagnosis.
- Selectable signal processing parameters.
- Replacement of an expensive vascular workstation with lower cost portable equipment.

How to go about it

CHOOSING THE RIGHT TECHNOLOGY

Huntleigh Diagnostics selected mixed ASIC technology to implement the improvements in its vascular diagnostic product because it offered the following advantages:

- Optimum solution for the required high speed signal processing functions.
- 65% lower components costs than equivalent discrete and DSP solutions.
- Integration of analogue and digital functions improved reliability and reduced size of printed board.
- Reduced overall power consumption enabling extended battery life.
- Availability of low cost ASIC prototype manufacturing services.
- Design security.

PROJECT OVERVIEW	
Main Activity	Mixed ASIC development
Duration	21 months
Effort	554 person days
Overall prototype development costs	174 K€

A PARTNERSHIP FOR SUCCESS

Huntleigh Diagnostics conducted the project as a FUSE application experiment with the support of suitable ASIC design and manufacturing subcontractors: The subcontractors provided support in the following areas:

- Training in ASIC development.
- System specification and modelling.
- ASIC design and verification.
- ASIC prototype fabrication and test solution.
- Test methodology and prototype evaluation.

The main project tasks, effort and costs are listed in the adjacent table.

EFFORT & COST		
Task	**Company's effort (days)**	**Subcontractors' costs (K€)**
Management	81	1.7
Training	71	8.2
Specifications	80	12.0
Design	239	33.4
Fabrication		25.0
Evaluation	83	2.2
Total	**554**	**82.5**

YOU CAN ALSO BENEFIT FROM MICROELECTRONICS

Mixed ASIC technology has provided Huntleigh Diagnostics with the means of improving its vascular diagnostic products and its competitive position. You can also achieve significant benefits by acquiring the right microelectronics technology and utilising it in your product or manufacturing process. You can get help from FUSE to realise this.

FUSE is a technology transfer programme, funded by the European Commission to stimulate the wider use of microelectronics technologies by European enterprises to increase their competitiveness and enhance their economic growth. The demonstrator described here is one of many examples in the public FUSE portfolio covering the whole spectrum of microelectronics technologies and spanning a wide range of applications and industry sectors.

FUSE provides you with:

- ***Best practice in acquiring specific microelectronics technologies and conducting full development projects through the FUSE portfolio of real life demonstrator documents.***
- ***Local training and expert support to plan your innovation realistically and help you conduct your project successfully.***

Further information and support relating to this and other demonstrators can be obtained from the addresses below.

The Technology Transfer Node
Centre for Electronic Product Engineering UGCS Ltd,
University of Glamorgan Pontypridd, Mid Glamorgan,
CF37 1DL, United Kingdom.
Tel: +44 1443 4824542
Fax: +44 1443 4824541
Email: mawahab@glam.ac.uk

The Company
HNE Diagnostics
35 Portmanmoor Road Industrial Estate
Cardiff, CF2 2HB,
United Kingdom.

The FUSE Secretariat
European Commission
DG Information Society – N105
200, rue de la Loi
B-1049 Brussels
Belgium