

# LCD RACING CAR DASHBOARD

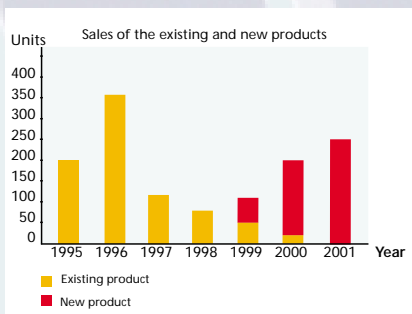
## FPGA-based system enables doubling of profit margin

*Tharsys produced an electronic dashboard for racing cars which utilises a large number of discrete components and light-emitting diodes (LED). In this project, the company has successfully developed an advanced dashboard by utilising field-programmable gate array (FPGA) technology and a custom LCD display. This solution reduced the manufacturing costs by 10% and resulted in significant feature enhancements which will enable the company to increase its sales and regain its market position.*

Tharsys designs and manufactures electronic equipment and display systems for space, aeronautic and automotive applications. THARSYS produces digital dashboards, looms, engine control units, safety rain lights, gear box ratio test units and single board computers. The production volume is typically 400 parts per year for each type of product.

THARSYS	
Employees	6
Turnover	550 K€/year
Industrial Sector	Automotive products NACE code: 31
Technical expertise before the project	PCB, discrete components and PLDs
Technical expertise at the end of the project	FPGA, VHDL, custom LCD

### SIGNIFICANT ECONOMIC BENEFITS



Sales of the company's racing car dashboard, which is used for training, were declining due to increased competition. With the improved FPGA based product, the company will be able to recover its market position and increase its sales as shown in the chart. The new product will command a higher selling price due to its improved features. As a result of this and the reduction in manufacturing costs by 10%, the profit margin will increase by a factor of 2. The development work, up to the prototype stage, was funded under the FUSE programme at a total cost 107 K€. The product industrialisation required a further 38 K€. These costs will be recovered in 2 years of sales. The return on investment is estimated at 200% over the product's 4 year lifetime.

### PRODUCT IMPROVEMENTS

The existing racing car dashboard uses a large number of discrete components and LEDs, and has limited features. The improved dashboard is highly versatile and utilises a custom graphic liquid crystal display (LCD) driven by an FPGA. In addition to a significant reduction in the number of components and manufacturing costs, the new dashboard has advanced features including:

- Race, road and training functional modes.
- User selectable screen configurations.
- Programmable parameters, such as the trigger value for the gear shaft alarm.
- Data logging, fast parallel data dump functions and a CAN bus interface.



# How to go about it

## CHOOSING THE RIGHT TECHNOLOGY

Tharsys has selected FPGA technology to implement the electronic functions of the dashboard because it offered the following benefits:

- Suitable technology step for Tharsys' engineers.
- The unit FPGA cost is compatible with the target price of the product.
- Significant reduction in the number of components compared to the existing product.
- Ability to drive an LCD.
- The flexibility and ease of reprogramming allows the dashboard to be customised to the requirements of individual users
- Using VHDL to implement the FPGA design enables design reuse and simplifies the process of developing new products.

### PROJECT OVERVIEW

<b>Main Activity</b>	FPGA and custom LCD
<b>Duration</b>	16 months
<b>Effort</b>	472 person days
<b>Overall prototype development costs</b>	107 K€

## A PARTNERSHIP FOR SUCCESS

The new racing car dashboard was developed by Tharsys as a FUSE application experiment. The company's staff participated in the tasks of the project with the support of suitable subcontractors.

The subcontractors provided:

- Training on FPGA design and development.
- FPGA design assistance.
- Support in the design of the LCD display.
- Manufacturing of the LCD display.

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

### EFFORT & COST

Task	Company's effort (days)	Subcontractors' costs (K€)
Management	40	
Specification	105	
Training	7	1.5
Design	80	8.5
Evaluation	240	2.5
<b>Total</b>	<b>472</b>	<b>12.5</b>

## YOU CAN ALSO BENEFIT FROM MICROELECTRONICS

FPGA technology provided Tharsys with the means of improving its product and enhancing its market 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.*

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