ASIC produces 350% return

By adopting mixed signal ASIC (application specific integrated circuit) technology, Grosse Webereimaschinen has reduced the production costs of its new actuator control system for Jacquard weaving machines by 17% whilst improving the performance and reliability of the equipment. The product improvements will significantly improve the company’s international competitiveness and will result in an increased market share.

Grosse Webereimaschinen GmbH specialises in the design, manufacture and sales of Jacquard weaving equipment, including Jacquard machines, CAD systems, card punch systems and card readers for use in the textile industry.

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<th>GROSSE WEBEREIMASCHINEN GMBH</th>
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Grosse realised that the continuing consolidation of textile manufacturers would result in increasing pressures on company prices for the company to maintain its competitiveness. The introduction of the ASIC device will allow the company to achieve a reduction in the controller’s production costs enabling the company to protect its market position, increase sales and improve profitability. The prototype development cost was funded by the FUSE project at a cost of 153.19 K €. The increased sales and a reduction of production costs will enable the company to recover this investment within 17 months. The expected return on investment will exceed 340% over 5 years. The industrialisation costs were 230 K €.

The existing Jacquard machine uses discrete logic to control up to 13,000 hook control solenoids, limiting the ability of the company to reduce the controller’s costs significantly. The introduction of a mixed ASIC technology has succeeded in reducing the controller’s cost by 17%, and improving the functionality of its Jacquard machines by the provision of the following features:

- A doubling of the data transmission rate, which in combination with a better error correction and detection system, will allow an increase in the size of the machines to be controlled.
- Simplification of the power supply requirements resulting in the removal of one supply voltage source.
- An increase in reliability due to the reduction in the number of components and the power consumption.
- Improved diagnostics allowing the status of each solenoid to be determined.
Grosse used a mixed ASIC device to implement the improvement in its Jacquard machine because it offered the following benefits:

- A significant reduction in the cost of the controller system.
- The ability to reduce the size of the control unit.
- Increased security and long term availability of the components.
- The ability to incorporate functional improvements, including individual solenoid diagnosis, whilst reducing the power supply consumption.

Grosse conducted the project as a FUSE application experiment. The company's staff participated in all of the project tasks in collaboration with selected subcontractors. The subcontractors provided support in:

- The creation of the device design specification.
- Training in VHDL design methods.
- Development of the ASIC design and layout.
- Design simulation.
- Prototype device fabrication and test.

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

Mixed signal ASIC technology provided Grosse with the means of improving its Jacquard machines 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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