SPARTAN™ FPGA

ESAOTE BIOMEDICA

A Spartan Success Story

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When the designers at Esaote Biomedica (Genoa, Italy) were looking for a logic solution that provided dual-port RAM, they found that only the Spartan Series of FPGAs from Xilinx met their cost requirements. Esaote was able to begin their design even before the production devices were available, because they were one of the first to receive the Alliance Series version 1.4 development system and Spartan device samples. As a result, Esaote placed the first volume order for Spartan devices.

The Esaote Florence R&D team is developing the next-generation of diagnostic ultrasound equipment. The target is a portable ultrasound scanner that is light, small, easy-to-use, and fast to produce results. The core of the application needs to process a high volume of data very fast, using dual-port RAM, at low power consumption and low cost. This is a perfect application for the Spartan family.

Esaote originally considered the XC4000XL FPGA family, taking advantage of the on-chip Select-RAM and high speed. True dual-port RAM was built by using the built-in dual-port read capability of the Xilinx Select-RAM and then adding a second block of RAM for dual-port write. However, the resulting implementation did not meet cost targets. In October 1997, the Xilinx representative firm working with Esaote, Silverstar-Celdis, presented advance information on the Spartan Series. The no-compromises Spartan family met the technical, performance, and cost requirements of the system. The Spartan solution was more cost-effective than even an ASIC alternative.

Esaote was able to prototype their design using the 5-V Spartan XCS20-3TQ144 samples. For implementation software, they used Alliance 1.4, which provided software support even before the Spartan announcement. Esaote engineers also used the beta version of the Xilinx CORE Generator to create some of their DSP functions.

Esaote has always paid careful attention to the issues associated with the cost of health care, as demonstrated by its cost-effective family of products. In this design, there are 32 Spartan devices per board, and two boards per system. With Esaote expecting to build 1,000 systems, the total Spartan usage is 64,000 devices. The Spartan family is what made this low-cost product feasible.

Views from Esaote Biomedia's manufacturing facilities.

Esaote Background

The Esaote Group designs, manufactures, markets, and services non-invasive diagnostic medical imaging systems and specialty medical monitoring equipment worldwide. The Esaote Group is the leading European manufacturer of diagnostic ultrasound equipment and the world leader in Dedicated Magnetic Resonance Imaging. In Italy the Esaote Group is the leading provider of electronic diagnostic medical equipment. Group headquarters are located in Genoa, Italy.

Esaote's technologically-advanced imaging products include a broad line of diagnostic ultrasound machines and an innovative Magnetic Resonance Imaging (MRI) system designed specifically to scan joints and extremities (Artoscan). The non-imaging products include electrocardiograph (EKG) and electroencephalograph (EEG) diagnostic monitors.

For more information on Esaote see their website at www.esaote.com ◆