

Topcon Tackles Eye Disease Screening with AMD Adaptive Computing Technology

AMD Kintex[™] FPGAs Drive Fast Image Processing for Quick Disease Diagnosis

PARTNER

HTOPCON Healthcare

INDUSTRY

Healthcare

CHALLENGES

Proper screening for eye diseases like glaucoma and diabetic retinopathy is expensive and complex.

SOLUTION

Topcon has created a variety of scanning and imaging tools that make diagnostics easier and more accessible to a broader range of eyecare professionals.

RESULTS

AMD FPGAs deliver fast data processing that makes 3D OCT imaging possible.

AMD TECHNOLOGY AT A GLANCE

AMD Kintex and Virtex FPGA

Topcon makes high-end eye care equipment, including 3D OCT systems, that offer comprehensive screening for glaucoma, diabetic retinopathy, and other diseases. The equipment has been primarily sold to hospitals, but the company is extending its reach to optometrists, and other professionals offering preventative eyecare services.

Topcon helps reduce costs associated with screening, detection, referral, and treatment of retinal eye disease.

"The eye is the window of health into the human body," said Hiroaki Okada, executive senior manager in the Eye Care Technology Development Department at Topcon. "If something is happening to our bodies, such as heart disease or diabetes, our eyes are often the first to show signs of these conditions. Early diagnosis is most important."

CHALLENGE

Ease-of-use is one of the biggest challenges in this space, where the equipment can be quite complex, but it's one of the most important aspects of Topcon products.

The operator can automatically take a picture with one touch today, and the company plans to drive the technology toward automatic diagnosis products in the future, driven by AI.

SOLUTION

AMD helps Topcon equipment scan the fundus area of the eye and make 3D OCT imaging possible. Topcon is using Kintex™ FPGAs to process the imaging data on its Maestro 2 and Triton product lines.

The Topcon 3D OCT Maestro 2 provides ophthalmologists with an advanced automated optical coherence tomography system and fundus camera for assessing optical pathologies. The full-color camera offers 2D pictures in high resolution.

The Topcon Triton system uses sweptsource technology to allow visualization into the deepest layers of the eye – even through cataracts, hemorrhages, gas bubbles, and other media opacities, making it possible for more patients to be imaged. The fast, 100 kHz scanning speed results in fewer motion artifacts and crisp image quality.

Topcon started using AMD Virtex[™] 4FPGAs around 2005, and recently migrated to AMD Kintex[™] 7 FPGAs. AMD recently extended the availability of Kintex 7 and all 7series products until at least 2035.

Kintex 7 FPGAs provide exceptional price/performance/watt at 28nm while delivering fast processing, cost-effective packaging, and support for mainstream standards like PCIe[®] Gen3 and 10 Gigabit Ethernet. The Kintex 7 family is ideal for



flat panel displays, video over IP, and other imaging solutions.

"When we were considering technology for our products, only AMD FPGAs satisfied our specifications for performance and latency," Okada said. "AMD's performance was #1 for us, and they are still #1 today, in our opinion. Since that time, Topcon's OCT image processing has been the fastest in the world."

RESULT

Akira Takahashi, senior expert of emerging products development in the Eye Care Technology Department at Topcon, said the company is currently using AI to help with disease diagnosis, but that it hopes to use this technology in the future to help analyze data, make the equipment easier to use, and enable wider-angle scanning. Currently, most fundus cameras are limited to a 45° scanning area, but in the future, 90° or more WF (Wide Field) or 110° or more UWF (Ultra-Wide Field) scanning may be possible.

About Topcon

Topcon Corporation is a global leader in manufacturing of technology designed to address essential challenges society faces in healthcare, agriculture, and infrastructure. Topcon specializes in developing optical, sensing, and control solutions powered by leading digital transformation technologies for these industries. Topcon addresses eye disease among the aging population by empowering providers with advanced imaging, diagnostic solutions, and intelligent data technology. For more information, please visit: www.topconhealthcare.jp. "Our product wouldn't be possible without AMD," Okada said. "We can be the world's number one retinal scanning equipment company because AMD FPGAs exist."

He added that support from AMD and its distributor, Avnet, has been very good as well.

"Topcon's 3D-OCT technology currently has the largest market share in the world, and we would like to cooperate with AMD to develop new functions that have never existed before," Okada said.

WANT TO LEARN MORE? About <u>AMD Kintex FPGAs</u> About <u>Topcon Maestro 2</u> About <u>Topcon Triton</u>

About AMD

For more than 50 years, AMD has driven innovation in high-performance computing, graphics, and visualization technologies. Billions of people, leading Fortune 500 businesses, and cutting-edge scientific research institutions around the world rely on AMD technology daily to improve how they live, work, and play. AMD employees are focused on building leadership high-performance and adaptive products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit the <u>AMD (NASDAO: AMD)</u> website, blog, LinkedIn, and <u>Twitter</u> pages.

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