

Fiber optic breakthrough in display sign technology

October 10 2007

Liquid Fiber Displays, a company spun out of research conducted in the Faculty of Engineering at McMaster University, has combined a uniquely woven optical fiber array with current LCD (liquid crystal display) and LED (light-emitting diode) display sign technology. The hair-thin optical fibers replace over 90 percent of the blue, green and red LED's required by conventional LED displays.

The result is a high-resolution, high-brightness light module approximately four inches square with excellent colour reproduction capability. And a significantly lower cost to manufacture and operate. LEDs account for approximately 70 to 80 per cent of sign costs.

“It’s a significant advancement from current electronic sign technology,” explains Adrian Kitai, a professor of both engineering physics and materials science and engineering at McMaster, who developed the technology. “It has higher resolution capability than any other LED screen on the market, high brightness, higher reliability, lower power consumption and can reduce costs by up to four times compared to conventional LED displays.”

To create a digital sign, the four-inch light modules are stacked in square panels of four. Panels are then joined together to form the desired display size. The technology features “invisible tiling” making the lines between tiles less visible. It is ideally suited for any indoor public space where signage is used such as in airports, shopping malls, convention centres, sports facilities and schools.

A prototype of the technology has been developed and installed at the McMaster University Student Centre (MUSC) in Hamilton. The 13” high x 70” long (480 x 90 pixel) animated electronic sign displays text and graphics and is used to promote campus activities and announcements.

Liquid Fiber Displays is jointly owned by Kitai and two graduate students, Nimesh Bahl and Cristian Nunez, who developed the enterprise through the Xerox Centre for Engineering Entrepreneurship and Innovation at McMaster. The initiative has received an \$117,000 award from the National Sciences and Engineering Research Council of Canada (NSERC) Idea-to-Innovation fund to help in commercialization.

“We’ve proven the technology works and is the best available,” said Bahl. “No further research is required, just product design and production.”

“We’re looking for the right partnerships to take this technology into the marketplace,” adds Nunez. “This is a great opportunity for the right media company as well as for marketers looking to gain attention for their client products and services.”

Features of the fiber optic digital display technology include 3.5mm pixel pitch (2000 cd/m²), video capability, easy plug-and-play operation in a Windows environment, ease of assembly into a video wall application, and higher reliability.

Source: McMaster University

Citation: Fiber optic breakthrough in display sign technology (2007, October 10) retrieved 3 May 2024 from <https://phys.org/news/2007-10-fiber-optic-breakthrough-technology.html>

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