



Company Overview

Optical CrossLinks is a development stage company specializing in the design, fabrication, packaging, and marketing of optical waveguide circuits and interconnection products. Our proprietary polymer and glass fiber ribbonization technologies are aimed at high speed data systems at chip and board levels, military aerospace fly by light signal distribution with optical devices and sensors, and biofluidic capillary chips and optical sensors for homeland security related applications.

Optical CrossLinks, a Delaware corporation founded in 1998 as Polymer Photonics, Inc., operates from a 13,000 square foot facility in Kennett Square, Pennsylvania. The Company formerly had 12 employees late in 2002. Since early 2003, in addition to a hard core, former employees have been used as independent contractors and consultants on an as needed basis until new investment or an acquisition is consummated. Optical CrossLinks is owned by its management, directors, employees, and Series A Preferred investors.

Technology Overview

Optical CrossLinks' intellectual property and processing techniques allow optical waveguide circuits to be imaged directly into its self-developing photo polymer films. The practicality of a "reel-to-reel" or "printing press" process offers rapid scalability to high-volume, low-cost production. Key members of Optical CrossLinks' team developed this acrylate polymer waveguide technology at DuPont beginning about 1985.

Optical CrossLinks has contractually secured non-exclusive rights to a portfolio of 11 patents from DuPont to the original PolyGuide™ polymer optical waveguide manufacturing process and related applications. Although the license is non-exclusive, all the team who developed the technology are founders at Optical CrossLinks' where additional proprietary application-specific technology has been developed. Combining this with extensive implementation knowledge and practical trade secret information, Optical CrossLinks has a de facto exclusive situation.

Applications

Optical CrossLinks is developing and manufacturing a new class of optical circuitry that Optical CrossLinks, Inc. 4/8/05

provides higher levels of performance for datacom, computer board level optical interconnections, telecom networking applications, control signal transmission for military aerospace, along with device / sensor read head products plus biofluidic applications. Our approach in these areas is more configurable, enables a higher level of integration, and has higher circuit/connector interface density, which all drive the economics of high-speed circuitry. The Company's configurable optical product platform is well positioned to enable the move toward high-speed, high-density optical data interconnections as well as biochip opportunities that are scalable and broadly applicable. Our optical approach complements copper-based electronics in those areas where inflexible routing, signal density and data rates are constrained or where EMI considerations as for aerospace applications are paramount.

The Company's approach to the design and manufacture of connectorized optical circuitry depends on both a proprietary polymer platform, and a custom glass fiber ribbonization and distribution system. All have specialized custom and proprietary interconnect technologies. These result in a highly scalable, automated, assembly process forming the foundation of a new class of optoelectronic products.

Products

Optical CrossLinks' has two fully connectorized platform products, *GuideLink™* polymer waveguides and custom optical fiber distribution or wiring harnesses referred to as *DistributionLink™*, providing complementary full optical system interconnect solutions. Both *GuideLink™* and *DistributionLink™* product applications are now targeted for point-to-point and functional interconnection links in the computer equipment, datacom, defense and home land security markets. All are aimed at chip-to-chip, daughter board, backplane, and signal distribution interconnects complemented with novel polymer optical functional devices and sensor systems. Due to the unique configurability, *GuideLink™* and *DistributionLink™* products are beginning to address opportunities in other markets such as aerospace, distributed control sensor platforms, and bio array testing / fluidic chips. Using our proprietary connectorization designs for both *GuideLink™* and *DistributionLink™*, precise single

or stacked 2D arrays of polymer and/or fiber guides can be connected with extremely high density interfaces within custom or industry standard (MT style) connector ferrule footprints, that are also amenable for insertion into industry standard latchable housings.

Optical CrossLinks' *GuideLink™* planar waveguide products are based on a unique and proprietary waveguide formation process, which is the key for our novel product attributes. Currently an acrylate monomer and polymer system technology facilitates the process. *GuideLink™* products are passive optical waveguide circuits for point-to-point, or functional splitting and multi-signal mixing for broad distribution, and can combine low loss crossing using internally imaged structures for dense routing. They enable in or out of plane mirror deflection connectivity and precise array connectorization, with the added capability for multi-layer stacking, and integration of complex and dense circuits. They also permit incorporation of switches, filters, gratings, or embedded active components or devices in the waveguides. OXL waveguide products can also be utilized as robust freestanding self-supporting links for flexible circuits or can be stably bonded to various board or wafer substrates. Preprocessing, micromachining, connectorization and QC are performed for both before application to final substrates or system. Our *GuideLink™* technology enables unique chip and board level interconnectivity, is scalable to volume production, and manifests a high-yield manufacturing process, low-cost materials, flexible design platforms, high levels of integration, and rapid prototyping (speed-to-market). Considerable new application-based intellectual property (IP) has been and continues to be developed. Thermo-mechanical robustness for cycling, IR solder reflow, and broad operating ranges has been demonstrated. Completion of engineering efforts is expected to enable full Telcordia environmental qualifications to be met as needed.

Optical CrossLinks' patented *DistributionLink™* fiber management technology platform creates perfect fiber shuffles, with pencil sized footprint and millimeter or less path length variations, and point-to-point custom fiber ribbons and cables with custom connectorization for optical distribution and wiring harnesses. *DistributionLink™* products are typically glass but can be plastic as well, are available in custom ribbon or harness configurations, and require no temperature

compensation to perform across a wide thermal range (-55°C to +125°C). *DistributionLink™* features polarization independence and ultra-low insertion losses, and facilitates and simplifies the task of routing glass fibers from their origins to predetermined locations. All fibers are encapsulated into ribbons using fire retardant materials with up to 64 fibers thus far with designed capability to handle 256 fibers. The fiber ribbons elegantly interface through the Company's proprietary precision connectorization designs to other fiber array ribbons or to *GuideLink™* waveguide arrays. The *DistributionLink™* technology increases channel density while decreasing footprint and system cost.

Customers

Optical CrossLinks has achieved product traction with industry leaders and key customers for both *GuideLink™* and *DistributionLink™*. Prototype *GuideLink™* optical chip-to-chip and board interconnects have been and/or are being supplied to large chip manufacturers like Intel and board assemblers like Litton and Sanmina to advance proprietary applications for high-speed optical interconnections. Deployment is anticipated once improved market conditions and critical need develops. The Company has achieved design interest for its *DistributionLink™* product with major telecom systems companies and defense contractors. Contractual programs are underway with Boeing and Optelecom for the unmanned military aircraft control (UAV) effort for custom connectorized light distribution networks. We anticipate working with more groups on chip-to-chip interconnect initiatives. *GuideLink™* sensors, fluidic capillary bio-chips, and multimode add-drop multiplexers have been delivered using our unique lossless crossover capability that also facilitates dense custom routing circuitry on the chip and board level. The Company is working with a strategic partner for the development of polymer material system solutions for advanced waveguide products to enhance *GuideLink™* capabilities.

Management Team

Dr. Bruce L. Booth, Founder, and CTO. – Thirty-one years with DuPont; and primary inventor of the DuPont PolyGuide™ process (predecessor to the *GuideLink™* technology).

John “Jack” L. Pund, Jr., Outside Financial Counsel. – Twenty-five years of accounting, consulting, and strategic finance experience.