



Linden Photonics Inc.
Optical μ packaging

Subject: Linden Photonics awarded a Phase II SBIR contract to develop Next Generation Rugged Aircraft Fiber Optic Cable

Aircraft Harness History & Problems

Optical fibers are extensively used in military aircraft, both as interconnects in electronic cards and in aircraft frames. Fibers used in computer cards suffer significant breakage failures, usually close to the exit point of the MT connectors and at points where they have been tacked to prevent movement. Fiber cables suffer “maintenance induced breaks” when, for example, a heavy object falls on them or they are bent sharply at an anchor point. Both these situations will benefit from development of a rugged, durable optical replacement fiber.

Linden’s Solution

The problem with TKT construction can be solved by using extruded insulation, but thermoplastics insulations in the past have not met temperature, arc tracking and hydrolysis requirements. Linden Photonics proposes the use of a new class of high temperature, high strength materials, Liquid Crystal Polymers (LCPs), for use as extruded wire harness insulation, with the following properties: no thermal degradation up to 450⁰ C; very high tensile strength; excellent chemical stability; no hydrolysis problems even at elevated temperatures; extrudes well therefore low cost. Electrical properties are excellent – dielectric breakdown voltage is 90 kV/mm vs. about 25 kV/mm for teflon and kapton. Testing shows that Linden’s multilayer extruded insulation passes wet arc tracking and cut through tests.

LCP COTS

Linden proposes the use of a new class of materials, blended liquid crystal polymer (LCP), for use as extruded optical fiber buffer. LCP resins are commercially available from several major suppliers – Ticona, Allied Chemicals, Dupont and Sumitomo.

Partners

Linden will be partnering with a global aeronautics company throughout the phase I effort.

For more information please contact Stephen O’Riorden, Director of Business Development at so@lindenphotonics.com or 978-392-7985.