SYNOPSIS

The explosive growth of fiber optics in telecommunications, where opto-electronics (OE) devices are being used for multi-gigabits data transmission and bi-directional communication modules, is increasing demands for fiber-optics interconnects. However, the task of attaching fibers to lasers and optical devices remains labor-intensive and low-yield throughput. The consequences of this low-volume & time consuming process of pigtailing and packaging OE devices process is cited as the main reason by the opto-electronics industry for the low throughput and the high cost of OE device modules.

Automation is finding its way to Opto-electronics industry as a solution for lowering cost and increasing production for pigtailing and device packaging. The Automated Fiber pigtailing (AFP) machine automatically align a fiber to a laser diode or optical modulator with sub-micron accuracy in less than five minutes.

The AFP machine uses two steps alignment procedure. The first step of the alignment, coarse alignment, identify and bring the optical fiber within few microns of optical modulator to couple some light. During the second step of the alignment, call fine alignment, a fine adjustments are made by maximizing the amount of light coupled between the fiber and the optical modular. The similar procedure is used to attach optical fiber to lasers.

The successful introduction of an optoelectronic module to the market place requires the use of well developed packaging technology to allow volume and low cost manufacturing. The packaging should be an integral part of the design. The packaging technologies used by opto-electronics industries are; Die attach, Silicon Waferboard, and Silicon microbench with on-board heaters.