

Automated Die Bonding for High Volume Optoelectronics Manufacturing: Speed, Accuracy, and Flexibility

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Abstract

High volume manufacturing of optoelectronics presents a unique set of challenges relative to more mature and extremely high volume semiconductor electronics. Throughput requirements remain high but the equipment used must offer a high level of flexibility in addition to placement accuracy. This talk will describe some of the special process requirements for optoelectronics that drive the need for equipment flexibility along with speed and accuracy. These requirements include multiple attach processes such as epoxy and eutectic die attach in one package and multi-chip production in one machine. High volume equipment for optoelectronics assembly must be able to handle small chips on ceramic substrates as well as full size gold-box packages. In addition, active optical cables and advanced optical sensors for augmented/virtual reality requires attaching dies on printed circuit boards with automatic material loading and unloading capability. Current packaging equipment performs these processes for traditional optoelectronics while achieving 3 micron placement accuracy at semiconductor level throughputs. The new frontier using silicon photonics technology calls for submicron die bonding accuracy where speed and flexibility can both be improved in the future.

Biography

Peter is currently the Director of Applications and Service Engineering at MRSI Systems in Billerica Massachusetts. MRSI Systems is a leading manufacturer of fully automated, ultra-precision die bonding and epoxy dispensing systems. Peter has been with MRSI for nearly twenty years as an Applications Engineer and head of the department. Previously he was a process engineering working on microwave modules for defense and space applications for Lockheed Martin. He has an MS in Manufacturing Engineering from Boston University.