Client requirement

Our client required an automated die bonding machine that could pick Micro-Electro-Mechanical (MEMs) die from a glass handle wafer and place a specified number of them onto a prepared, non-rigid laminated substrate to within 4 micron accuracy in three axes.

The machine was for use in a cleanroom environment and a fast cycle-time was critical.

Our role

We designed the machine to automate both the pick and place functions, with an integrated shuttle linking the two stages. To achieve this, the machine incorporated the following technologies:

• 4 motion axes on the picking stage, 4 on the placement stage and a shuttle with a cleaning system – totalling 11 motor axes

• Control architecture using a high-performance Beckhoff® control system acting as the PLC, motion controller and operation of 14 separate pressure and vacuum functions

• Two integral rack-mount PCs for control of vision analysis from 4 cameras, HMI functions and Manufacturing Execution System (MES) interaction

• Sub-micron resolution vision measurement system for accurate die placement

• Intuitive operator and maintenance interfaces with easy control of process parameters

• Full integration with MES and wafer metrics systems
Precision Mechatronics Pty Ltd is an Australian owned and operated company.

We provide custom-designed, custom-built and fully installed equipment solutions for many industries and environments. We can service the automation requirements of the following types of industries:

- Semiconductor Packaging and Test Systems
- Research and Development
- Telecommunications
- Photonics
- Automotive
- Mining
- Pharmaceutical
- Medical and Life Sciences
- Test and Measurement
- Food and Beverage

Located on the east coast of Australia, we are geographically positioned to provide a responsive service and timely support to the Asia Pacific region. We can also locate our highly-trained service staff wherever their skills are needed.