

control systems, for example, are now produced at the same time as the structure housing it — eliminating fasteners, improving reliability and reducing assembly time.

As electronics replace mechanical and electrical components, it makes sense for them to turn electricity on or off to a component they control rather than "order" a separate switch to do so. To facilitate this development, we have established a world-class power electronics laboratory to research and apply semiconductors capable of managing power loads found in electrical drives and other factory equipment.

A World Leader in Ion Implantation From a startup in the early 1980's, Eaton has built a business to serve the burgeoning electronics industry with ion implanters, a critical piece of equipment

used to manufacture semiconductor chips. Sales totaled \$500 million in 1995 and are expected to reach \$700 million in 1996. More than 1300 Eaton implanters are in use around the world.

Since its introduction, Eaton's new high-energy implant system has captured two-thirds of the available market. Among other technological initiatives is a program to develop systems capable of implanting wafers twice as large as those currently used, thus increasing customer efficiency and productivity. Capitalizing on its experience in ion implantation, Eaton has also made investments in an implantation system for flat-panel displays (like those found in laptop computers). These innovations and others have made Eaton a world leader in this dynamic growth industry.

ION IMPLANTERS: BENCHMARK FOR THE INDUSTRY

Eaton is enhancing the automation and control elements in its ion implanters with embedded statistical process control (SPC). The on-board SPC tool (top left) monitors up to 100 user-selectable machine and process parameters. The process disk (in background) contains monitors that provide real-time feedback to the implant control system to accurately maintain dose and temperature on the wafers and to help control charging effects. Robotic wafer handling (center) includes a revolutionary architecture that performs multiple wafer handling actions in parallel to enhance productivity. In addition to sophisticated controls and automation capabilities, Eaton's implanters utilize advanced materials, such as vitreous carbon, which is used in the quadrupole lens (lower left), designed to precisely focus the ion beam of Eaton's high-energy implanter. Eaton's new ion source technologies continue to raise the industry benchmark. The recently introduced extended-life ion source (bottom right) more than doubles the ion source life and reduces customer operating costs.