**SURFACE MOUNING TECHNOLOGY**

**Surface mount technology is an easiest and prefect form of mounting components in Printed Circuit Boards. It entails making reliable interconnections on the board at great speeds, at reduced cost. To achieve these, SMT needed new types of surface mount components, new testing techniques, new assembling technique, new mounting techniques and a new set of design guidelines.**

SMT is completely different from insertion mounting. The difference depends on the availability and cost of surface mounting elements. Thus the designer has no choice other than mixing the through hole and surface mount elements. At every step the surface mount technology calls for automation with intelligence.

Electronic products are becoming miniature with improvements in integration and interconnection on the chip itself, and device – to – device (D–to–D) interconnections. Surface Mount Technology (SMT) is a significant contributor to D–to–D interconnection costs.

In SMT, the following are important

1. D-to-D interconnection costs.
2. Signal integrity and operating speeds.
3. Device- to-substrate interconnection methods.
4. Thermal management of the assembled package.

D-to-D interconnection costs have not decreased as much as that of the ICs. A computer-on-a-chip costs less than the surrounding component interconnections. The problem of propagation delay, which is effectively solved at the device level, resurfaces as interconnections between the devices are made.

The modified new IC packages, having greater integration of functions, less in size and weight, and smaller in lead pitch, dictate newer methods of design, handling, assembly and repair. This has given new directions to design and process approaches, which are addresses by SMT.Currently, D-to-D interconnections at the board level are based on ‘soldering’-the method of joining the discrete components.

The leads of the components are inserted in the holes drilled as per the footprint, and soldered.In the early decades, manual skills were used to accomplish insertion as well as soldering, as the component sizes were big enough to be handled conveniently. There have been tremendous efforts to automate the method of insertion of component leads to their corresponding holes, and solder them en-mass. The leads always posed problems for auto-insertion. The tendency of Americans against using manual, skilled labour resulted in the emergence of SMT, which inherits with it automation as precondition for success.