

DDM – A New Fixture at Diebold

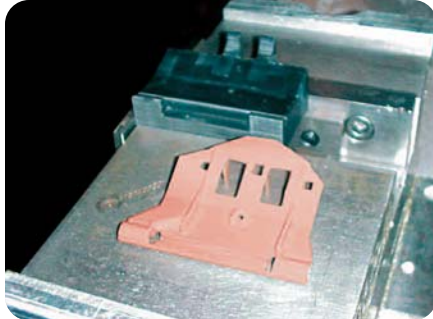


Image 1: Diebold ATM keypad and privacy shield. Image 2: Full view of keypad-privacy shield assembly fixture. Image 3: Black machining fixture at rear was rapid manufactured from PC/ABS on an FDM system.

Direct Digital Manufacturing Yields 80 Percent Savings on Fixtures

"FDM enables us to produce assembly and machining fixtures in one-quarter the time and at one-half the cost as conventional machining."

- Rich Lute, Diebold

Real Challenge

Diebold, a manufacturer of automated teller machines (ATMs), electronic-security and voting systems has had early success with direct digital manufacturing (DDM). Previous applications proved that it could dramatically cut time and cost from component production for these sophisticated systems. This experience led to the discovery that DDM could do the same for assembly and machining fixtures.

"Producing the fixtures using conventional machining methods could easily take a week," says Rich Lute, Diebold senior mechanical engineer. Since production is at a standstill until fixtures are available, this delays a product's release. "DDM helps us get to market faster by providing a quicker and less expensive method of building the fixturing."

Real Solution

Having used fused deposition modeling (FDM®) for manufacturing of components and sub-assemblies, Diebold chose the technology to make its fixtures. The company needed accurate fixtures since there are many small components that are machined or assembled to tight tolerances. "FDM makes it possible to build fixtures from durable thermoplastics, such as polycarbonate and ABS. The fixtures can be produced to an accuracy of 0.005 inch, which is more than enough for this application," says Lute.

For a recently introduced ATM, Diebold used DDM to make several assembly aid fixtures. One such fixture (image 2) is used by production workers to precisely position a keypad privacy shield onto the ATM bezel. This ensures proper installation during assembly.

Diebold also uses DDM to make machining fixtures, such as the one shown in image 3 (black). This particular fixture is used to secure production parts during final machining. Image 4 shows a (red) part to be machined, held in the fixture.

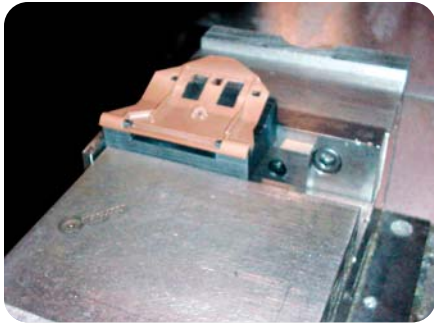


Image 4: The fixture is being used to secure the red part during final machining.

With FDM direct digital manufacturing, Diebold has saved as much as 80 percent in both time and cost. Commenting on average savings, Lute says, "FDM enables us to create assembly and machining fixtures in one-quarter the time and at one-half the cost of conventional machining."

"We purchased an FDM Titan™ because it can produce machining and assembly fixtures in only a day or two," says Lute. Combined with the time savings for components, Diebold is realizing the benefits of direct digital manufacturing in its ATM and security system product lines.

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