Seybert Castings

Sanders 3-D Printing process

If you're not familiar with 3D printers, they work rather like regular inkjet printers: there's a jet that moves in the X-Y plane and prints tiny drops of material. In a 2D printer the drops are ink and they draw pictures; in the Sanders machine the drops are a wax-like plastic, and they form a layer of the model. When each layer is finished, it is milled off to smooth the top, then the build bed moves downwards, leaving room for the next layer to be drawn. After many layers, usually somewhere between 100 and 1000, the part is complete.

CAD

All that is needed is your 3D CAD model converted to a high-resolution STL file. STL file format is used as the starting point for model build.

Specifications

Build envelope: 12 x 6 x 8.5 in. (30.48 x 15.24 x 21.59 cm)
Achievable model accuracy: +/- 0.001 in. (0.025 mm) per inch in X, Y and Z dimensions
Surface finish: 32-63 micro-inches (RMS)
Minimum feature size: 0.010 in. (0.254 mm)
Automatic generation of model support structure
Minimal post-processing of model surfaces necessary
Layer thickness minimum: 0.0005" (Typical layer 0.0015")

Pattern Advantages and Properties

Reduces time-to-market by translating CAD designs into precise 3D casting patterns. With build layers as fine as .0005 inches, the system delivers higher precision patterns than any other pattern making system. Evaluate designs quickly and realistically - before committing to hard tooling. Allows very good freedom of geometry: odd-shaped holes, raised or recessed lettering and inaccessible areas are no problem. It can make almost any geometry, accurately and repeatably.. The constraints of carving and moldmaking don't apply, because parts are built up in layers rather than carving them out of a block. The process is ideal for intricate, thin-walled, and complex parts. The machine's great strength is its ability to handle undercuts. A soluble support structure is used, laid in as the part is built and dissolved away afterwards. The support can be removed even from areas that can't be reached by hand, and it comes off clean, without any residue.

Pattern Size limitation

Although the theoretical build envelope is quite large, it's not usually economical to go over several cubic inches. Typical parts are subminiature to 3" in size, with larger parts tending to be flatter. Above the Sanders size limit, we can utilize other prototyping processes for investment casting patterns (ie. Castform™, Thermojet™, injected wax). We know what's out there and how it can work for you.

Pattern cost

The build time, and hence the cost, for a part depends on its height, complexity, and layer thickness. The combination of factors makes it difficult to quote without an STL file in hand.

Investment casting

The pattern material burns out without expansion or residue. It acts much like a typical investment casting wax, but is more brittle in handling. The material is excellent for investment casting. The pattern material itself is not suitable for any functional application. Seybert Castings prototyping services are available in zinc alloy and aluminum alloy.