

ADVANCED APPLICATIONS

Parts produced can be used in lots of different manufacturing applications. Parts can be painted, electroplated and drilled. They can also be used in advanced applications such as investment castings, RTV molding and sand casting. Each application includes the benefits to using an RPS part with detailed instructions.

ELECTROPLATING

Electroplating deposits a thin layer of metal on the surface of a part built. This improves the part's mechanical properties and gives the appearance of production metal or plated parts and provides a hard, wear-resistant surface with reflective properties.



EXTRUSION BLOW MOLDING

Polycarbonate RPS molds are used in the blow molding process, reducing lead time and expense. In five days or less, companies can design a mold, build the tool and blow mold near production-quality prototypes.



FIBERGLASS FORMS USING FDM MOLDS

CNC machining is a costly and time consuming process to produce a lay-up. Handcrafting a lay-up mold is a laborious process requiring skilled workers. Much of this labor goes into the mold's lay-up, but a lot of time will go into the design iterations. Using RPS to produce the molds can reduce labor costs and time.



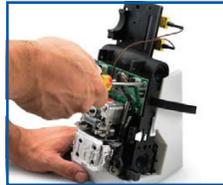
INVESTMENT CASTING

Investment casting, also called lost wax casting, is widely used for producing ferrous and nonferrous metal parts. Unlike other casting processes, investment casting produces net shape parts with excellent surface finish and dimensional accuracy. Using RPS eliminates the need for tooling in the casting process, saving weeks of production time.



MANUFACTURING TOOLS

Manufacturing engineers rely on tools such as jigs fixtures, templates, and gauges. RPS production systems produce manufacturing tools in hours. Producing parts in thermoplastic reduces part weight, consolidates into a single build, allows you to design for function, and makes iterations quickly.



MODULAR FIXTURES

A modular fixturing system is commonly used to stage parts for CMM inspections, hold work pieces during machining and position parts when bonding or assembling. Magics RapidFit module by Materialise automates the digital design process, and with just a few mouse clicks, the files are ready for production.



PAPERPULP

An RPS production system is a great fit for mold making because of its thermoplastic durability. The flexibility of thermoplastic materials makes the continual vacuum/reverse-flow cycle possible without plastic cracking. After many cycles, RPS molds have shown little to no wear.



POLYSTYRENE MOLDS

PPSF thermoplastic withstands high temperatures used to manufacture EPS (expandable polystyrene) parts for helmet liners. Using the RPS process, others saved \$3,360-\$6,360 per mold assembly and shaved 4 weeks off the manufacturing process.



RTV MOLDS

Parts built using RPS provide the fast, accurate and affordable patterns that drive RTV molding. By replacing machined patterns, the entire process can be completed in 2-3 days. And unlike machining, complex and intricate shapes have no effect on the time or cost for the RPS pattern.



RTV MOLDING SOLUBLE CORE

Complex geometries normally requiring core removal such as curved hoses, water tanks, bottles, and arterial structures are good examples where it may be helpful to use this alternative method. Instead of building the core in thermoplastic material (traditional RPS build process) the mold is built in the Water Soluble support material making it easy to dissolve away the material after casting.



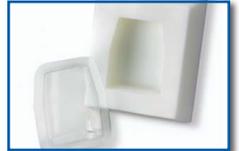
SAND CASTING

A thermoplastic matchplate mounted on an automatic molding machine can withstand the ramming forces used to pack sand casting tools. Using an RPS production system to produce the match plate reduces the lead time from weeks to days.



THERMOFORMING

RPS production systems can quickly produce thermoforming molds in less time than conventional means. The thermoforming process becomes simpler, more efficient and increasingly cost-effective.



WIND TUNNEL

When compared to machining and model making, this is a faster, less expensive and more efficient method for making detailed and accurate models for wind tunnel testing. The mechanical properties of ABS-M30, polycarbonate (PC), PC-ABS and polyphenolsulfone (PPSF) can withstand airflow forces and stresses.



SPIN CASTING

By replacing machined metal patterns with models produced on an RPS production system, the entire spin casting process, including pattern making, can be completed in as little as one day. Thermoplastic materials can endure temperatures of 300-350 degrees F and pressures of 800 to 3,500 psi necessary during the vulcanization process.



INJECTION BLOW MOLDING

In the injection blow molding process a contoured preform is injection molded and then transferred to a blow mold cavity where it is inflated. To reduce lead time and expense, blow molders are adopting RPS technology. In five days or less, companies can design a mold, build the tool and blow mold near-production quality prototypes.



CARBON FIBER LAY-UP MOLDS USING FORTUS THERMOPLASTIC

Thermoplastic materials have been validated to withstand high temperatures and vacuum pressure during the fiberglass lay-up process and RPS has become a new method to produce fiber molds. Producing a mold on an RPS production system decreases lead times, is less expensive and is more accurate.

