Description

Image

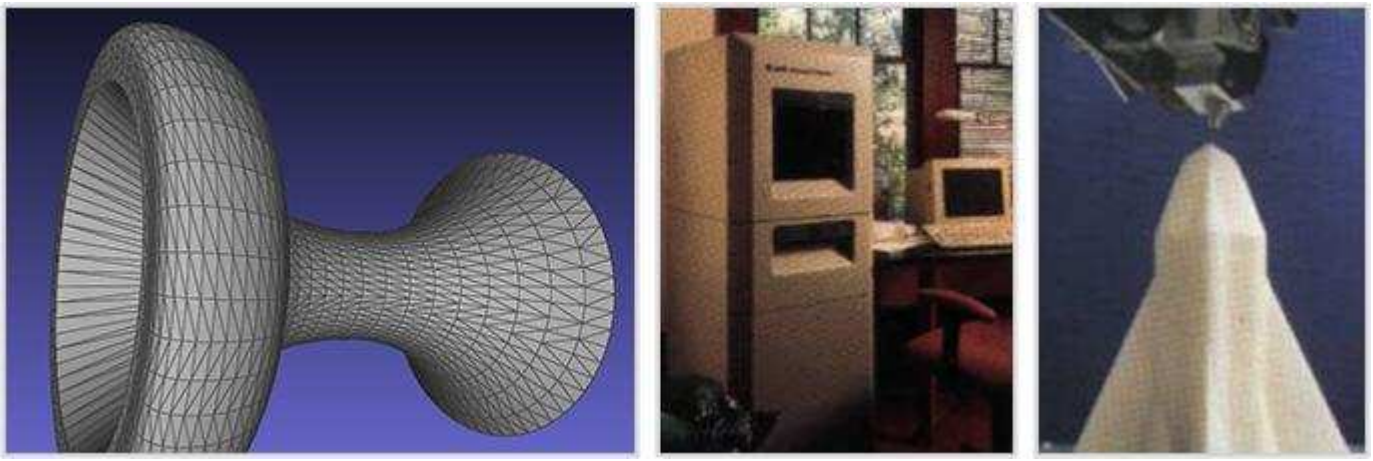


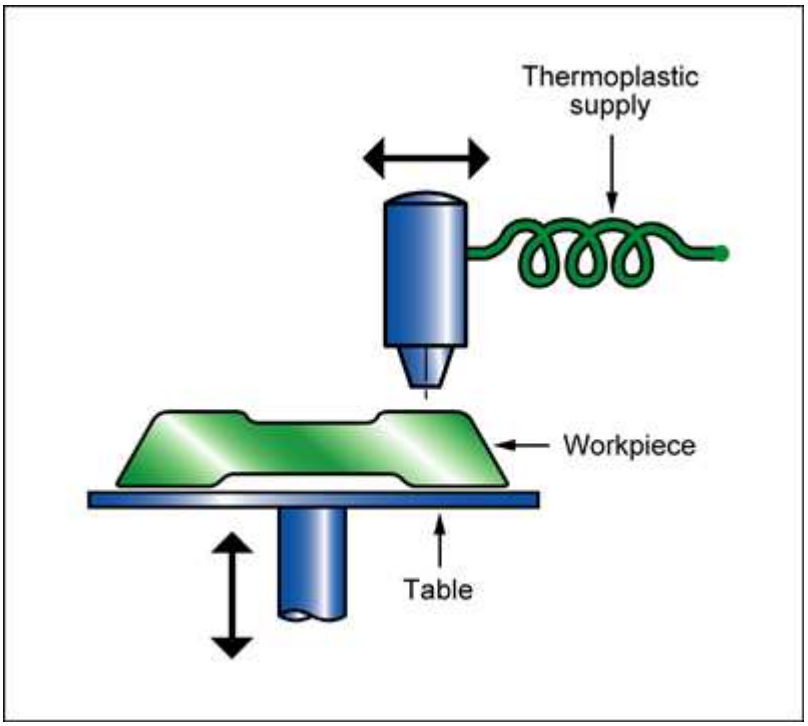
Image caption

(1) STL sample © Kaboldy at Wikimedia Commons (CC BY 3.0) (2) BPM Personel Modeler © BPM Inc (3) BPM Personel Modeler in action © BPM Inc

The process

BALLISTIC PARTICLE MANUFACTURE (BPM) is a rapid prototyping technique in which microscopic particles of molten thermoplastic are shot by a piezoelectric jetting system and freeze when they hit the object being created. A wide range of materials can be used. As with other rapid prototyping processes, a CAD solid model of the part is required.

Process schematic



Material compatibility

Polymers - thermoplastics	✓

Shape

Circular prismatic	✓
Non-circular prismatic	✓
Flat sheet	✓
Dished sheet	✓
Solid 3-D	✓
Hollow 3-D	✓

Economic compatibility

Economic batch size (units)	1	-	10	

Physical and quality attributes

Mass range	0.1	-	8	kg
Range of section thickness	1.5	-	100	mm
Tolerance	0.36	-	2	mm
Roughness	100	-	330	µm

Process characteristics

Primary shaping processes	✓
Discrete	✓
Prototyping	✓

Cost model and defaults

Relative cost index (per unit)	Out Of Range				
Capital cost		2.69e5	-	5.37e5	USD
Material utilization fraction	*	0.9	-	0.98	
Production rate (units)		0.06	-	0.08	/hr
Tooling cost	*	53.7	-	134	USD
Tool life (units)		1	-	10	

Supporting information

Design guidelines

All shapes can be made. The only finish available is in

Technical notes

The system uses materials which can be easily melted and solidified such as thermoplastics, aluminum and wax.

Typical uses

Making prototypes and models quickly from CAD systems.

The environment

No particular environmental hazards. No material is wasted in this process.

Links

MaterialUniverse

Reference