THINK TECH FORWARD

Designed by YIZUMI, April 2025

YIZUMI

SpaceA

INDUSTRIAL PELLET 3D PRINTING

Simple. Fast. Competitive

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【2】The picture in the catalogue is for reference only. The real object should be considered as final.
【3】The data in the catalogue is obtained from internal testing in YIZUMI laboratory.
Please refer to the actual machine for the final data. YIZUMI reserves the right of final interpretation upon disputes and ambiguities.

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THINK TECH FORWARD

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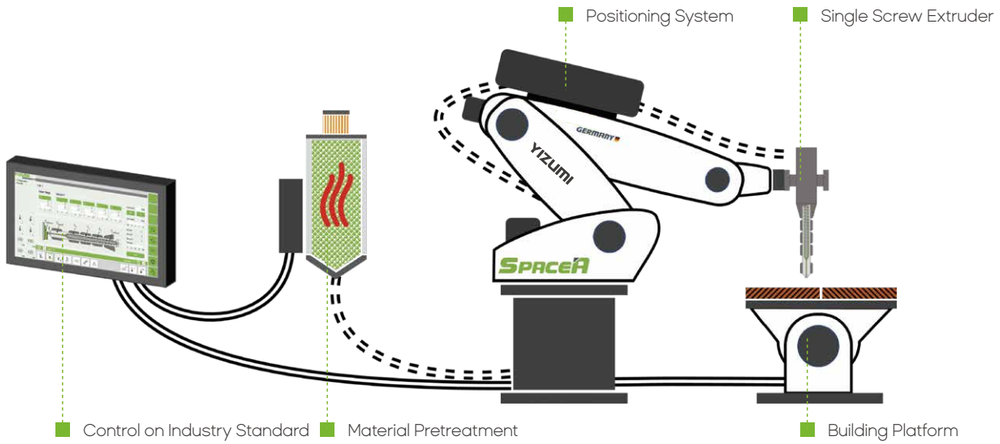
PRODUCT DETAILS

SpaceA technology is a 3D printing technology based on the layer-by-layer deposition of molten thermoplastics, directly using pellet plastic raw materials for production.

SpaceA – A Synergy of robotic technology and pellet using

- Best Return on Invest
- High Automation Potential
- Low Material Supply Costs
- Low Cycle Time



SpaceA technology is based on the layer-by-layer deposition of one molten thermoplastic. A solid component can be built up by solidifying this melt strand.

YIZUMI' s SpaceA technology is based on 4 principles for economical use:

- Use of a screw extruder
- Use of a 6-axis positioning system
- Use of a high plant modularity
- Use of an industry standard control system

First, the material which will be processed is pretreated in a dryer. This dryer is included in all standard systems. The material is fed from the dryer to the extruder.

The extruder is a compact single-screw extruder, weighing only 6.5 kg. There the pellets are plasticized and discharged in a defined manner. The final component can then be produced on the construction platform by a relative movement of the positioning system.

SpaceA S-Line

- **All in one solution**
  Full running system with standard periphery for plastics processing
- **Compact machine design for production integration**
  Perfect Part Size to Machine Size Ratio and software interfaces
- **Fast delivery**
  Machines on stock

SpaceA E-Line

- **The quick start**
  Update your own new Kuka robotic system
- **All in one 3D process packager**
  Software. Extruder. Periphery. SpaceA Control Unit.
- **Fast Delivery**
  Machines on stock

SpaceA B-Line

- **Big all in one solution**
  Full running system with standard periphery for plastics processing
- **Freely accessible manufacturing cell**
  Lean design with many opportunities for various production integration
- **Big. Bigger. B-Line**
  High Range up to 3.9 m with high throughput up to 25 kg/h

SpaceA C-Line

- **Customize your own additive manufacturing centre**
  Based on S- Line and B-Line
- **Fully Automated**
  Process Controlling. Line Production. ERP-System integration. Software interfaces.
- **Unlimited technical solutions for best ROI**
  Engineering. Service. Design. Market Know-How.

Benefits at a glance

Material Diversity

Easily available **Low cost** **Already certified materials**

The screw plasticizing unit is operated with conventional thermoplastic granulate. Compared to filament-based production technologies, this enables the processing of unfilled, but also highly filled plastic compounds with simultaneously high and scalable throughputs. The possible high throughput leads to a considerable cost advantage in the processing of engineering thermoplastics. In addition, depending on the material, the low price of granulate (approx. 1 to 8 €/kg) compared to filament (approx. 20 to 500 €/kg) results in a considerable cost reduction potential.

As with all manufacturing processes, the production results depend on the process capability of the material used. The main aspects here are dimensional accuracy (shrink drives) and mechanical properties (adhesion drives).

PA6 CF, PEEK, TPE/TPU,
PP/PE, PP GF,
PC / PMMA, PK, POM

AND MANY MORE...

Benefits at a glance

Productivity & Economical efficiency

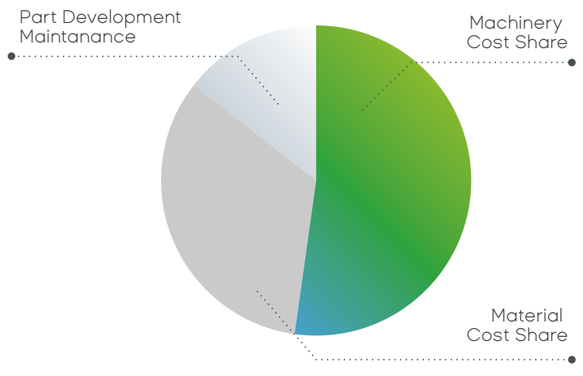
- High material throughput
- Low material costs
- Low machine investment
- Low energy consumption
- Best return on invest

The high productivity of the process used is based on the physical principle of shear heating within the screw extruder. In contrast to the pure plastification via heat conduction, a scalable conveying rate independent of the thermal conductivity of the material can be achieved. Depending on the process point, the throughput rate can be increased to several kilograms per hour.

Like previous manufacturing processes, additive manufacturing plants must also be subject to the usual investment calculations. Accordingly, the plant investment must be reduced and the material output increased at the same time. Only with high ratios of absolute investment and material output per year can an economic production be guaranteed in comparison to injection molding.

Composition of costs

- High throughput range
- Low maintenance cost
- Low equipment cost
- Low energy consumption



■ Part cost: <8 €/kg part weight

Benefits at a glance

Scalability

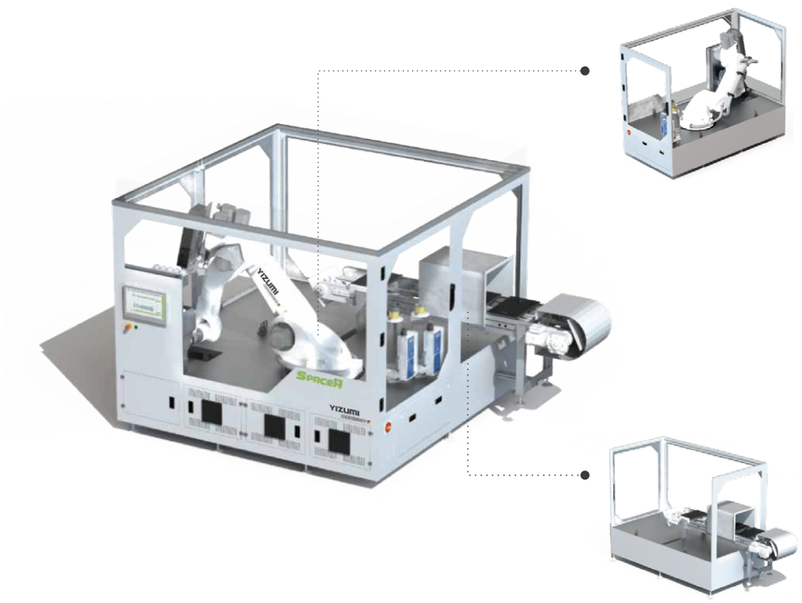
Scalable robot size | **Possible line integration** | **Standard interfaces**

The flexibility of the system is based on the separation of platform module and print module. Thus, a standardized production module can be combined with different platform modules or several production modules can be combined with one platform module.

Thanks to this modularity, the system can also be easily integrated into existing production chains, for example to functionalize injection molded parts. The high productivity of the SpaceA product family makes it possible to apply sealing elements or reinforcing structures to the component in the cycle of an injection molding machine.

For flexible use on a standard basis

SpaceA using high module design with print module and platform modul, could match different products and system for flexible production.



Print Modul

- Screw extruder
- Milling cutters
- Gripper
- Granulate dryer
- Further solutions on request

Platform Modul

- Workpiece carrier conveyor system
- Conveyor
- Turntable
- Fixed construction platform
- Further solutions on request

Benefits at a glance

High Potential of Automation

A 6-axis industrial robot overcomes the usual limitations of component size and design complexity. In order to ensure reproducible dimensional accuracy and high surface quality and at the same time avoid a restriction of component complexity, subtractive processes are integrated into the manufacturing process by combining additive structure and machining in one manufacturing system.

Based on this approach, it is also possible to integrate inserts such as threaded or bearing bushes, injection molded parts, electronic or ceramic inserts and to equip the component to be manufactured with additional functions. For this purpose, the machine used for extrusion and machining operations is equipped with a standardized tool changing system, which guarantees a high degree of automation and flexibility.

Application areas

One Extruder, Many Opportunities

Customer are not only satisfy with single product but also customized, shorten developing, function integrated product. In order to meet new requirement, additive manufacture is applied in industry around 30 years, there are still some restriction like high material cost, dimension restriction, low productivity, low precision.

SpaceA is developed by YIZUMI Germany and IKV using screw extrusion technology, it can use fiber filled thermoplastic granule directly. The system also integrate additive manufacture and subtractive manufacture to achieve automation and mass production which causing SpaceA outstanding.

Structural (crash-relevant) Part

Weight: 810 g
Production Time: 74 min
Material Costs: 3.24 €
Material: PA6 CF30
Production Costs: 6.81 €
Size: 320 × 550 × 135 mm³

Pellet Supply Unit

Weight: 877 g
Production Time: 82 min
Material Costs: 3.51 €
Material: PA6 CF30
Production Costs: 7.41 €
Size: 280 × 160 × 400 mm³

Gripper Finger

Weight: 60 g
Production Time: 165 min
Material Costs: 0.24 €
Material: PA6 CF30
Production Costs: 8.09 €
Size: 65 x 250 x 120 mm³

Drone Body

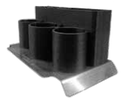
Weight: 1050 g
Production Time: 125 min
Material Costs: 4.17 €
Material: PA6 CF30
Production Costs: 10.11 €
Size: 800 x 800 x 370 mm³

Furniture Lounge Chair

Weight: 12kg
Cycle time: 11.5 h
Material: PP CF / Wood fiber
Cost: customer exhibit

Bicycle Frame

Weight: 700 g
Production Time: 100 min
Material Costs: 2.8 €
Material: PA6 CF30
Production Costs: 4.91 €
Size: 620 × 250 × 200 mm³

APPLICATION AREA	PRODUCTION	MATERIAL	PHOTO	PRODUCTION CYCLE
Art furniture	Decorative column	PLA/Wood fiber		5 h
	Table and chairs	PP CF		6 h
Structure part	Seat back	PA CF		4 h
	Pen holder	PA CF&Pretreated sheet metal		40 min
Function part	Feed pipe	PA CF		30 min
	Gas divider	PA CF		40 min
	Pneumatic fixture	PP GF		20 min
Flexible printing	Seal strip	TPE		5 min
	Suction gun holster	TPE		2 h

Product overview

SpaceA Technology

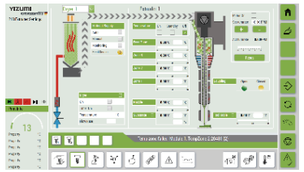
SpaceA technology is based on the layer-by-layer deposition of molten thermoplastic. A solid component can be built by solidifying this melt strand. YIZUMI´s SpaceA technology is based on 4 principles for economical use:

- Use of a screw extruder
- Use of a high plant modularity
- Use of a 6-axis positioning system
- Use of an industry standard control system

First, the material is pre-treated in a dryer. This dryer is included in all standard systems. The material is fed from the dryer to an extruder. The extruder is a compact single-screw extruder weighing only 6.5 kg. There the pellets are plasticized and discharged in a defined manner. The final component can then be produced on the construction platform by a relative movement of the positioning system. The entire process is controlled by a higher-level control system.

※ The controller allows networking with other production units on the hardware and software side.Interfaces such as EUROMAP 67,Ethernet or EtherCat are available as standard.

- **Control on Industry Standard**
  Higher-level control concept with many interfaces available in the standard version
- **Single Screw Extruder**
  Most compact extruder technology with concentric feed zone and integrated drying unit
- **Positioning System**
  A 6-axis robotic system with positioning accuracies of 0.05 mm
- **Material Drying**
  Integrated drying unit can achieve raw material pretreatment.



Serenity-Control

Dryer

Higher production efficiency and economic benefits

Extruder

Production Lines

Standard

SpaceA S-Line

- Small size standard 3D printers, including dryers, material conveyors, screw extruders, industrial robots and control units. It's compact design, flexible and fast processing.

- The Big standard 3D printer is divided into printing modul and platform modul. The printing platform is larger and more flexible, and has excellent scalability, which can meet the requirements of automatic production, secondary printing of parts surface and other processes.

SpaceA B-Line

From 1.6 to 3.9 meters Kuka arm, our popular Beckhoff based HMI and from currently 2 extruder types and various tables you can choose your Big Printer.With the SpaceA B-Line, you also get an all-in-one solution.Additive manufacturing can be as easy as molding - just fill the dryer with pellets and get started.

SpaceA Specialty

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SpaceA C-Line

With our in-house designers and technicians, we have the ability to work with you on nearly unlimited projects. some examples: combination of printing and milling, Camera monitoring, Sensor Integration, plate separation and feeding for the production of hybrid components, high degree of automation for industrial level production, and much more. With the SpaceA C-Line, you also get an all-in-one solution.

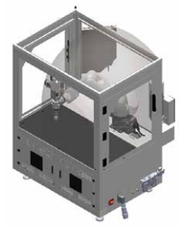
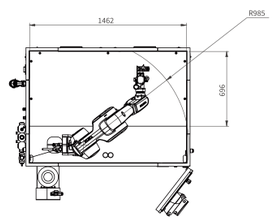
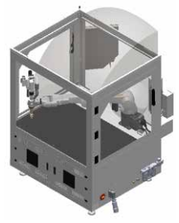
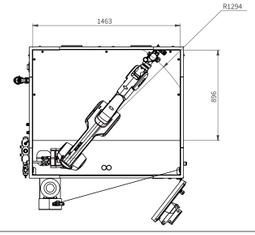
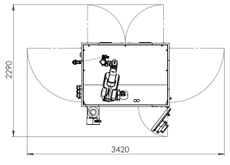
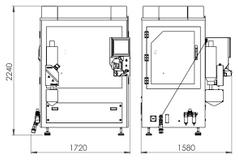
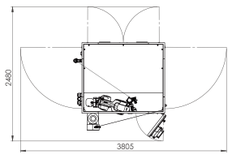
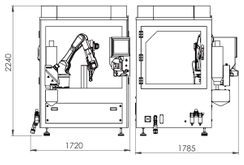
SpaceA E-Line

The small and beautiful printing system contains the basic control components, dryer and extruder, supports a wide range of communication modes and can be flexibly combined with your Kuka.

Option list

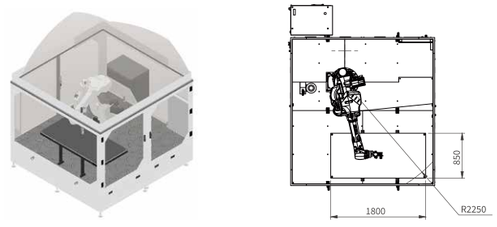
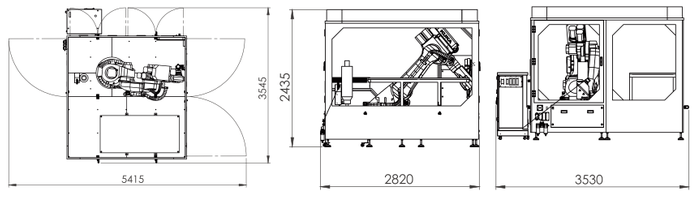
HARDWARE
Heated Building Platform (Different Dimensions)
Variothermal Building Platform (Different Dimensions)
Lighting Package
Layer Cooling
Conveyor Belt Integration
Piece Carier System Integation
Gripper Package
Automated Pellet Supply System
Extruder Extension (more throughput)
Multi Parts Melt Destributor
SOFTWARE
Process Chain Generator
Digital Interfaces (OPC-UA, Ethernet, EtherCat, Profibus)

Specifications SpaceA S-Line

ITEM	UNIT	SpaceA-S-900E-500-FP-S	SpaceA-S-900E-500-FP-T	SpaceA-S-1100-500-FP-S	SpaceA-S-1100-500-FP-T
Max. Throughout	cm^3/h	1500	2×1500	1500	2×1500
Screw Diameter	mm	16	2×16	16	2×16
Screw Rotation Speed	RPM	130/250	130/250	130/250	130/250
Dryer	Liter	5/7	5/7	5/7	5/7
Nozzle Diameter	mm	0,3-5	0,3-5	0,3-5	0,3-5
Roboter Load	kg	10	10	10	10
Roboter Arm Length	mm	900	900	1100	1100
Building Area	m × m × m	1×0,5×0,9*	1×0,5×0,9*	1×0,5×1*	1×0,5×1*
Usual Print Speed	mm/s	100	100	100	100
Max. Print Speed	mm/s	250	250	250	250
Pneumatic Pressure&Pneumatic Flow(Peak)	bar & L/min	8 & 500	8 & 500	8 & 500	8 & 500
Max. Power	W	900	1300	900	1300
Voltage&Curent	V & A	400 & 32	400 & 32	400 & 32	400 & 32
Heating Power	W	400	2×400	400	2×400
Printing Accuracy	mm	0,15-1,2	0,15-1,2	0,15-1,2	0,15-1,2
Machine Size	mm	1600×1700×2300	1600×1700×2300	1800×1700×2300	1800×1700×2300
Machine Weight	kg	950	960	970	980
Standard Pellet Materials	-	PA 6 GF, PA 6 CF, PEEK, ETFE, TPE, TPU, PMMA, PE, PP, PP GF, PP CF, PC	PA 6 GF, PA 6 CF, PEEK, ETFE, TPE, TPU, PMMA, PE, PP, PP GF, PP CF, PC	PA 6 GF, PA 6 CF, PEEK, ETFE, TPE, TPU, PMMA, PE, PP, PP GF, PP CF, PC	PA 6 GF, PA 6 CF, PEEK, ETFE, TPE, TPU, PMMA, PE, PP, PP GF, PP CF, PC
Machine Appearance	-				
Machine Dimensions	-				

*The robot work in a spherical volume. The printing part dimensions must be controlled with the robot work space.

Specifications SpaceA S-Line

ITEM	UNIT	SpaceA-S-2000-500-FP-S
Max. Throughout	cm^3/h	1500
Screw Diameter	mm	16/24
Screw Rotation Speed	RPM	130/250
Dryer	Liter	5/7
Nozzle Diameter	mm	0,3-5
Roboter Load	kg	30
Roboter Arm Length	mm	2100
Building Area	m × m × m	2×1×2*
Usual Print Speed	mm/s	100
Max. Print Speed	mm/s	250
Pneumatic Pressure& Pneumatic Flow(Peak)	bar & L/min	8 & 500
Max. Power	W	1800
Voltage&Curent	V & A	400 & 63
Heating Power	W	400/1000
Printing Accuracy	mm	0,15-1,2
Machine Size	mm	3500×2900×2500
Machine Weight	kg	2800
Standard Pellet Materials	-	PA 6 GF, PA 6 CF, PEEK, ETFE, TPE, TPU, PMMA, PE, PP, PP GF, PP CF, PC
Machine Appearance	-	
Machine Dimensions	-	

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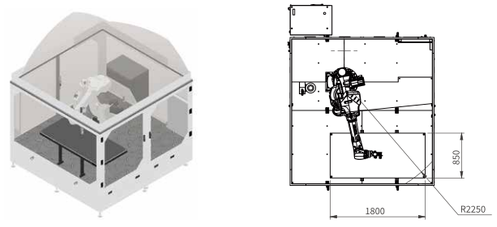
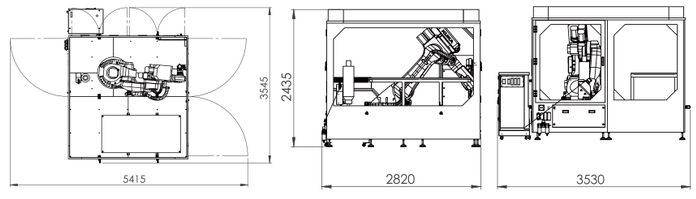
ITEM	UNIT	SpaceA-S-2500-500-FP-S
Max. Throughout	cm^3/h	1500
Screw Diameter	mm	16/24
Screw Rotation Speed	RPM	130/250
Dryer	Liter	5/7
Nozzle Diameter	mm	0,3-5
Roboter Load	kg	50
Roboter Arm Length	mm	2500
Building Area	m × m × m	2×1×2*
Usual Print Speed	mm/s	100
Max. Print Speed	mm/s	250
Pneumatic Pressure& Pneumatic Flow(Peak)	bar & L/min	8 & 500
Max. Power	W	1800
Voltage&Curent	V & A	400 & 63
Heating Power	W	400/1000
Printing Accuracy	mm	0,15-1,2
Machine Size	mm	3500×2900×2500
Machine Weight	kg	2800
Standard Pellet Materials	-	PA 6 GF, PA 6 CF, PEEK, ETFE, TPE, TPU, PMMA, PE, PP, PP GF, PP CF, PC
Machine Appearance	-	
Machine Dimensions	-	

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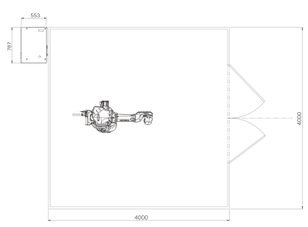
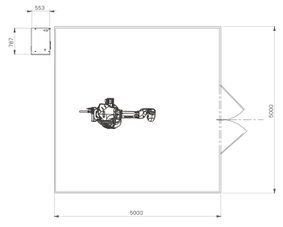
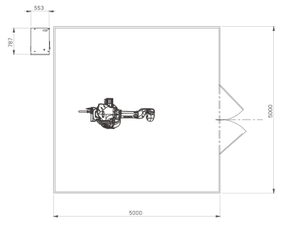
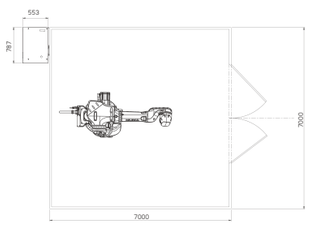
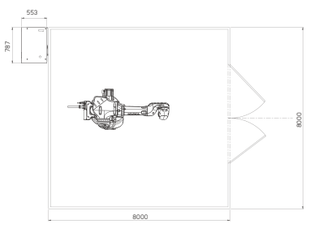
Specifications SpaceA B-Line

ITEM	UNIT	SpaceA-B-1600-10000-FP-S	SpaceA-B-2100-10000-FP-S	SpaceA-B-2500-10000-FP-S	SpaceA-B-3100-10000-FP-S	SpaceA-B-3900-10000-FP-S
Max. Throughout	cm^3/h	3500/10000	3500/10000	3500/10000	3500/10000	3500/10000
Screw Diameter	mm	16/24	16/24	16/24	16/24	16/24
Screw Rotation Speed	RPM	130/250	130/250	130/250	130/250	130/250
Dryer	Liter	5/7	5/7	5/7	5/7	5/7
Nozzle Diameter	mm	0,3 - 5	0,3 - 5	0,3 - 5	0,3 - 5	0,3 - 5
Robot Load	kg	16	30	50	120	120
Robot Arm Length	mm	1600	2100	2500	3100	3900
Building Area	m × m × m	1,5x1,5x1,5*	2x2x2*	2,5x2,5x2,5*	3,1x3,1x3,1*	3,9x3,9x3,9*
Usual Print Speed	mm/s	100	100	100	100	100
Max. Print Speed	mm/s	250	250	250	250	250
Pneumatic Pressure& Pneumatic Flow(Peak)	bar & L/min	8 & 500	8 & 500	8 & 500	8 & 500	8 & 500
Max. Power	W	1300	1800	1800	1800	1800
Voltage&Curent	V & A	400 & 63	400&63	400&63	400&63	400&63
Heating Power	W	400/1000	400/1000	400/1000	400/1000	400/1000
Printing Accuracy	mm	0,15 - 1,2	0,15 - 1,2	0,15 - 1,2	0,15 - 1,2	0,15 - 1,2
Machine Size	mm	4x4	5x5	5x5	7x7	8x8
Machine Weight	kg	1200	1500	1750	2000	2500
Standard Pellet Materials	-	PA 6 GF, PA 6 CF, PEEK,ETFE, TPE, TPU, PMMA,PE, PP, PP GF, PP CF, PC	PA 6 GF, PA 6 CF, PEEK,ETFE, TPE, TPU, PMMA,PE, PP, PP GF, PP CF, PC	PA 6 GF, PA 6 CF, PEEK,ETFE, TPE, TPU, PMMA,PE, PP, PP GF, PP CF, PC	PA 6 GF, PA 6 CF, PEEK,ETFE, TPE, TPU, PMMA,PE, PP, PP GF, PP CF, PC	PA 6 GF, PA 6 CF, PEEK,ETFE, TPE, TPU, PMMA,PE, PP, PP GF, PP CF, PC
Machine Dimensions	-					

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YFO:6 Premium Services

Telephone follow-up
Setting up customer files and providing consulting and guidance services

24-hour service
365-day, 24-hour hotline ser vice, about 200 maintenance experts for your needs

Door-to-door service
Regular on-site nspection by service engineers, providing preventative maintenance

Engineer grading
Grading for YFO service engineers to regulate service standards

Spare part service
Convenient spare part supply network, quick and accurate delivery

Training
Focused training for professionals and customers

YIZUMI e-service

YIZUMI

THINK
TECH FORWARD