

Transforming digital  
manufacturing and  
industrial production

# Neo<sup>®</sup> stereolithography range



## About us

RPS provides industrial 3D printing hardware, material and service solutions, transforming digital manufacturing and industrial production.

RPS is based in Aylesbury, England and started in 2007, servicing and supporting customers with legacy 3D printer hardware. The small team consisted of individuals who collectively had decades of experience working with stereolithography and laser sintering technology.

While servicing 3D printers within the industry, RPS engineers listened to customers and analysed the limitations of existing hardware in the market. This knowledge and insight inspired RPS to develop and manufacture the next generation of stereolithography 3D printer technology and launched the Neo800 in 2016. As a result of the success of the Neo800, RPS recently added the Neo450 series to the range, offering more choice and functionality to suit more applications, for all industries.

Every element of the Neo has been carefully considered, always with the customer needs in mind. From manufacturing the Neo with best-in-class components for greater reliability to regular user-driven software updates, the customer is always at the core of the Neo's development. We take care and time to manufacture each printer, that is why each individual Neo is given a name and introduced to every prospective new owner.

Today, the Neo is a world-leading stereolithography 3D printer renowned for its reliability, accuracy, and part quality. Used for high yield volume applications from prototyping and tooling, through to master patterns, the Neo is already placed within industries such as F1, automotive, service bureaus and Universities. The Neo is exceeding expectations, with many customers now owning multiple Neo systems.

Supporting and collaborating with our customers is the key foundation and cornerstone of RPS and continues to be the focus of what we do – working with our customers to help drive digital manufacturing and industrial production for business success.

British designed,  
developed and  
manufactured by  
RPS engineers.



# Neo<sup>®</sup>800



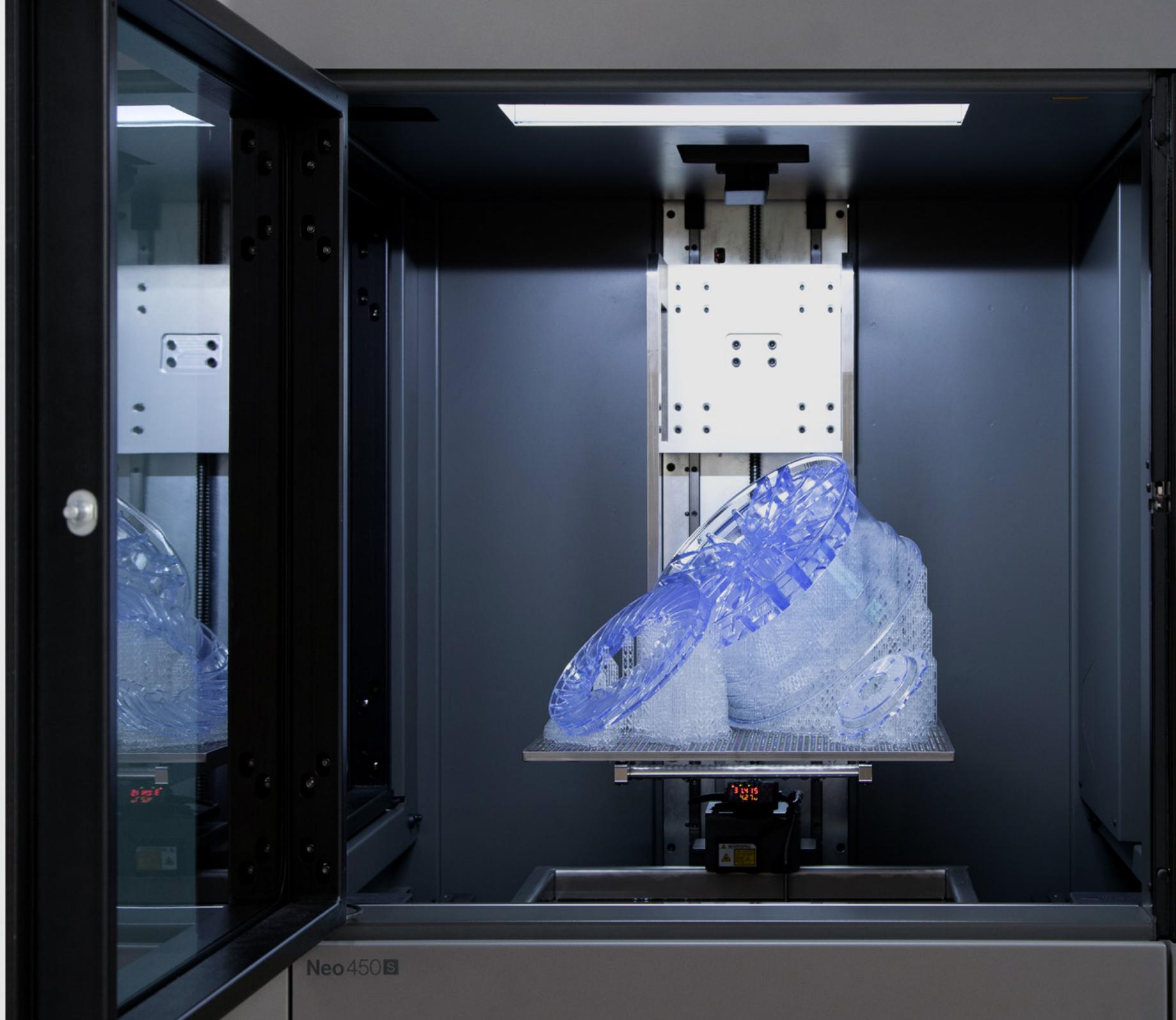
# Neo<sup>®</sup>450



Build prototypes, rapid tooling and master patterns with the state of the art Neo stereolithography range.

The reliable and proven Neo builds high-quality parts with superior surface quality, accuracy and detail.

Build medium  
to large SD parts  
or small detailed  
HD parts on the  
Neo450s.



Neo450s

# Why choose the Neo Stereolithography Range?

## Reduce finishing time by up to 50%

The Neo produces highly accurate parts with unparalleled industry quality. Optimising the machine design and utilising the latest cutting-edge technology available for laser and scanners, our beam delivery system produces exceptional layer-to-layer alignment repeatability. The printed parts are dimensionally accurate, with exceptional sidewalls and crisp feature resolution.



Designed with an open-resin system offering customers the ability to utilise any 355 nm hybrid resin chemistry.

Produce highly accurate parts with unparalleled industry quality.

## Versatile and Functional

The Neo is available in a large 800 x 800 x 600 mm platform or smaller 450 x 450 x 400 mm platform. Both offer different build options and modes to suit all applications.<sup>1</sup>

## Faster build speeds<sup>2</sup>

The high-power laser processes any 355 nm SL resin while maintaining maximum productivity between services. Build speeds are enhanced with carefully developed and efficient software. Dynamic beam shape control is standard throughout the Neo range, with variable option available for even greater build speeds



## Proven reliability and quality assurance

British designed and manufactured, the Neo is carefully engineered throughout using state of the art technology, proven components and aesthetic finishes.

## Minimise downtime, increase productivity

The Neo utilises an integrated UPS system with intelligent monitoring control.<sup>1</sup> With the UPS system, receive notification of any downtime for greater peace of mind. If the UPS battery runs out, a controlled build stop and shut-down will automatically occur, minimising any further disruption.

## Open resin system

An open material system means users are not restricted by the usual parameter constraints, offering the ability to utilise any 355 nm hybrid resin chemistry.



Printed parts are dimensionally accurate, with exceptional sidewalls and crisp feature resolution.

The Neo is designed for reliability and productivity. RPS expert service engineers are available to assist when needed.

## Enhance workflow efficiencies with Titanium™ software

Intuitive software is developed for simplified daily operation or more functionality. Customer suggestions and feedback are encouraged, driving user focused software updates.

## Part traceability and data reporting for your application

Titanium™ software helps you capture build history, parameter detail and part traceability data reporting. Get further insight such as hardware or resin usage easily, via Microsoft Excel® export.



## Outstanding accessible service and support

If required, highly skilled RPS engineers are available to support on-site the next business day<sup>3</sup> or via remote diagnostics to help when needed. Get direct access to the RPS engineers behind the design of the Neo for even greater reassurance when needed.

The Neo800 builds large prototypes, rapid tooling and master patterns, and is the global market-leader of large-format stereolithography technology.

Designed by RPS engineers, the Neo800 has been developed with the customer in mind. The Neo800 is renowned for its reliability and industry standard side-wall quality. It has an established proven track record for delivering consistently accurate parts and high yield volumes for industrial production.

Known in the industry for its productivity and performance, build exceptionally large parts with detail and accuracy.

Already proven in the market, the Neo800 is placed around the world in companies that belong to a range of industries such as F1, automotive, service bureaux and Universities.



### Key highlights

Print large parts with outstanding surface finish on the 800 x 800 x 600 mm build platform.

Produce large parts without the need for sectioning or build multiple parts in one build saving time and costs.

Intuitive Titanium™ software optimises build quality and captures build data for greater traceability, enhancing work efficiencies.

The Neo offload trolley and UV800 post-curing oven is available for the Neo800 for a complete end-to-end 3D printing solution.

Dynamic laser focusing and SD and HD build modes produces highly accurate and detailed parts.

Integrated UPS system allows for uninterrupted build time, for greater peace of mind.

Develop materials with the Neo Material Development Kit using the range of equipment and software provided for each stage of the process.

<b>Laser &amp; Scanning System</b>	<b>Laser</b>	2 Watt 355 nm, solid-state frequency tripled Nd: YVO <sub>4</sub>		
	<b>Beam Focus</b>	Dynamic & Variable		
	<b>Beam Size</b>	150 to 600 µm		
	<b>Scanning Speed</b>	Up to 10 m/s		
<b>Layer Resolution</b>	50 to 200 µm*			
<b>Minimum Feature Size</b>	0.2 mm in X & Y <sup>†</sup> / 0.4mm in Z <sup>†</sup>			
<b>Build Modes</b>	HD & SD			
<b>Accuracy</b>	Dimension <100 mm ±0.1 mm. Dimension >100 mm ±0.15% <sup>‡</sup>			
<b>Material Compatibility</b>	Open resin system - compatible with 355 nm stereolithography resins			
<b>Capacities</b>	<b>Build (XYZ)</b>	Short: 800 x 800 x 120 mm	Half: 800 x 800 x 300 mm	Full: 800 x 800 x 600 mm
	<b>Vat Fill</b>	173 ltr (194 kg <sup>‡</sup> )	300 ltr (336 kg <sup>‡</sup> )	555 ltr (630 kg <sup>‡</sup> )
<b>Software</b>	<b>Operating System</b>	Windows 10 Pro		
	<b>Input File Format</b>	SLC		
	<b>Control Software</b>	Titanium™		
	<b>Remote Editor</b>	Titanium Assistant™ (Optional)		
<b>Connectivity</b>	<b>Ethernet</b>	Fully compliant with IEE 802.3, IEEE 802.3u, IEEE 802.3ab		
	<b>WIFI</b>	Fully compliant with IEEE 802.11 b/g/n		
	<b>USB Port</b>	USB 2.0		
<b>Features &amp; Build Options</b>	Build validation / Build time estimator / Material usage estimator / Scheduled start / Open build parameters enabling any material to be processed / On-the-fly parameter adjustment & part deletion / Upper surface build quality optimisation / Bubble remover with automated option			
<b>Advanced Services &amp; Reporting Tools</b>	Industry 4.0 compliant / Full part traceability / Logging of machine utilisation; build history; parameters; material usage; formatted data export / System & build status email notification <sup>§</sup> / On-board camera / Resin viscosity tracking / User level access control / Scheduled lighting			
<b>Support</b>	1-click 'snapshot' job diagnostic pack for remote support / Remote diagnostics <sup>§</sup>			
<b>Electrical Requirements</b>	<b>208 ~ 240 V, 50/60 Hz</b>	900 W Typical operation, 1900 W Max		
<b>UPS</b>	Integrated UPS. 10 ~ 20 mins of system up-time with Intelligent Control			
<b>Environmental Requirements</b>	Temperature range: 20-23°C, max rate change ±1°C/hr. Relative humidity 20-50% non-condensing			
<b>Dimensions (WxDxH)</b>	1350 x 1630 x 2300 mm			
<b>Weight</b>	<b>Printer</b>	800 kg		
	<b>Vat (empty)</b>	240 kg		
<b>Warranty</b>	<b>System</b>	12 months on-site service and support, as per RPS conditions of sale		
	<b>Laser</b>	Replacement <800 mW before 10,000 hours or 18 months (whichever is sooner)		
<b>Accessories</b>	Neo800 offload trolley / Neo UV800 post-cure & heated resin store / Neo Material Development Kit			
<b>Regulatory Conformity</b>	CE  ICES-3			

\*100µm layer parameters are supplied for RPS certified materials. Parameters for alternative thicknesses may be available. Layer thickness range is material dependant. Contact RPS for more detail. †Accuracy & minimum feature size will vary depending on material, parameters, part geometry and size, pre & post-processing methods and environment. ‡Based on typical material density 1.12kg/ltr @ 26°C. §Internet connection is required for full or partial functionality.

# Neo<sup>®</sup>450

## A versatile printer with flexible options to suit all needs

**Reliable, productive and efficient, the Neo450 series is designed and engineered for industrial-grade performance.**

Based on the proven Neo800, the compact Neo450 series has a 450 × 450 × 400 mm platform and builds prototypes, rapid tooling and master patterns with exceptional surface quality, accuracy and detail.

Designed for greater flexibility and versatility, the Neo450 series is available in two models with different performance and functionality depending on your needs.

### Neo450e

The Neo450e is an affordable industrial grade 3D printer producing small to medium parts with consistent accuracy and repeatability. Dependable and reliable the Neo450e is designed for non-stop printing of industrial production parts.

### Neo450s

The Neo450s offers performance and versatility along with all the benefits of Neo450e. Producing superior quality parts, the Neo450s is up to 40% faster and offers standard and high definition build modes.



### Key highlights

#### Neo450e

Produce complex industrial grade quality prototypes, tooling or master patterns. Build parts with accurate detail and outstanding sidewall quality.

Dependable and reliable, the Neo450e is designed for non-stop printing of industrial production parts. Dynamic laser beam technology ensures highly-accurate laser beam positioning with outstanding layer resolution.

Intuitive Titanium™ software helps you capture build history, parameter detail and part traceability data for further insight and reporting.

#### Neo450s

Faster part production of industrial grade prototypes, master patterns and tooling with superior surface finish and detail.

One machine with multiple build modes reduces the need to operate many SL systems with different functions, reducing costs and space.

The Neo450s variable laser beam technology allows you to rapidly build SD or produce fine resolution HD parts with intricate, small detailed designs.<sup>1,4</sup>

		Neo450e	Neo450s
<b>Laser &amp; Scanning System</b>	<b>Laser</b>	1 Watt 355 nm, solid-state frequency tripled Nd: YVO <sub>4</sub>	2 Watt 355 nm, solid-state frequency tripled Nd: YVO <sub>4</sub>
	<b>Beam Focus</b>	Dynamic	Dynamic & Variable
	<b>Beam Size</b>	250 μm	80 to 750 μm
	<b>Scanning Speed</b>	Up to 10 m/s	Up to 10 m/s
<b>Layer Resolution</b>		50 to 200 μm*	50 to 200 μm*
<b>Minimum Feature Size</b>		0.3 mm in X & Y <sup>†</sup> / 0.4mm in Z <sup>†</sup>	0.15 mm in X & Y <sup>†</sup> / 0.4mm in Z <sup>†</sup>
<b>Build Modes</b>		SD	HD & SD
<b>Build Speed</b>		In like-for-like comparisons, build times are up to 40% shorter with the NEO <sup>®</sup> 450s <sup>1,9</sup>	
<b>Accuracy</b>		Dimension <100 mm ±0.1 mm. Dimension >100 mm ±0.1% <sup>†</sup>	
<b>Material Compatibility</b>		Open resin system - compatible with 355 nm stereolithography resins	
<b>Capacities</b>	<b>Build (XYZ)</b>	Short:** 450 × 450 × 50 mm	Half:** 450 × 450 × 200 mm
	<b>Vat Fill</b>	38 ltr (43kg <sup>‡</sup> )	141 ltr (158 kg <sup>‡</sup> )
<b>Software</b>	<b>Operating System</b>	Windows 10 Pro	
	<b>Input File Format</b>	SLC	
	<b>Control Software</b>	Titanium™	
	<b>Remote Editor</b>	Titanium Assistant™ (Optional)	
<b>Connectivity</b>	<b>Ethernet</b>	Fully compliant with IEE 802.3, IEEE 802.3u, IEEE 802.3ab	
	<b>WIFI</b>	Fully compliant with IEEE 802.11 b/g/n <sup>††</sup> (optional)	
	<b>USB Port</b>	USB 3.1	
<b>Features &amp; Build Options</b>		Build validation / Build time estimator / Material usage estimator / Open build parameters enabling any material to be processed / On-the-fly parameter adjustment & part deletion / Upper surface build quality optimisation / Bubble remover with automated option / Scheduled start	
<b>Advanced Services &amp; Reporting Tools</b>		Industry 4.0 compliant / On-board camera / Full part traceability / Logging of machine utilisation; build history; parameters; material usage; formatted data export / System & build status email notification <sup>§</sup> / Resin viscosity tracking / User level access control / Scheduled lighting	
<b>Support</b>		1-click 'snapshot' job diagnostic pack for remote support / Remote diagnostics <sup>§§</sup>	
<b>Electrical Requirements</b>		110 ~ 120 Volt, 60 Hz	300 W Typical operation, 550 W Max
		220 ~ 240 Volt, 50 Hz	700 W Typical operation, 1300 W Max
<b>UPS</b>		10 ~ 20 mins of system up-time with Intelligent Control (Optional)	
<b>Environmental Requirements</b>		Temperature range: 20-23°C, max rate change ±1°C/hr. Relative humidity 20-50% non-condensing.	
<b>Dimensions (WxDxH)</b>		1050 × 1225 × 1900 mm	
<b>Weight</b>	<b>Printer</b>	600 kg	
	<b>Vat (empty)</b>	100 kg	
<b>Warranty</b>	<b>System</b>	12 months on-site service and support, as per RPS conditions of sale	
	<b>Laser</b>	Replacement <400 mW after 10,000 hours or 18 months (whichever is sooner)	Replacement <800 mW after 10,000 hours or 18 months (whichever is sooner)
<b>Regulatory Conformity</b>		CE  ICES-3	

<sup>1</sup>100μm layer parameters are supplied for RPS certified materials. Parameters for alternative thicknesses may be available. Layer thickness range is material dependant. Contact RPS for more detail. <sup>†</sup>Accuracy & minimum feature size will vary depending on material, parameters, part geometry and size, pre & post-processing methods and environment. <sup>‡</sup>Based on typical material density 1.12kg/ltr @ 26°C. <sup>§</sup>Internet connection is required for full or partial functionality. <sup>§§</sup>Based on internal testing October 2019. <sup>\*\*</sup>Available 2021 Q2. <sup>††</sup>Ethernet connection recommended to ensure all functionality, please contact RPS for more details.

Made in the UK, the Neo450 has been carefully designed and engineered throughout using premium components, parts and finishes.



# Neo Software – Titanium™ and Titanium Assistant™



Many options are user-definable as defaults, enabling simple click-and-print operation.

Part traceability and hardware utilisation facilitated by excellent reporting capability.



## What is Titanium™ Software?

Neo Titanium™ is industry leading software that has been designed with the user in mind. Compatible with Windows 10, the easy-to-use interface allows users to start builds quickly and monitor throughout the building process. Software updates are driven by customer suggestions and feedback, providing a system that is optimised for customers and their applications.

## What can you do with Titanium™ Software?

Titanium has been carefully designed with both the user and department manager in mind. Many options are user-definable as defaults, enabling simple click-and-print operation.

Automated communications assist department efficiency and field service response. Part traceability and hardware utilisation is facilitated by excellent reporting capability.

## Highlights:

### 1. Range of build options & features

- Build validation
- Build time estimator
- Material usage estimator
- On-the-fly parameter adjustment and part deletion
- Upper surface build quality optimisation
- Bubble remover with automated option
- Scheduled start

### 2. Build Status Notification Emails

Build progress emails can be sent to users at any point during a build. This assists department efficiency optimising machine utilisation. Titanium can also be configured so users can receive emails for: Build Start, Pause, Completion or Alert Progress.

### 3. On-board Camera

Each Neo system is installed with a built-in camera, offering users the potential to keep track of builds remotely, at any stage.

### 4. Industry 4.0

The Neo stereolithography system range can be integrated into an Industry 4.0 system. Integration is available through multiple mechanisms including a RESTful API and shared file access. The data provided includes progress details of the current build. Neo uses industry standard formats (e.g. XML). The RESTful API supplies the data using JSON. RPS is open to work with customers in developing the remote access interface and RESTful API to provide additional functionality.<sup>5</sup>

### 5. Reporting Tools and Export

Titanium features a range of reporting tools and dashboards to help users capture build history, parameter detail, hardware usage and part traceability data. This data

can assist operators and managers to analyse utilisation of the Neo to help meet business objectives. Using Titanium, data is easily accessed with a click of a button and can be exported as a formatted Microsoft® Excel spreadsheet, via email or to a USB drive. Data can cover a range of timeframes and builds including:

- Build reports
- Monthly / Yearly / Custom period reports

### 6. Part Traceability and Hardware Utilisation

In many industries part traceability is paramount. With Titanium software, parts are easily traced to a build with all parameters recorded. A complete insight on hardware usage hours can be easily obtained to determine hardware productivity.

## Titanium Assistant™, the companion application to the Neo Titanium™ software.

Titanium Assistant is a standalone software application that allows operators to preview build files, schedule planning and prepare builds on multiple Neo systems from any PC on a network.

Designed to optimise workflow, Titanium Assistant can run on a local workstation offering users remote access to operational alerts and status of multiple Neo printers utilised within a facility.

### Prepare

Once slice files are available, this function allows the user to alter the parameters of a build, remotely.

### Preview

Titanium Assistant will analyse and validate each build before printing. Users can also preview and check the integrity of the slice file, quickly and easily.

### Plan

Obtain independent build time estimates prior to sending files to a Neo. This assists operators with build scheduling and maximises machine utilisation.

### Print

Effortlessly transfer your build files with all parameters to a specific Neo platform remotely. No need to move build files manually using memory sticks, increasing productivity.

# Accessories and Support

**A range of Neo accessories is available for the Neo800 for an end-to-end 3D printing solution.**

## **Neo Offload Trolley**

This allows completed build platforms to be moved from the Neo800 to the part clean up area.

## **Neo UV800**

Printed parts need to undergo a final post cure process. The UV800 is designed to fulfil this requirement with high intensity UV lamps and turntable. Exposure processing times are controlled via a dedicated PLC with HMI screen.

The lower half of the UV800 is a heated resin store, maintaining resin at VAT temperature. This avoids any significant temperature changes when refilling a vat.

## **Neo Material Development Kit**

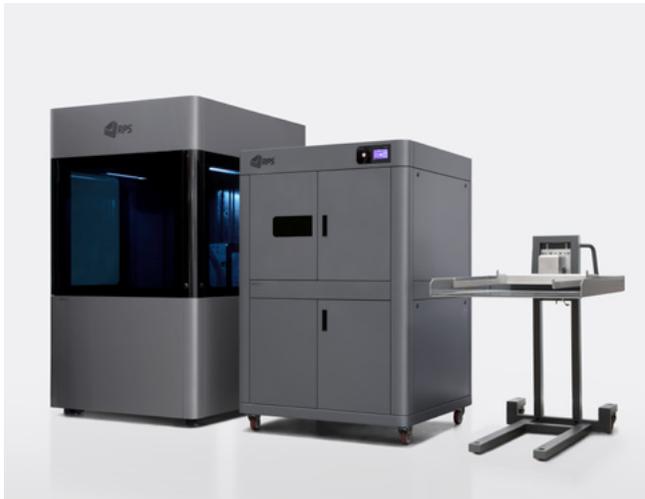
Create new and innovative materials for a variety of applications with the Neo Material Development Kit. To be used in conjunction with the Neo800 stereolithography system, develop materials with ease using the range of equipment and software provided for each stage of the process.

## **Materials**

In partnership with DSM Somos®, RPS can provide the most technically advanced stereolithography resins for all Neo systems. The Neo800 has RPS certified parameters to work with the following DSM materials including PerForm, EvoLve 128, Watershed and Taurus.

## **Support**

The highly reliable Neo range has a proven track record for reliability, productivity and performance. For further support or maintenance, RPS has a dedicated team of highly skilled and knowledgeable service engineers ready to assist when needed. We can be there for in-person repairs, parts and service the very next business day<sup>3</sup> or available via remote system access and telephone assistance.



Neo800 with UV800 post curing oven and Neo offload trolley.

Our expert engineers can be there for in-person repairs, parts and service the very next business day.<sup>3</sup>

1. Features may vary depending on Neo model specification.
2. Accuracy & minimum feature size will vary depending on material, parameters, part geometry and size, pre & post-processing methods and environment.
3. Available in selected countries.
4. 100µm layer parameters are supplied for RPS certified materials. Parameters for alternative thicknesses may be available. Layer thickness range is material dependant. Contact RPS for more detail.
5. Internet connection is required for full or partial functionality.



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Contact us  
+44 (0)1296 425 665  
enquiries@rps.ltd

rps.ltd

Unit 3 Premus  
Brunel Park  
Coldharbour Way  
Aylesbury  
Buckinghamshire  
HP19 8AP  
United Kingdom

