NEW

Renfert

making work easy

3D printing with SIMPLEX

plug and print –

The SIMPLEX 3D filament printer system specially designed for model production in the orthodontic sector

Getting started with digital model fabrication is effortless – at the touch of a button

plug and print

Dental 3D printing helps to optimize workflows in the dental office and the dental laboratory and closes a gap in the digital workflow. Having your own 3D printer will open up a whole new world and will enhance your work, while also making it easier. The potential offered by 3D printing is particularly high in the world of orthodontics. The SIMPLEX 3D filament printer has been specifically designed for orthodontic applications. With this device, getting started with 3D printing technology is effortless and convenient. "Ready to use," and clean too – without any biologically harmful cleaning chemicals. With the innovative 3D filament printer (FDM/FFF process), you can print any type of orthodontic models. And the best thing about it: The printed models don't need any post-processing.

A simple solution for environmentally safe and sustainable printing. With SIMPLEX, getting started with digital model production is effortless – basically a touch of a button.

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"The digital possibilities make our day-to-day work much easier. We should see them as an opportunity."

In conversation with Dr. Oliver Raeth, Orthodontist from Engen, Germany

The SIMPLEX 3D filament printer system

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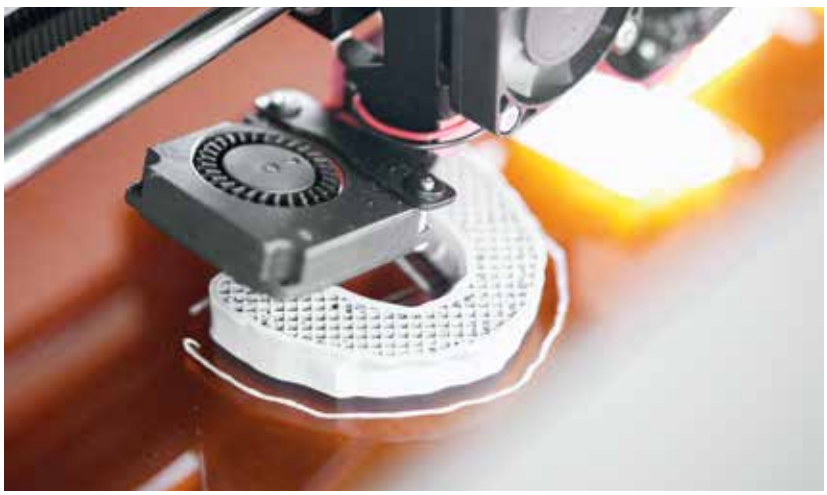
HOW 3D FILAMENT PRINTING MAKES DAY-TO-DAY ORTHODONTIC WORK EASIER

In most orthodontic indications, a physical model is essential despite all of the virtual possibilities that are available. From the dataset right to the model – without any production service providers – with 3D printing, you can close an important gap in your digital workflow. Whether SLA, DLP or FDM/FFF: 3D printing is considered a trendsetter in the dentistry world and is becoming increasingly important in the area of orthodontics. But what are the benefits of 3D printing in day-to-day practice? And what makes filament printing so exciting for orthodontic applications? Orthodontist Dr. Oliver Raeth from Engen provides an insight into a typical day in his practice.



Visiting Dr. Oliver Raeth, Orthodontist from Engen, Germany

"FOR US, THE MAIN APPLICATION AREA FOR THE 3D FILAMENT PRINTER IS THE PRODUCTION OF ALL TYPES OF ORTHODONTIC MODELS."

Dr. Oliver Raeth is a big fan of the digital workflow in his orthodontic office. For him, the benefits of digital orthodontics are the simplified work processes and the time savings that are achieved as a result. Data capture, diagnostics, treatment planning, manufacturing of appliances, data archiving, follow-up checks etc. – all of this takes place quickly and precisely within the digital process chain. He also appreciates the fact that the intraoral scanner allows him to work more sustainably. "We need a lot less alginate and plaster," the orthodontist explains. And there is no need to clean or disinfect the impression or manually fabricate the model; the office team can print out the models themselves with ease. At his dental office, there are hardly any of the work steps that would conventionally take a lot of time and involve the potential for errors. This also results in a high level of satisfaction among the office team.

Filament printing as a eco friendly production technology

When deciding which 3D printing system to go for, Dr. Raeth looked at a variety of printer technologies to see which would best meet the requirements of his practice. The main area of application is the printing of orthodontic full-arch models. With this application, the aim is to get from the dataset to the model as quickly and easily as possible. Dr. Raeth's decision to choose filament printing was based on a number of reasons: On the one hand, he was impressed by the simplicity. On the other hand, there was the fact that this system uses no resins, etc.; it avoids the use of additional harmful substances in the dental office. "Environmental aspects are also very important to us. No biologically harmful cleaning chemicals are used," adds Dr. Raeth.

Tangible arguments for the SIMPLEX 3D filament printer

When asked what makes the SIMPLEX 3D filament printer so special as a dental filament printing system, he answers with tangible arguments. SIMPLEX has been specifically designed for the orthodontic industry and has the necessary print volume. In day-to-day work, this means "plug and print" – with no need for any prior knowledge. "Just the touch of a button is all it takes to print a model from the digital dataset," says Raeth, praising the simple operation and flexibility of the device. "The printer can be installed anywhere within the office," he adds. The SIMPLEX 3D filament printer is quiet and offers a high resolution. And the material selection is important too, according to the orthodontist. With SIMPLEX, high-quality special filaments are provided for every orthodontic application. The configured print program and filament are used in line with the particular indication. Application errors are virtually ruled out thanks to the automatic presets.

Cost-efficient and sustainable

And the decision to buy the printer has been worthwhile from an economic perspective too. Since working with the SIMPLEX 3D filament printer, the value creation has remained in the dental office with a lot of applications (e.g. aligners). In terms of purchase price, the filament printer is much more affordable than other options such as DLP systems, and the printing of the models saves a lot of time compared to the conventional method. And there's no hazardous waste. For Dr. Oliver Raeth and his team, this makes the digitally supported model production a cost-efficient, sustainable and clean option.

Find out everything you need to know to get started with filament printing on the next pages.

Real experience

"The SIMPLEX 3D filament printer stands out thanks to its simplicity and intuitive operation. Theoretically, anyone in the team can operate the printer. And there are no cleaning chemicals and no polymerization (which is unavoidable with resin printing). This means no isopropanol and no light curing. This allows us to meet our objectives not only regarding environmental and climate protection but also regarding health protection within our office team".

Dr. Oliver Raeth,
Orthodontist from Engen, Germany

The SIMPLEX 3D filament printer system:

BECAUSE COMPLEX DOES NOT NEED TO BE COMPLICATED

The use of 3D printing as an additive production technology closes a gap in the digital workflow in the dental office and the dental laboratory. But despite an enthusiasm for technological possibilities, you as a user are probably not a computer science engineer or a mechanical engineer. Your journey to the printed model should be simple. And because complex doesn't need to be complicated, there's now the SIMPLEX 3D filament printer. With this special filament printer for the orthodontic sector, getting started with 3D printing is practically child's play.

The specially coordinated system is what makes SIMPLEX such a simple option for the orthodontic sector.

"Thanks to the simple operation and the fact that no biologically harmful cleaning chemicals are used, the SIMPLEX 3D filament printer system fits in perfectly with our day-to-day work."

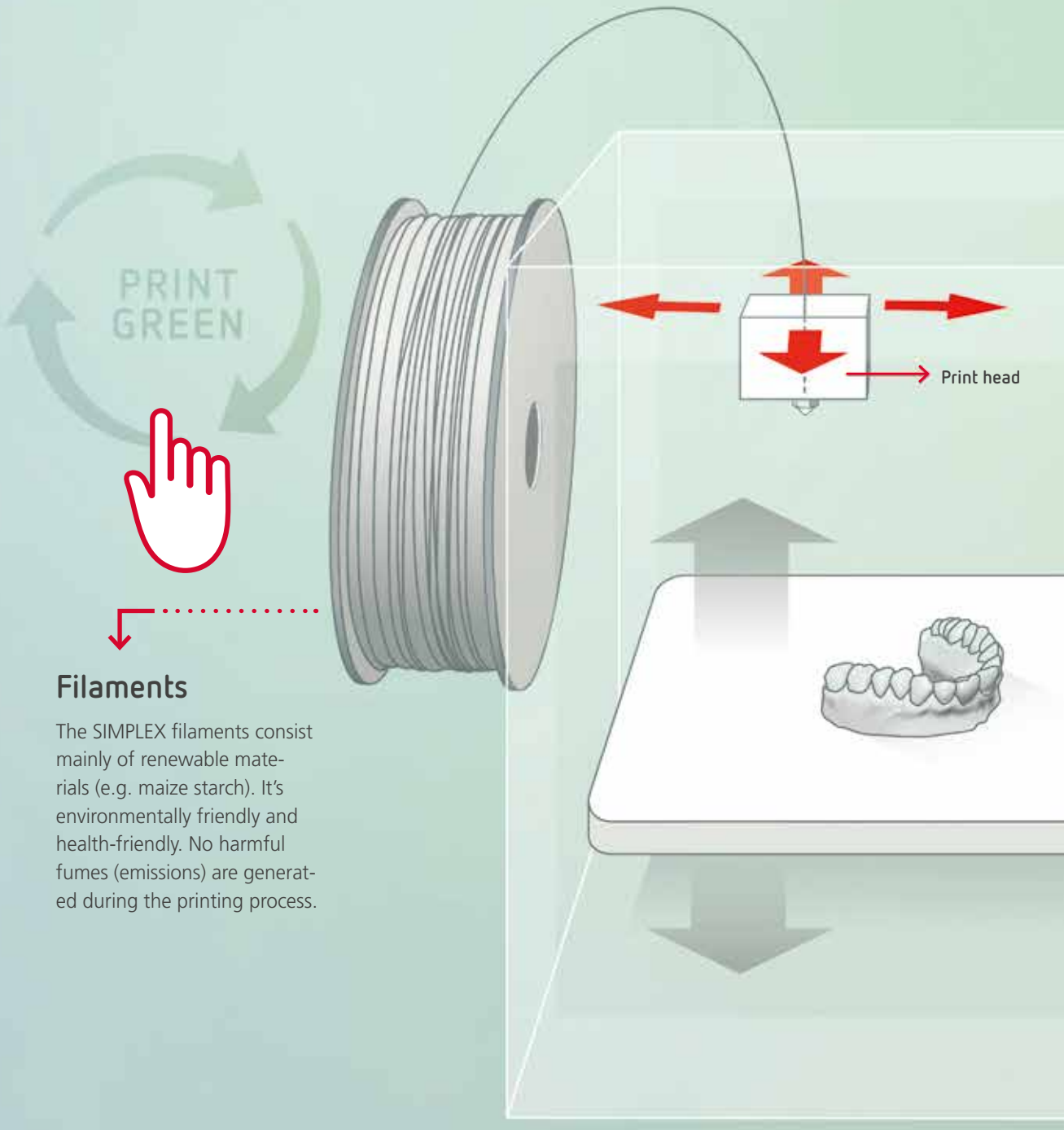
Christian Born, DT at Cultus Dentes Orthodontic Laboratory, Berlin, Germany

1.

The technology behind filament printing

ECO-FRIENDLY AND EFFICIENT PRINTING

Filament printing (FDM/FFF process) uses melting filaments (thermoplastics in wire form assembled on a reel). The material softens under the influence of heat. A nozzle then builds up the 3D print object layer by layer on the print bed. Done! The filaments used in the SIMPLEX 3D filament printer system are mainly bioplastics that can be industrially composted without the need for any complex processes. This gives the orthodontic office and the laboratory an environmentally sustainable way of creating a 3D-printed object.



Filaments

The SIMPLEX filaments consist mainly of renewable materials (e.g. maize starch). It's environmentally friendly and health-friendly. No harmful fumes (emissions) are generated during the printing process.

- **100% free from irritants**
- **No polymerization in the light-curing unit necessary**
- **No post-processing with chemicals required**
- **Eco friendly and health-friendly printing**
- **Colorfast, UV-resistant**

Real experience

Unlike resin 3D printers, filament printers do not require any time-consuming post-processing (polymerization, cleaning). Filament-printed objects do not need to be cleaned or polymerized. ***In other words: fewer work steps and fewer chemicals.***

Christian Born, DT at Cultus Dentes Orthodontic Laboratory, Berlin, Germany

2.

Perfectly coordinated components

SIMPLE AND INTUITIVE WORKING

The SIMPLEX stands out from other filament printers with its intelligent advantages. The SIMPLEX 3D filament printer system is a coordinated orthodontic solution. With its dental-specific slicer software and appropriate filaments, the modified printer ensure consistently reproducible and reliable results. It's that simple!

1. Printer + 2. Software

SIMPLEX 3D filament printer system

An extremely wide range of orthodontic models can be produced, e.g. working models, planning models or aligner models.

3. Filaments

SIMPLEX filaments and their area of application

SIMPLEX study model
Diagnostic and planning models

SIMPLEX working model
Working models

SIMPLEX aligner model
Models for aligner and thermoforming technique

SIMPLEX multi-use model
Diagnostic and planning models

Perfectly coordinated components

quick easy intuitive

The name says it all.
With the SIMPLEX 3D filament printer system, getting started with 3D printing is simply effortless. The printing system is configured for the requirements and print volume of an orthodontic office or laboratory. It makes your work and your team's work more convenient and consistent. You don't need any prior knowledge. Just switch on and print – it's that simple. The system consists of three coordinated components.

- **Healthy, time-saving working with filaments, 100% free of irritant substances**
- **High-quality materials (made in Germany)**
- **Process reliability thanks to coordinated indication area**
- **Excellent mechanical properties**

The **SIMPLEX filaments** (printer material) are adapted to the particular application (e.g. aligner model) and coordinated in line with the printing parameters. Simply select the area of application, insert the material and start the printing process. Our filaments provide a high level of consistency and dimensional accuracy, resulting in excellent print quality and sharp detail reproduction. The high-quality special filaments are harmless to health and have excellent mechanical and physical properties.

1.
Printer

- **Pre-installed programs for the orthodontic sector and the specific models**
- **Simple integration into day-to-day practice and laboratory operations**
- **Detailed results and process reliability**
- **Extremely quiet printing**

The **SIMPLEX 3D filament printer** stands out thanks to its intelligent simplicity. The device is compact and can be installed even in the smallest of rooms. Secure use is guaranteed thanks to the closed building chamber with lockable door and removable cover. The touchscreen navigation makes for convenient operation. The printer communicates with your PC via Wi-Fi*. You simply select the indicationcomand the material; the printer does everything else (pre-installed parameters). During the printing process, the filament monitoring system with notification function and automated troubleshooting ensures process reliability. Once printing is complete, the object is detached from the removable print bed. Because no post-processing is required, you can continue working immediately.

* Valid for EU and USA

2.
Software

- **Pre-set printing parameters for perfect results**
- **Easy induction for the office and laboratory team**
- **High process reliability**

The **slicer software** with pre-set settings developed for the dental industry can be seen as the mediator between an STL file and a 3D printer.
It's the centerpiece of the SIMPLEX 3D filament printer system. The software receives the digital dataset from the scanning process in the standard STL format. STL files cannot be read or used by a 3D printer, so the SIMPLEX sliceware coverts them into machine-readable Print controls. These Print controls are known as G-code. As part of this conversion, the SIMPLEX sliceware "slices" the CAD/STL file into individual horizontal slices, and describes a precise, machine-readable path for the printer for each slice, which is what then makes 3D filament printing possible.

Perfectly coordinated components

SOFTWARE AND FILAMENT – THE PERFECT COORDINATION IS WHAT MAKES SIMPLEX SO EASY TO USE

The quality of a print object depends on a number of different factors. These include the filament as well as the printing parameters, the print speed and the layer thickness (resolution) – these parameters can be controlled using the software. Because the software operates based on default settings, you only need to select the application and the appropriate material and then start the printing process.

Simply select the default setting for the required print model in the software, such as the "SIMPLEX aligner model."

All model types required for orthodontic purposes are stored in the software with the appropriate printing parameters. This ensures a high level of process reliability and simplicity.

Place the specific filament for the model to print into the SIMPLEX 3D filament printer, such as the "SIMPLEX aligner model."

The SIMPLEX filaments are easy to insert into the printer thanks to their clever design. It takes just a few simple steps. The printing process is then started by pressing a button.

Real experience

SIMPLEX is just as suitable for those just getting started with 3D printing as it is for experts, thanks to the option to select between two different modes. In the Renfert mode, the printing parameters are already defined. All of the necessary settings for orthodontic applications are pre-configured and tailored to the filament. In Expert mode, however, the presets can be modified as required.

Dr. Oliver Raeth,
Orthodontist
from Engen, Germany

An overview of the default settings and the matching filaments:

SIMPLEX study model filament

Specially designed for printing planning and diagnostic models

The bioplastic filament SIMPLEX study model offers high detail reproduction and sharpness for precise planning and diagnostics. The filament promotes a pleasant working environment (free from irritants). The filament does not produce unpleasant vapors during the printing process, is recyclable and industrially compostable.

Printing temperature: 190 to 230°C

SIMPLEX working model filament

Specially designed for printing working models

The bioplastic filament SIMPLEX working model offers high detail reproduction and impact resistance. The filament encourages a pleasant working environment (free from irritants). The filament does not produce unpleasant vapors during the printing process, is recyclable and industrially compostable.

Printing temperature: 190 to 230°C

SIMPLEX aligner model

Specially designed for printing models to be processed with the thermoforming technique (aligner*)

The special filament SIMPLEX aligner model is tailored to the special requirements of aligner production and of the thermoforming technique*. The material is dimensionally stable, promotes a pleasant working environment (free from irritants), does not produce unpleasant vapors during the printing process and is recyclable.

Printing temperature: 235 to 255°C

*not suitable for: Zendura Clear Aligner & Retainer Material

SIMPLEX multi-use model

Specially designed for printing models with a high gypsum content

The bioplastic filament SIMPLEX multi-use model provides a natural surface effect with its high hard-gypsum content. The fi-lament offers high detail reproduction and can be optimally worked with rotary instruments or a scalpel. The filament promotes a pleasant working environment (free from irritants). The filament does not produce unpleasant vapors during the printing process, is recyclable and industrially compostable.

Printing temperature: 205 to 220°C

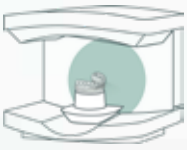
3.

A system that's extremely easy to use in the practice

ECONOMICAL AND RELIABLE

The SIMPLEX 3D filament printer system is extremely simple to use in your office or laboratory. It starts up at the touch of a button with ease and without any extensive prior technical knowledge. This makes getting started with 3D printing both efficient and reliable. You and your team are sure to be impressed by the intuitive workflow.

plug and print



Extraoral scanner

Intraoral scanner

Step 1
SCAN

Extraoral scan/Lab
Intraoral scan/Clinical
Generate the digital dataset for the mouth. This is performed using the intraoral scanner. Alternatively, use an impression or model scanner.

Step 2
CAD-DESIGN

transfer via STL-File

Digital model
Import the data to the CAD software (e.g. model builder, orthodontic software). This is where the digital model is generated (STL dataset).

G-Code
The G code integrates all of the necessary information for 3D printing:
- Extruder temperature
- Print bed temperature
- Process speed
- Feed rate
- Fan settings

etc.

transfer G-Code via
Wi-Fi (EU and USA)
USB A-B cable
USB stick

Step 3
MODEL PRODUCTION

3.1 SIMPLEX sliceware
Slicer software, slicing software, slicer or SIMPLEX sliceware is a software interface between the CAD program and the printer, and is what makes the 3D printing possible in the first place.

3.2 SIMPLEX 3D filament printer
Printing with the SIMPLEX 3D filament printer. The filament is heated and melted in the extruder and then printed onto the print bed by a nozzle. The model is created layer by layer.

Step 4
PRODUCTION OF ORTHODONTIC APPLIANCES

Orthodontic application
The model can be used as usual, e.g. for the production of aligner splints or orthodontic appliances, without the need for any post-processing.

Done!

A system that's extremely easy to use in the practice

THE COMPACT AND INTELLIGENT DESIGN GUARANTEES MAXIMUM UTILIZATION DURING DAY-TO-DAY OFFICE AND LABORATORY OPERATIONS

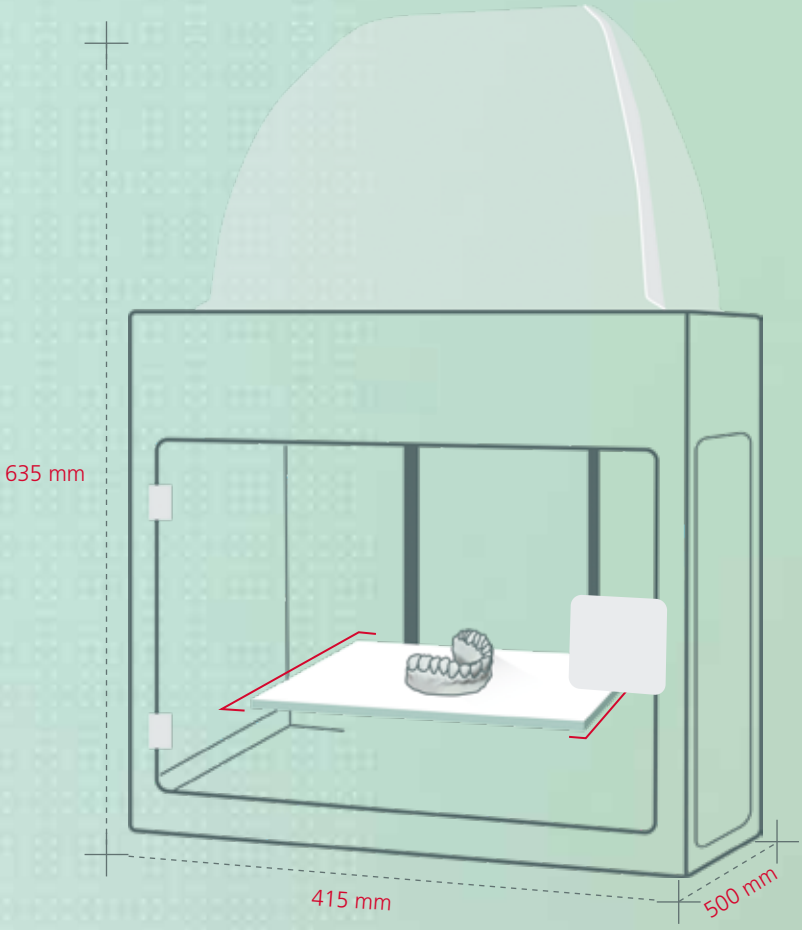
What makes the SIMPLEX 3D filament printer so appealing is its compact design. The printer can be installed with ease even in small spaces. At the same time, the intelligent compact dimensions and the versatile print bed also offer maximum utilization.

When developing this printer, we put a lot of emphasis on functionality. This included making sure that the printer could be easily integrated into the office and laboratory environment while also allowing for a high level of utilization. Compact – with maximum flexibility: This is SIMPLEX!

Joanna Deligianni, Product Manager and Dental Technician at Renfert

Size of the SIMPLEX 3D filament printer

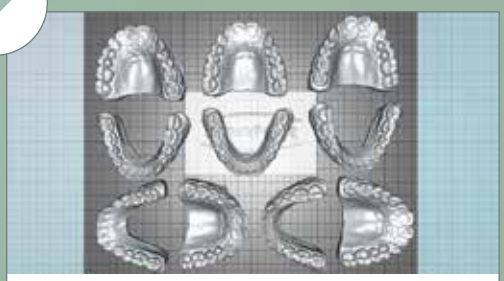
(Incl. filament holder and cover)



Its compact dimensions mean that the SIMPLEX 3D filament printer will find its place even in the smallest of rooms. With its space-saving design, the printer provides added convenience during day-to-day practice and laboratory operations in almost any location.

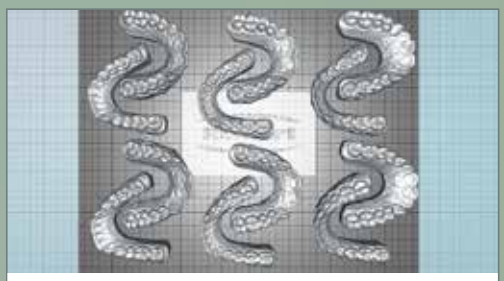
Print bed

Despite its modest dimensions, the SIMPLEX 3D filament printer offers a versatile and optimal print bed with space for approx. 12 dental arches, approx. 10 working models or approx. 8 planning and diagnostic models.



Working models

Planning models



Aligner models

A system that's extremely easy to use in the practice

THE EASY WAY TO GET STARTED WITH PROFESSIONAL DENTAL 3D FILAMENT PRINTING

The SIMPLEX 3D filament printer system contains more than just the 3D filament printer. With the SIMPLEX, you are also getting the SIMPLEX sliceware software, which is designed specifically for dental applications and which can be used to prepare your STL files for filament printing securely and easily thanks to the pre-installed default settings. There is also the SIMPLEX print software that allows you to access the SIMPLEX printer from your PC or to start, pause and stop a print job, as well as a USB stick and SIMPLEX study model filament so you can start printing immediately once you have installed the system.

SIMPLEX

Here is what is included in the package:

- SIMPLEX 3D filament printer
- SIMPLEX sliceware
- SIMPLEX print
- SIMPLEX study model
- Filament sensor
- Cover with fan
- Lockable Plexiglas door with lock and key
- USB stick
- Filament roll holder
- Bowden system (filament guiding tube)
- Service set
- Power cable with safety plug
- Travel adapter
- USB-A-B cable
- Distance card
- Quick-start guide
- Operating manual

plug and print

Here's how easy it is to get started

1. **Unpack and install**

2. **Level the print bed**

3. **Load the filament**

4. **Install SIMPLEX sliceware**

Printing

Real experience

I was completely won over by the convenient "plug and print" system. Renfert has really put its "making work easy" performance promise into this device. In a nutshell, that means: no major effort, no high investments, no environmental impact, and an automated, controllable, and valid process

Here's how easy it is to get started without time-consuming trial and error. I select the program, push the button, and the system does what it is supposed to – fantastic!

Christian Born, DT at Cultus Dentes Orthodontic Laboratory, Berlin, Germany

4.

Making it easier to work with SIMPLEX – also in the long term

SERVICE & GUARANTEE

Day-to-day practice and laboratory operations can expose you to many challenges. Therefore: Why not use the convenient services we offer for SIMPLEX? We have set up our Customer-Success-Program to make sure that digital model production in your day-to-day work goes smoothly right from the start. This program provides all the help you could possibly need at any time. SIMPLEX 3D filament printer system – enjoy simplicity with us!

The Customer-Success-Program

The Renfert Customer-Success-Program is the service you can rely on if something isn't working correctly. We will help find a solution as part of the Renfert guarantee. Simply download our **Renfert CONNECT app*** free of charge to take full advantage of all the benefits. Register and you're ready to go!

Renfert *CONNECT*

*** Available soon on the App Store and Google Play Store.**

The Customer-Success-Program includes

Renfert

WORKFLOW GUARANTEE

3-year guarantee*
10 year spare parts guarantee
activity guarantee

+ **3-year Renfert Workflow guarantee**
The benefits you can enjoy: 3 year guarantee on Renfert devices!*

+ **10 year spare parts guarantee**
All Renfert products are very durable. Therefore we guarantee a high availability of spare parts. Renfert guarantees that original spare parts will be available for every device for a period of at least ten years after purchase.

+ **The activity guarantee**
The Renfert Service is extraordinarily efficient. Renfert dealers and certified service partners are supported by a strong international team that does everything it can to minimize any failures in the laboratory with passion and expertise. This helps to guarantee economic efficiency.

+ **Maintenance service**
Optimal product performance significantly increases service life and reduces the likelihood of failures. Ask about our attractive service offerings!

+ **Device hire service**
This is another area where you rely on us. Enjoy the benefits of our device hire service to minimize downtimes. Just get in touch!

* Wear parts excluded

24/7/365
SUPPORT

We provide the following support at www.renfert.com/simplex/support:

- Self-help videos and support videos
- Repair instructions
- Operating instructions
- Spare parts lists
- Drawings
- FAQs
- Remote desktop help (only available during service hours and following successful software download and installation)
- Contact options
- Helpline and live chat
- RIC (Renfert Chatbot)

In addition to the Customer-Success-Program, we also provide a free support package with every purchased Renfert device. Because in the end, only one thing is important: that you're satisfied, as quickly as possible.

direct to 24/7/365 support ›

Renfert *SUPPORT*

"Trust is based on knowing that you always have a contact partner."

Markus Münch, After Sales Service Advisor

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Renfert making work easy

plug and print

Find more SIMPLEX information at:
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Our service works:
quickly and easily.

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making work easy

"making work easy" is our promise in everything we do. Renfert products are developed with your needs in mind. Everything we do follows one specific goal: to make your daily work a little bit easier. That's what "making work easy" is all about - less stress, better results, more success.

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