3DGence

INDUSTRY F421

rev.1/2021

3DGence INDUSTRY F421

Main features:

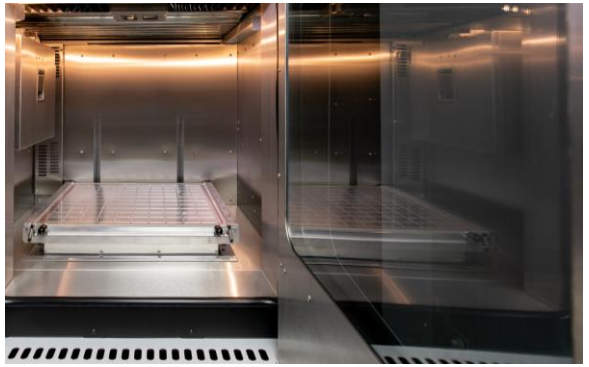
1. **Interchangeable printing modules** – wide use of technical materials
2. **High-temperature printing chamber** – accurate and durable parts
3. **PEEK and ULTEM™ 3D printing, composite materials**– the highest performing polymers
4. **Soluble materials** – support structures made of ESM-10
5. **High-quality components** – dedicated electronics, fast and rigid kinematic system, robust design
6. **3DGence CLOUD** – remote control over printing proces
7. **Air filter, signal tower, emergency stop and power backup –** operator safety, and industrial standards
8. **3 years warranty–** 3DGence sets up new industrial standard for 3D printers reliability

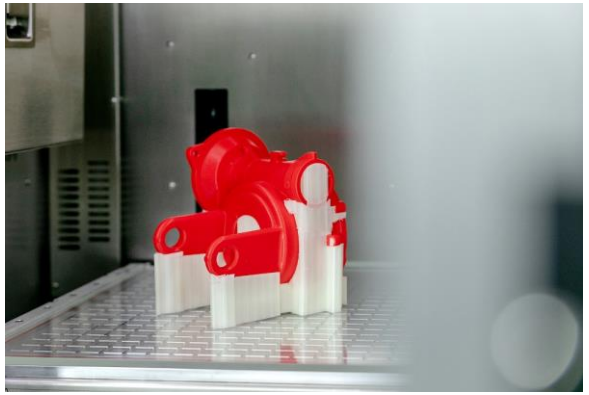
3DGence
INDUSTRY F421

Dual extruder 3D printer designed for industrial applications where accuracy, speed, comfort and safety of the entire 3D printing process are crucial.

This 3D printer is suitable for working with a wide range of technical materials including the high-performance thermoplastics and composites.

SPECIFICATION	
Build volume (w × d × h)	380 × 380 × 420 mm
Printing nozzles	2 per module
Hotend temp. (max)	500°C
Table temp. (max)	180°C
Chamber temp. (max)	180°C
Filament chamber temp. (max)	50°C
Software	3DGence SLICER 4.0, 3DGence CLOUD





INDUSTRY F421
UNIQUE SELLING POINTS

- Speed
- Modular printing system
- Ultra-polymers (ULTEM, PEEK) and composites
- Price to build volume ratio
- Best in class Total Cost of Ownership
- 3DGence CLOUD
- Brand new kinematic system
- Built-in SMM system for material recognition
- Dedicated buildplates

INDUSTRY F421
KEY FEATURE: SPEED

Key aspect of the new industrial platform from 3DGence is its high focus on speed.

By implementing several innovative solutions, the platforms performance has increased greatly, making F421 not only a great rapid prototyping tool, but a full-fledged additive manufacturing system.

Achieving high travel and print speeds and reaching high quality at the same time is possible thanks to improved kinematic system. The system is able to monitor its current position and correct itself should an error be detected.

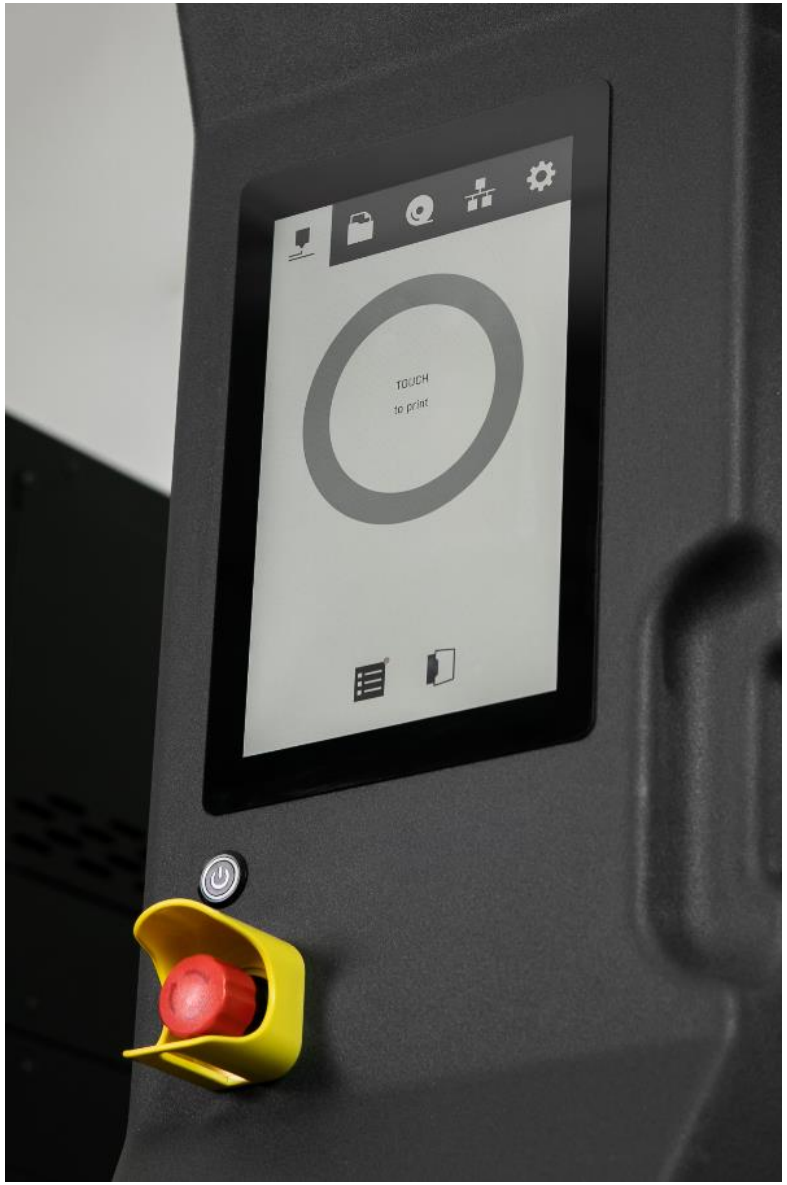
XY kinematic system based on a steel beam and the Z axis built around a ball screw results in smooth actuation and the printer rigidity.

travel move

1 m/s

printing speed

up to 400 mm/s



INDUSTRY F421
KEY FEATURE: MODULARITY

Module M280

Temperature:
up to 280°C

Nozzle diameter:
0.5 mm

Model materials:
PLA, ABS, ABS-ESD, ASA,
PA6, PA-CF

Support materials:
ESM-10 (soluble),
HIPS (break-away)

Module M360

Temperature:
up to 360°C

Nozzle diameter:
0.4 mm

Model materials:
LEXAN, PC, PC-ABS, PEKK-CF,
ULTEM 9085

Support materials:
ESM-10 (soluble)

Module M500

Temperature:
up to 500°C

Nozzle diameter:
0.4 mm

Model material:
PEEK, PEKK, AM™200 FIL

Support materials:
ESM-10 (soluble)

INDUSTRY F421
KEY FEATURE: SMART MATERIAL MANAGER

NFC antenna that belongs to Smart Material Manager (SMM) is housed within the material bay. When a spool is placed in the bay, it is automatically detected and read - no additional action is required.

Apart from containing information about material weight, type and producer, the NFC system can write new data to the NFC tag. This gives the possibility to update the material weight as the spool is being used. Every time, prior to a print job, available material and required material values are compared. The user is informed about possible need to load the second bay.

Cloud based service also draws information from the tags, building usage statistics for the user.

INDUSTRY F421
KEY FEATURE: LARGE HEATED CHAMBER

F421 is equipped with a powerful, actively heated build chamber, capable of reaching 180°C. With a patent pending solution regarding variable chamber volume, time required for the working temperature to be reached remains minimal. Walls of the chamber are lined with satin stainless steel, preventing damage and oxidation.

The combination of heated build chamber, appropriate extrusion temperatures, and heated material chamber, ensures that the prints made of high-performance polymers like PEEK or ULTEM™ filament are always of best possible quality and reach the expected nominal mechanical properties, without warping or any other printing failures.

There is also a nozzle priming sector housed within the chamber. F421 no longer relies on mechanical nozzle blocking, using printhead purging instead.

INDUSTRY F421
KEY FEATURE: BUILDPLATES

F421 heatbed, reaching 180°C, is dual function.

highly versatile

mechanically resilient

easy, tool-less removal/replacement

mounted by metal clamps

sensor for detecting buildplate presence

BOROSILICATE GLASS

specific use

very effective in certain material combinations

easy, tool-less removal/replacement

mounted by vacuum

HEATBED SHEETS

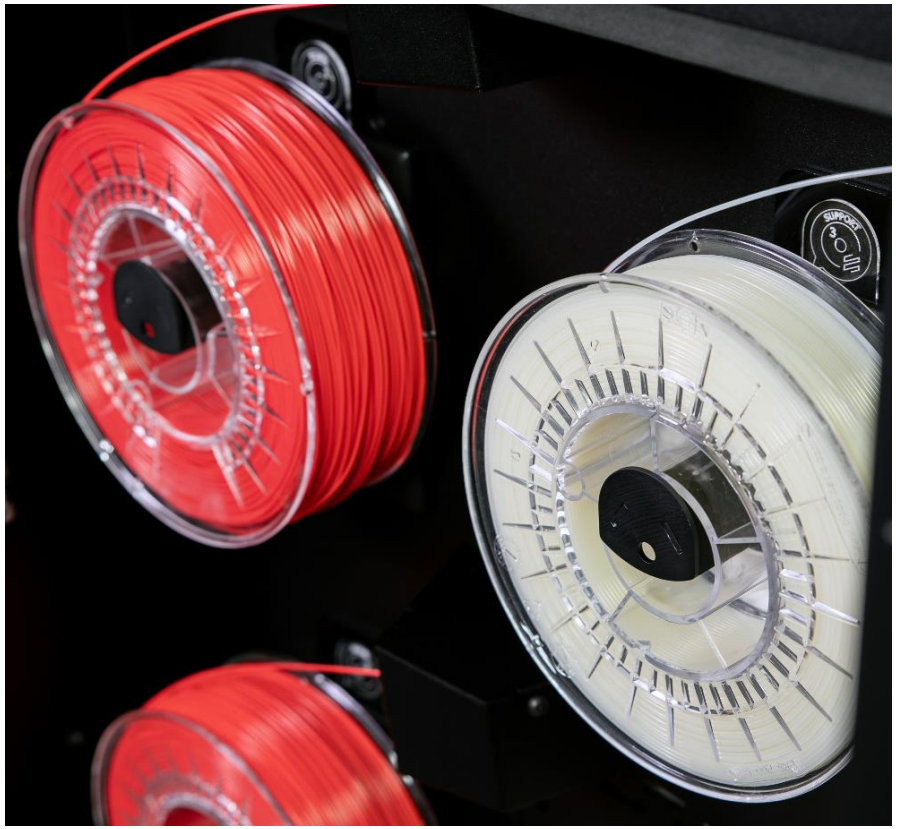
User can choose and switch between used buildplate material with no additional tools or changes to the machine. Pressurized air connection on printer installation site is required for vacuum functionality.

INDUSTRY F421
KEY FEATURE: AUTOMATIC SPOOL CHANGE

INDUSTRY F421 has four material bays, storing four 1kg spools of material. By default, two are dedicated to model material and remaining two house support material. When the material of any spool is running out it will be automatically replaced in the extruder with the material from another bay.

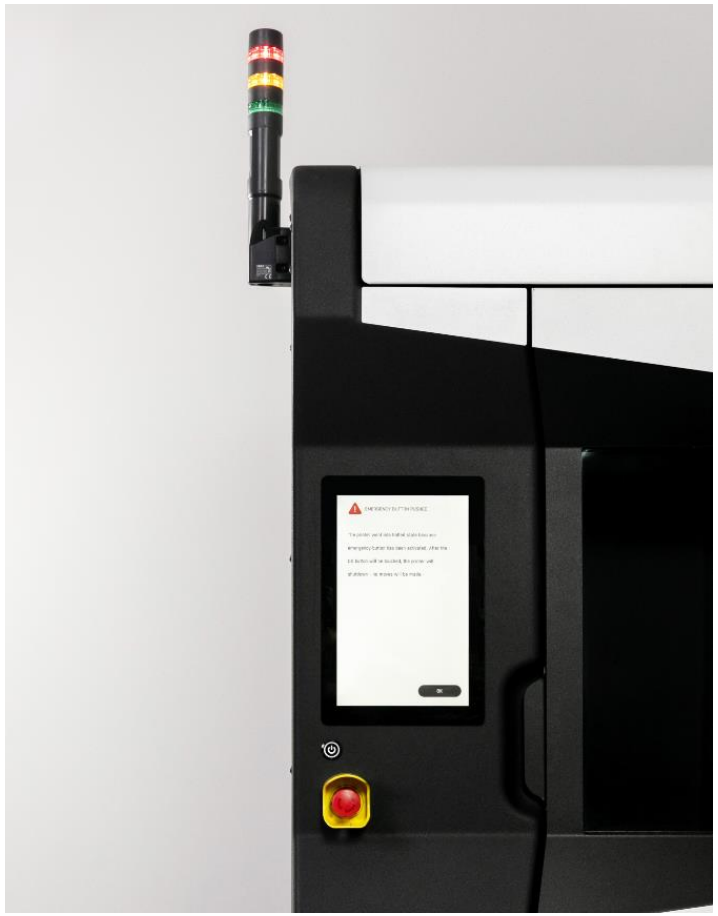
F421 is capable of automatic spool change mid-print. Once filament end is detected, the machine will load material from the second bay without any user intervention and resume printing seamlessly.
Material bays are continuously heated up to 50°C. With specific spool geometry, mounting four 2kg spools is possible with all functionalities retained.

Each bay is equipped with LED status indicator.



INDUSTRY F421
KEY FEATURE: SAFETY

- an electronic lock of the main chamber door, also controlled via Cloud service and printers' interface
- sensors for main chamber door and top access hatch
- redundancy for thermal sensors of high-power heating elements
- emergency switch - immediate cut of power to motion and thermal control, now as a standard equipment
- system for emergency shutdown of logic
- software access overdrive - the printer can be remotely shut down



INDUSTRY F421
KEY FEATURE: FILTRATION

With focus on high performance thermoplastics it becomes increasingly important to provide adequate emissions control. F421 filters offer unprecedented filtering efficiency among FFF AM platforms.

F421 uses an advanced ULT filtration unit, capable of filtering:

- macro dust
- nano dust (VOC, UFP)
- solvent vapor
- noxious gasses
- foreign particles

Key Optimized Functional Aspects:

- Z-line pre-dust filter
- HEPA H13 filter (filtrating particle up to 0.3 microns)
- Absorption layer (layer of the activated carbon)
- Provides very good adsorption of volatile organic compounds (VOC) and styrene
- Filters nearly 100% PM10 and PM2.5 particles

INDUSTRY F421
KEY FEATURE: UPS AND SIGNAL TOWER

F421 can be equipped with an UPS unit. Printer supports all functions during short power outages. UPS is integrated with the system at a deeper level, monitoring UPS battery life. In case the power loss is longer, the printer will switch to idle support mode. Printing will be paused, and only key thermal control and logic functionalities will be maintained. When the power will be restored, printing will continue normally.

This dual approach can yield two results:

- **unaffected printer performance during short power outages**
- **longer battery life in case of longer power issues**

Additionally, each 3DGence INDUSTRY F421 is equipped with the signal tower, that indicates the status of the print. Signal tower makes the machine highly visible from distant parts of the production site.

INDUSTRY F421
KEY FEATURE: 3DGENCE CLOUD

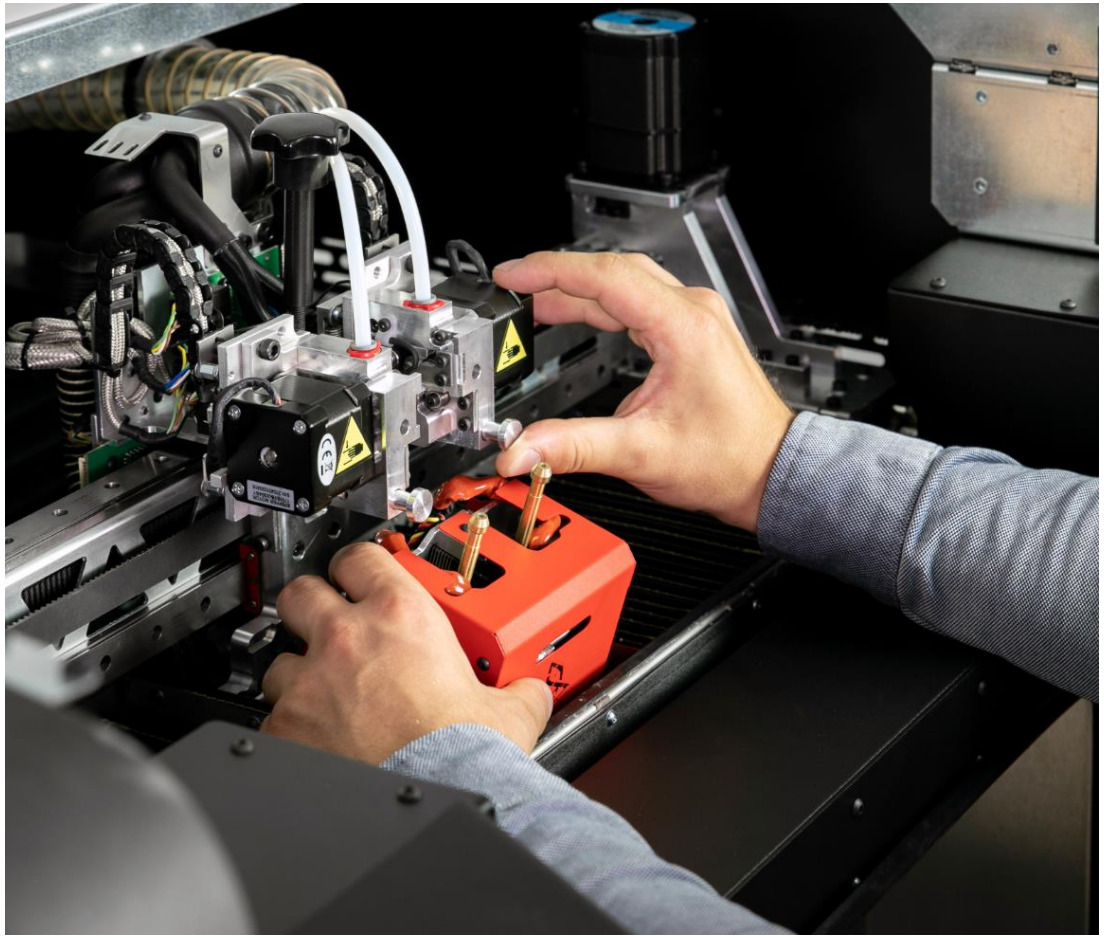
- remote print start, cancelling and queuing. Full control over job order and execution, even on multiple printers
- real time monitoring of machine and print status
- aggregation and presentation of machine and material usage statistics
- service access module
- file sharing and storage
- access control and administration
- marketing functionalities
- live camera feed
- asymmetric encryption for data transfer (RSA)

INDUSTRY F421
3 YEARS WARRANTY

3 YEARS WARRANTY
CONTINUOUS RAPID PRODUCTION

3DGence INDUSTRY F421 is an absolute workhorse that allows for continuous rapid production at our customers' sites. Being sure that the reliability of our flagship industrial grade 3D printers is on the top level, we decided to offer **3 years warranty.**

- CARE maintenance packages that have been available in our offer are now being replaced by official **full-fledged warranty**
- Main point to maintain the warranty is to follow **maintenance activities** and perform **warranty checkup** every 12 months
- **Warranty is available all over the world.** The terms for regions may vary, for details please contact your local 3DGence Partner or sales representative



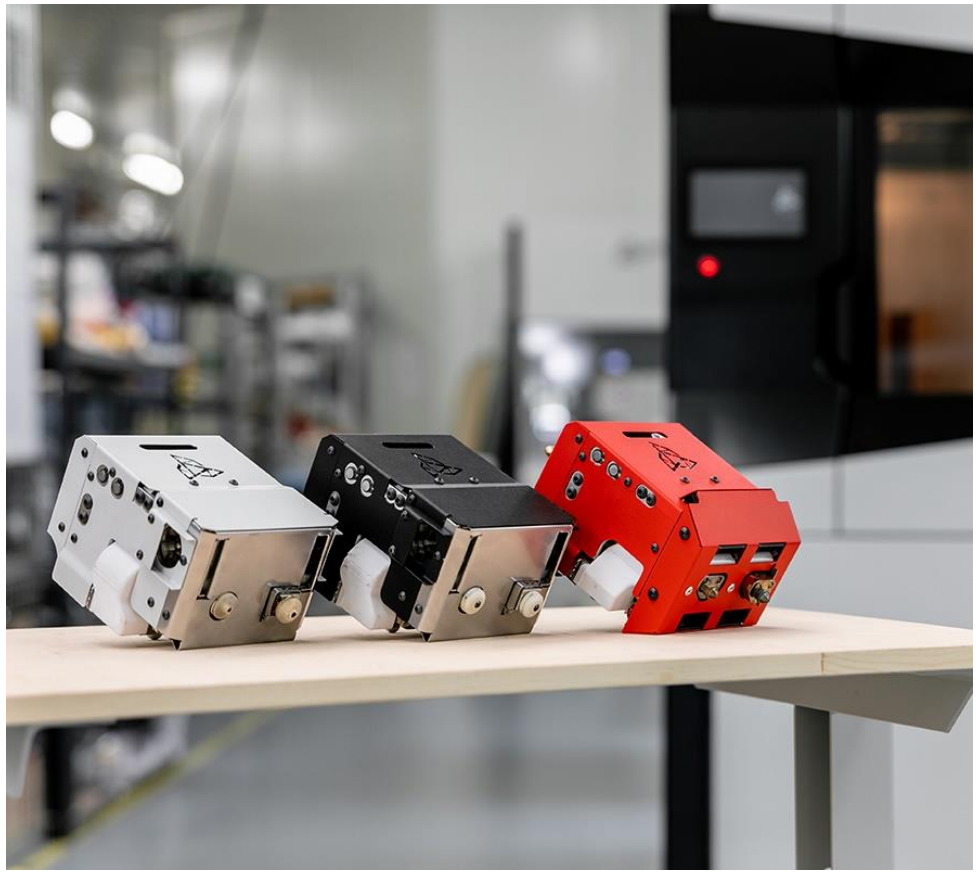
INDUSTRY F421
PACKAGE CONTENT AND OPTIONS

WHAT IS INCLUDED?

- 3DGence INDUSTRY F421 3D printer
- Set of accessories (Wi-Fi module incl.)
- Signal tower
- Emergency stop circuit

WHAT IS THE ADDITIONAL EQUIPMENT?

- The M280 dual-extruder printing module (+1 spool ABS, +1 spool ESM-10)
- The M360 dual-extruder printing module (+1 spool PC, +1 spool ESM-10)
- The M500 dual-extruder printing module (+1 spool PEEK, +1 spool ESM-10)
- UPS – emergency power supply
- Advanced filtration unit



INDUSTRY F421
SPECIFICATION

Build volume
380 × 380 × 420 mm (60 648 cm3)

Printing system
Dual extruder equipped with purging station

Filament diameter
1.75 mm

Model materials
PLA, ABS, ASA, ABS-ESD, PA6, PA-CF, LEXAN, PC-ABS, PC, PEKK-CF, ULTEM™ 9085*, PEEK, PEKK, AM™200 FIL
*For ULTEM printing you need air preparation unit, heatbed sheet and compressor.

Support materials
Breakaway support material, soluble support material ESM-10*
*For ESM-10 removal you need solvent and Support Dissolving System.

Material chamber
4 bays with automatic filament change

Nozzle temperature (max.)
500°C

Buildplate temperature (max.)
180°C

Chamber temperature (max.)
180°C (active heating)

Filament chamber temperature (max.)
50°C

Software
3DGence SLICER 4.0, 3DGence CLOUD

Additional accessories
Advanced air filtration unit, UPS – emergency power supply

INDUSTRY F421
main differences vs INDUSTRY F420

WHAT HAVE CHANGED?

- 3DGence INDUSTRY F421 is a brand-new machine with numerous improvements, that will replace INDUSTRY F420 in 3DGence offer
- Improved kinematic system, with even **better rigidity and easier maintenance**
- The flagship 3D printer is now equipped with **signal tower and emergency stop as a standard**
- Each INDUSTRY F421 is equipped with **industrial-grade extrusion system, thus being composite printing ready**
- Larger, 10-inch TFT screen with optimized user interface for even **easier machine operating**
- Chamber heater protective mesh added
- Build chamber lined with satin stainless steel – higher damage resistance and more aesthetic visual aspect
- Each material bay is equipped with LED status indicator
- Two additional inspection openings for easier installation and maintenance of advanced filtration unit and blower filter
- Heatbed sheets has new dedicated space in accessories chamber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