TRAK® MACHINE TOOLS

SOUTHWESTERN INDUSTRIES, INC.

Presents

3D Printers from 3ntr

- Wide range of materials
- Temperature-Controlled build chambers
- Generous capacity
- Simultaneously prints 3 different materials

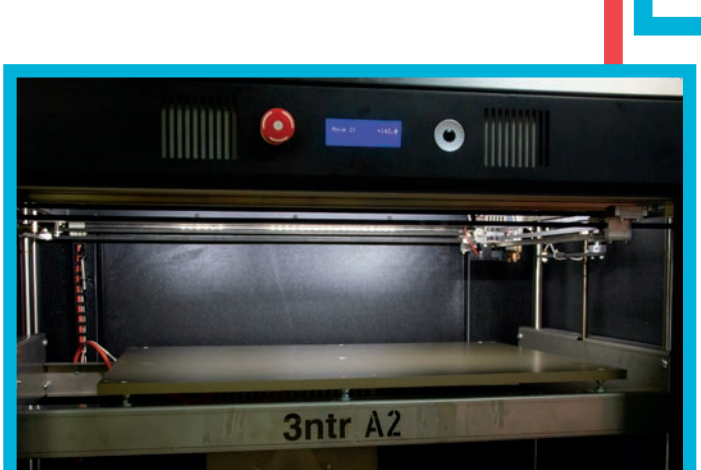
- High quality, functional parts.
- Low cost per part.
- Accurate, repeatable process.

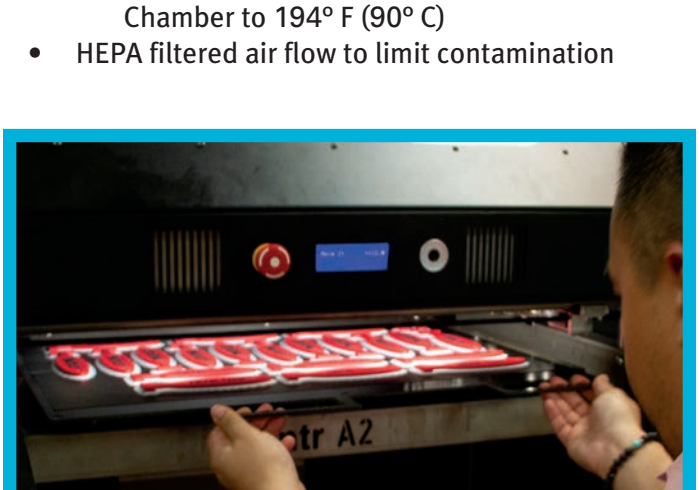
Industrial Grade

Beyond the hype surrounding 3D Printing are the realities of physics and chemistry. With the **A2** and **A4** from 3ntr you will master those realities to achieve **prototypes** that stand up to field testing as well as long lasting **end-use parts**.

Build Chamber

- Generous capacity for parts up to 24” x 13” x 19” (depending on configuration)
- Individually controlled heating elements to achieve optimal accuracy and finish from the material you use
  - Nozzle up to 806° F (430° C)
  - Bed up to 320° F (160° C)
  - Chamber to 194° F (90° C)
- HEPA filtered air flow to limit contamination



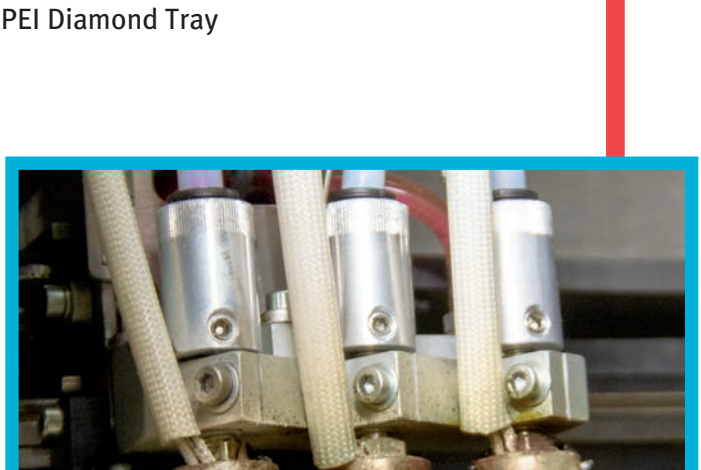


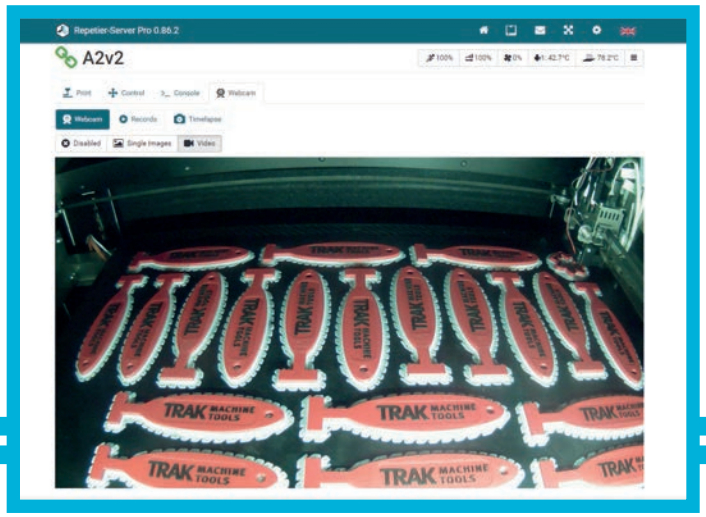
Printer Bed

- Reusable bed for thousands of prints with minimal maintenance
- PEI Diamond Tray

Three Extruders

- One for support material
- Two extruders for build material
- Allows combinations of materials on a single build.
- Liquid cooling at each extruder for precise temperature control
- Unprecedented freedom in design!
- Tungsten Carbide Bliss nozzles (optional)





Integrated Camera & Web Monitoring

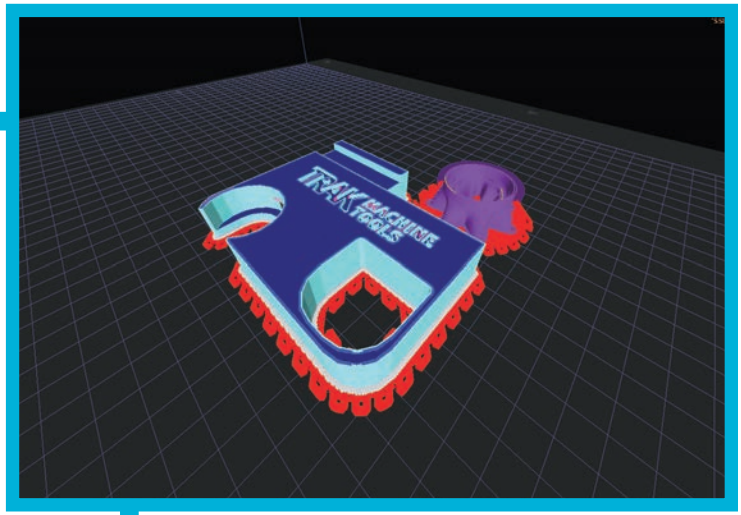
- Monitor the build process from another location
- Make remote adjustments through the web interface

The world's best Material Management System (optional)

- Protect your expensive spooled material
- UV-free
- Low humidity
- Real-time monitor displays material usage and amount remaining
- Holds up to six actively mounted spools
- Feed into the printer, keeping the spool protected
- Doubles as printer base

Powerful, Flexible User Interface

KISSlicer is powerful software that prepares STL files for optimized printing. The user interface enables you to select preloaded settings or to adjust dozens of variables yourself



- **Adaptive Layer Control** - enables you to optimize layers
- **Preload** - precise control of how the printer extrudes filament
- **Expert Mode** - enables you to precisely set variables for your own unique configurations
- **Fractional Number of Loops** - improves bonding between loops and infill
- **Lock Paths** - lets you configure different styles for different parts on a single print
- **Wizards** - guides the processes of setting up Profiles and Tuning the material flow
- **Object Packer** - to maximize the output on the build table

...and dozens more innovative features!

Open Materials

Materials development is the new technology frontier in 3D Printing

Many of the world's top chemical engineers are racing to develop the thermoplastics of tomorrow. But many new, innovative materials already exist. With the **Open Materials** platform on 3ntr Printers, you are free to explore and develop superior solutions.

Or stay with the tried and true. We've done the research and established Material Profiles for dozens of materials, with more added all the time. We'll give you advice for getting the best results, including the type of **Support Materials** that will work best.

ABS & ASA

You will love the results you get when printing these standards of the industry. You are free to use your own sources for the material, but we also offer formulations especially made for 3D Printers.

Support Material

With the 3ntr, you can have a different support material and build material. Choices include break-away and soluble material that complement the build material. Your part finishes and delicate features will come out beautifully.

Design For Additive (like never before)

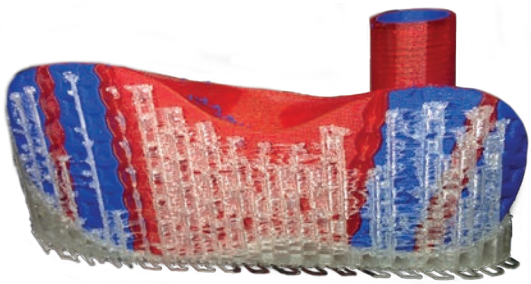
Your imagination gets a boost from the multi-material capability of 3ntr printers. The part to the left is the result of combining formerly separate parts to achieve a single design, integrating a hose and filter housing.

Combine Materials for Lower Cost

The part shown here was made with a combination of two different build materials. For the internal shaft, IGUS Iglidur is used for self-lubricating and hardness. To minimize the part expense, the body is made of ASA.

Rubber-like Materials

The controlled build chamber and powerful software enables you to make soft, rubber-like components.



Multiple Colors

You can print in two colors simultaneously.

Large & Complex

This part requires the precision of an Industrial Grade 3D Printer. Complex parts often use soluble support material to preserve the precision of the delicate features.

Specifications

Dimensional Data	A2	A4
Printer Dimensions	940 x 715 x 1125 mm 37 x 32 x 44.3”	528 x 515 x 615 mm 20.7 x 20.2 x 24.2”
Printer Weight	110 kg | 242 lbs.	43 kg | 94 lbs.
Shipping Dimensions	1041 x 831 x 1321 mm 41 x 32.7 x 52”	681 x 620 x 920 mm 26.8 x 24.4 x 36.2”
Shipping Weight	226 kg | 498 lbs.	69 kg | 152 lbs.

Electro / Mechanical Data	A2	A4
Ambient Operating Temperature	16-32° C | 61-90° F	
Storage Operating Temperature	5-40° C | 41-104° F	
AC Input	220/230 Vac - 15A	110/120 - 15A
Power Supply	24 Vdc - 13A	
Connectivity	USB, Micro SD, LAN	
Steel Cabinet / Frame Construction	2mm (.08”) Powder Coated	
Clear Panels	Polycarbonate	
Heated Print Bed	Anticorodal 6082	

Printing Specifications	A2	A4
Printer Technology	FFF	
Number of Extruders	2 or 3	
Maximum X-Y Axis Speed	300 mm/s | 11.8”/s	
Maximum Z Axis Speed	2 mm/s | .08”/s	
Maximum Extruders Speed	43 mm/s | 1.7”/s	
Build Envelope - W x D x H[1]	600 x 325 x 500 mm 23.6 x 12.7 x 19.6”	295 x 195 x 190 mm 11.6 x 7.6 x 7.4”
Positioning Precision - X-Y	11 Microns | .000433”	
Positioning Precision - Z	5 Microns | .0002”	
Positioning Precision - Extruders	.9 Microns	
Filament Diameter	2.85 mm +/- .1 mm	
Standard Nozzle Diameter[2]	.4 mm | .01575”	
Maximum Extruder Temperature[3]	430° C | 806° F	
Maximum Heated Bed Temperature[4]	160° C | 320° F	
Maximum Heated Chamber Temperature[5]	90° C | 194° F	
Minimum Layer Thickness	50 Microns | .00197”	

[1] A4 depth (D) is 39 mm (1.54”) less with three nozzles installed, A2 is 35 mm (1.38”) less

[2] Available nozzles: .3 mm, .4 mm, .6 mm, .8 mm & .4 mm hardened anti-abrasion

[3] Standard / Optional maximum nozzle temperature: 430° C on 2 of 3 nozzles

[4] Measured at the heater on the aluminum print base

[5] In conjunction with heated bed at maximum temperature

All specifications are subject to change due to ongoing research and product development.

Material Information

Listed below are just a few of the materials available

Build Polymers

Material	Density	Max Operating Temperature	Elongation at break	Max tensile strength psi	Flammability UL94	Use Cases	Nozzle Type	Heated Chamber
ABS	1.05	85°C	5.52%	1539	HB	General use	Std	Yes
ASA	1.07	95°C	10.00%	2010	TBD	High UV resistance, general use	Std	Yes
Casting "Wax"	1.1	-	-	-	-	Investment casting pattern material with very low ash (.03%) at burnout	Std	Yes
GF30-PP*** (GF polypropylene)	.94	~150°C	1.6%	8,700	TBD	GF30-PP is designed for functional prototyping, industrial tooling, etc.	Tungsten	Yes
IGUS Iglidur	1.21	90°C	-	-	-	Printed-in-place bearing and low friction surfaces	Std	Yes
nPOWER (PPS)	1.27	210°C	7.40%	1966	V0	Self-extinguishing, high temp, extreme chemical resistance	Std/HT*	Yes
Nylon 645	1.15	120°C	186%	5188	HB	Chemical resistance of Nylon 6,6 with slightly lower HDT	Std	Yes
PACF**	1.14	100°C	4%	9267	HB	High fatigue resistance	Tungsten	Yes
PCABS	1.13	109°C	8.40%	2006	HB	Fast print, high impact resistance, metal plating	Std	Yes
PEKK	1.29	172°C @ 1.8MPa	2-4%	~7,000	V94	Developing, annealing required for max performance	Std/HT*	Yes
TECH-G	1.27	75°C	3%	5900	-	Good chemical & fatigue resistance, FDA CFR 177.1315 for food & drink	Std	No
Elasto85A	1.19	95°C	680%	3700	-	Elasto/soft parts	Std*	No
Elasto95A	1.22	95°C	580%	5650	-	Elasto/semi-soft parts	Std*	No
Elasto75D	1.18	95°C	295%	6900	-	Elasto/tough parts	Std*	No

* this material requires special processes, procedures and/or printer configuration to print. Please request guide sheet prior to printing. HT=requires high temperature nozzle configuration, see owner's manual. ** Carbon fiber filled nylon *** Carbon fiber filled polypropylene

Support Polymers

Material	Removal	Solvent	Compatible Materials	Heated Chamber
SSU00	Break Away	None	ASA, ABS, PCABS	Yes
SSU01	Soluble	BioSolv*	ASA, ABS, PCABS	Yes
SSU02	Break Away	None	PACF	No
SSU04	Soluble / Break Away	Hot water*	TPU, PETG, PACF	No/Yes
SSU05	Break Away	None	nPOWER	Yes
SSU301	Soluble / Break Away	Hot water*	TPU, PETG, Selected Nylons	No/Yes
N1	Break Away	None	Nylon, GF-30 PP	Yes

*Removal optimized by the use of ultrasonic and flow/agitation cycles at 40-50°C.

About the manufacturer

3ntr is a 50 year old manufacturing business with deep roots in Oleggio, a traditional apparel manufacturing district outside of Milan, Italy. The inventor of the core technology, Davide Ardizzoia, draws on his long experience in engineering material flow through highly-automated equipment. Because of its innovative design the 3ntr printer appeared on the cover in the Italian version of Wired Magazine shortly after being introduced to the European market. In five years of sales, the Model A2 and A4 have been embraced by industry-leaders such as Airbus, Louis Vuitton, and Crocs.

About Plural AM

Plural AM is the exclusive 3ntr provider in North American and our strategic partner in serving customers needs in the relatively new and exciting world of 3D Printing. Plural AM founders were driven by vast experience in high-end CAD systems to find new ways to solve the problem of cost effective rapid prototyping and functional low volume parts manufacturing. 3ntr printers provide the perfect solution to this industry wide dilemma. For the last five years, Plural AM has been dedicated to becoming expert in the design, materials and processes that are so crucial to success in Additive Manufacturing. They will put that expertise to work with us to assure that our customers get the very most from the investment in a 3D Printer.

About TRAK Machine Tools

Our long involvement with providing technology-driven tools to machine shops dates back to the first introduction of the Trav-A-Dial in the 1960s. Since its introduction in the 1980s, our ProtoTRAK CNC has become the industry standard in controls for small lot milling. In the process, we have developed Sales, Service and Technical Support resources unsurpassed in our industry – with a strong presence in R&D and Engineering. We are applying our excellence in support to assure that our customers have the best possible outcome from their purchase of a 3D Printer.

Introducing the

TRAK 2op

Support your Printing with a real machine tool.

- Designed for second operations.
- Easy to learn and use.
- Strong and rigid enough for metal cutting.
- Portable for moving to the job.
- Small Footprint: 30” x 48”

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