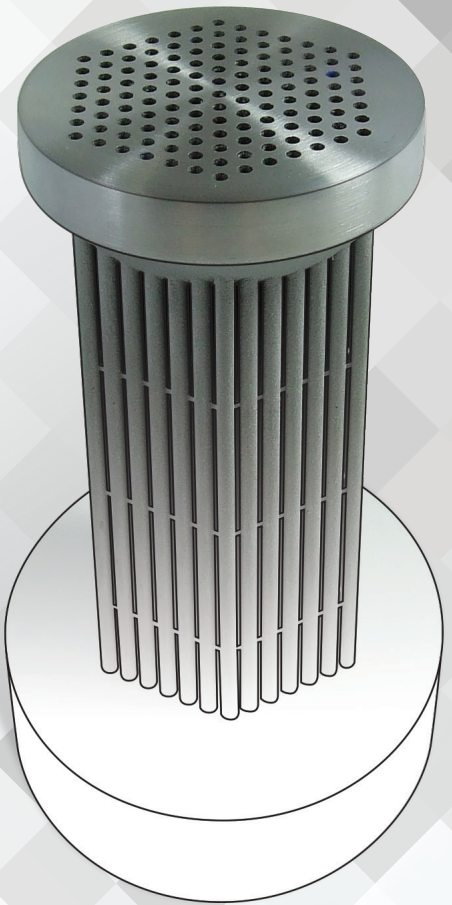
A GLOBAL LEADER IN METAL AM

SINTAVIA

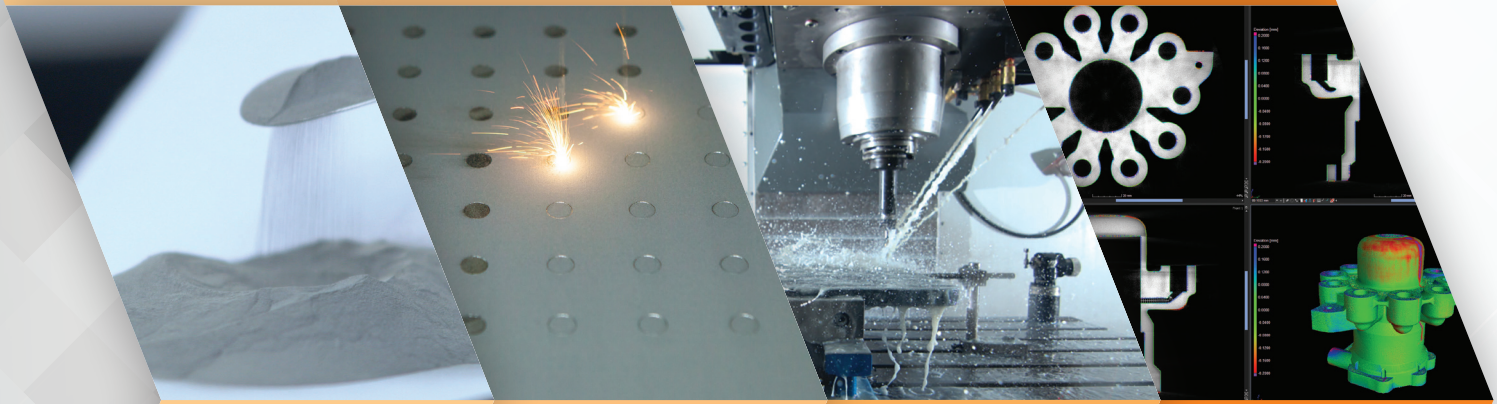


SINTAVIA

THE LEADING INDEPENDENT TIER ONE ADDITIVE MANUFACTURER IN NORTH AMERICA

Founded in 2012, **Sintavia** is an innovator in the design, additive manufacturing ("AM"), and material testing of optimized metal parts for the global Aerospace & Defense, Ground Power, Oil & Natural Gas, Space, and Automotive industries. The company's proprietary manufacturing process is unique in the AM industry.

Sintavia is committed to quality serial production of metal parts that meet or exceed the exacting standard of precision industries. The company offers on-site metal additive manufacturing via the Powder Bed Fusion (PBF) process, as well as metrological and metallurgical testing. By combining production with advanced metrological and metallurgical analyses, Sintavia is able to maintain consistent quality and demonstrate repeatable design metrics. The company's state-of-the-art facility is self-sufficient with respect to design, fabrication, quality testing, and post-processing. Our customers appreciate our commitment to quality and consistency, as well as our technicians' understanding of the global OEM supply chain.



PRE-PROCESSING

Sintavia works with its customers to identify the right parameters that will allow for quality, high speed part production. Capabilities include design, production specifications, and powder analysis.

ADDITIVE MANUFACTURING

Sintavia excels at printing nickel, aluminum, titanium and stainless steel alloys on machines each dedicated to a specific alloy based on the printer's strengths.

POST-PROCESSING

Sintavia utilizes a wide array of finishing methods to meet or exceed customers' expectations on critical dimensions and surface finishes.

QUALITY & INSPECTION

Sintavia is Nadcap, ISO 9001, AS9100, and ANAB certified, and OASIS and ITAR registered. Its metallurgical lab is ISO/IEC 17025 accredited and A2LA approved.

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SCALING UP THE ADDITIVE MANUFACTURING SUPPLY CHAIN

In 2018, Sintavia doubled its production footprint from six AM machines to 12 at its Davie, Florida, location. In 2019, the company expects to more than double production capacity again to 25 machines, following its move to its new Hollywood, Florida facility. Over the next five years, Sintavia plans to replicate this manufacturing footprint in other locations throughout North America. The company is committed to supporting its OEM customers' accelerated growth plans for AM adoption.

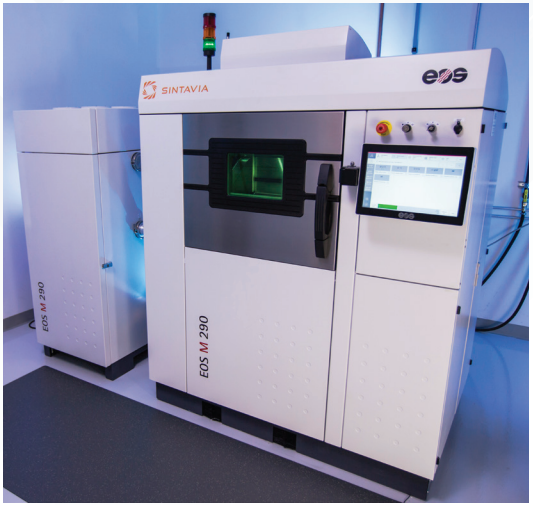
5 x **EOS** laser printers (1 x M400-1, 2 x M400-4, 2 x M290)

4 x **SLM Solutions** laser printers (3 x SLM 280 printers and 1 x SLM 500 quad laser)

1 x **TRUMPF** TruPrint 3000 laser printer

1 x **Arcam** Q20+ electron beam printer

1 x **Concept Laser** M2 Laser Printer



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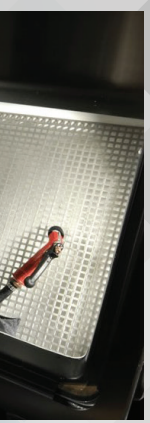
UNIQUE MANUFACTURING SYSTEM INCLUDES A COMMITMENT TO POST-PROCESSING

A successfully scaled additive manufacturing process continues well beyond the actual printing itself. Sintavia has always committed itself to developing in-house capabilities for post-processing, including machining, furnacing, and blasting.

Although PBF parts come out of the machines with a remarkable near net shape, post-processing is often involved to meet critical dimensions and/or surface finishes. Sintavia utilizes a wide array of finishing methods to meet or exceed customers' expectations.



Sintavia post-processes parts to customer specifications.

In-house tools include:

Hot Isostatic Press (HIP)
Vacuum heat treatment ovens
Wire Electric Discharge Machines (EDMs)
Industrial band saws
Computer Numerical Control (CNC) mills
3-Axis manual mills
Haas CNC lathes
Wet and dry blasters

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SINTAVIA'S AEROSPACE QUALITY SYSTEM IS A KEY ASPECT OF ITS SUCCESS

Sintavia's quality system is based on industry-leading aerospace service providers, and was created in order to meet and exceed its customers' stringent quality requirements. The company's quality control expertise has been gathered from experience in type certificate holder design and manufacturing, OEM engine manual repair procedures, and aerospace part manufacturing requirements. A great benefit of having a complete set of capabilities at a single location is that the audit trace is very easy. Sintavia is therefore able to offer its customers a complete front-to-back QC package at the conclusion of a project, all the while ensuring the security and consistency of data.

Sintavia is committed to the most stringent quality control systems in the industrial world. The company is Nadcap and ANAB accredited, ISO 9001 and AS9100 certified, and OASIS and ITAR registered. Its metallurgical lab is ISO/IEC 17025 accredited and A2LA approved.

Sintavia's onsite accredited powder laboratory has the equipment and expertise to control and optimize powder quality, size, shape, morphology, oxygen content, and moisture level.

Sintavia's metallurgical lab capabilities include:

- PSD per ASTM B822 using laser diffraction analyzer
- SEM morphology and microscopic analysis
- ICP-OES per ASTM B215
- Gas analysis of Nitrogen, Oxygen, Hydrogen, Sulfur and Carbon
- Tap density per ASTM B527
- Flowmeter testing per ASTM B213
- True density per ASTM B923

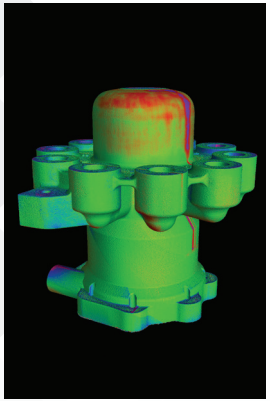
Accredited Nadcap™

AS9100 CERTIFIED ISO9001 CERTIFIED

OASIS REGISTERED ITAR REGISTERED ISO17025 ACCREDITED | ANAB

Sintavia possesses one of the most advanced and sophisticated metallurgical analysis laboratories in the world. The company is capable of performing many highly technical tests and procedures in-house, allowing it to validate production and analyze specimens to understand the microstructure of each build. Sintavia's in-house metallurgical laboratory is ISO 17025/ANAB accredited.

Sintavia employs mechanical testing to assist in the substantiation of the mechanical properties of specimens and components used in additive manufacturing process. In AM, mechanical testing is an excellent tool to qualify the build as build plates are removed from the machines. Often these tests are conducted at elevated temperatures.



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THE HISTORY AND FUTURE OF SINTAVIA

2012 – Sintavia **founded** as in-house additive manufacturing effort of CTS Engines, a mature jet engine MRO

2015 – **Spun off** as a standalone company and launched with a $10mm investment from Neff Capital Management (NCM).

2015 – **Initial investments** include powder laboratory, AM machines, blue light scanner and mechanical testing equipment

2016 NOV – Achieves **AS9100** Certification

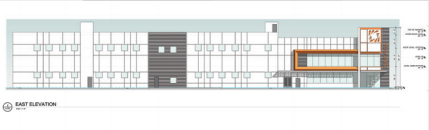
2016 DEC – Achieves **ISO 17025** Accreditation

AS9100 CERTIFIED ISO9001 CERTIFIED
OASIS REGISTERED ITAR REGISTERED ISO|7025 ACCREDITED | ANAB

2017 JAN – Develops proprietary process for printing **F357** Aluminum

2017 MAR – Closes second, $15mm round of **equity financing** with NCM

2017 MAY – Unveils plans for 55,000 square foot **lean AM facility**



2017 DEC – **Breaks ground** on new advanced manufacturing plant

2018 JAN – Becomes first AM supplier approved to produce flightworthy parts for **Honeywell Aerospace**

2018 FEB – Forms partnership with **Taiyo Nippon Sanso Corporation** to promote metal AM and research gas flow dynamics in AM

2018 APR – Achieves **Nadcap** accreditation for laser and electron beam AM

Accredited Nadcap™

2018 SEP – **Sumitomo Corporation** of Americas makes strategic investment in Sintavia

2019 APR – **Opening** of lean advanced manufacturing plant in South Florida

/ NOV 2018 /

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