



# Ansys Granta MI for Additive Manufacturing

How do you realize the full potential of Additive Manufacturing? Using Ansys Granta MI™ for Additive Manufacturing, engineers capture, track and analyze the right process parameter information to get their product to market faster.

## / The Problem

Additive Manufacturing (AM) promises to transform manufacturing. But only by understanding process parameters and their effect on materials can organizations control part performance, consistency and quality. Typically manufacturers resort to trial and error to understand the process-property relationship which takes time and money.

To gain this knowledge, companies must strategically capture and mine critical material and process information. Progress depends on having the right strategy to meet the challenges of scale-up and implementation and to maximize return on investment.

To compound this, AM programs generate vast amounts of data on material properties, process parameters, test data, simulation and qualification of parts. This raises many questions:

- what data should users retain, how should they leverage it and what are the best practices?
- How do users audit their processes?
- How do they know which parameters or relationships are critical?
- How can they avoid significant investment into parts that will not get certified or having to repeat work for certification purposes?
- How do users choose from the hundreds of industrial AM machines and materials?



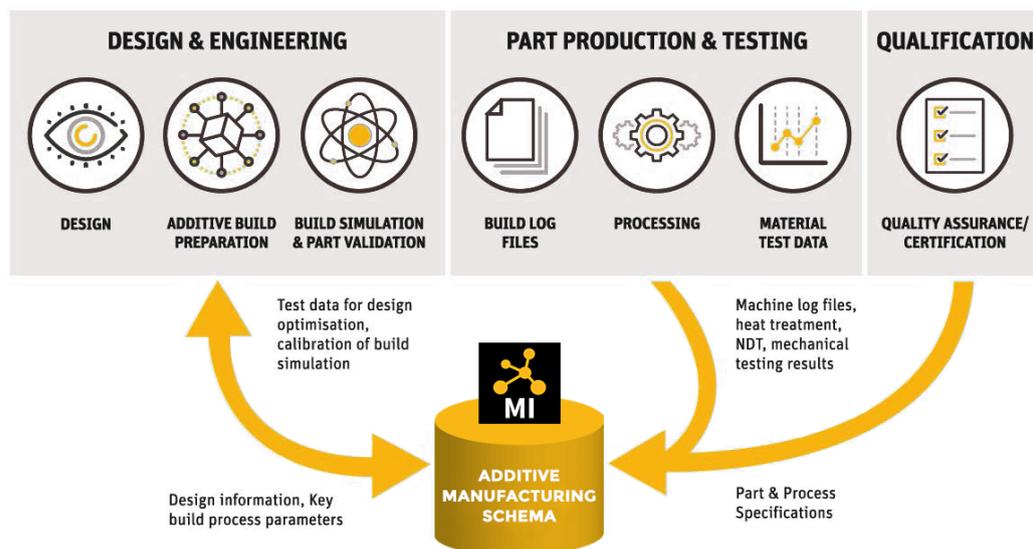
## / Key Benefits

- ✓ Understand process-property relationships by robust capturing and tracking of AM data
- ✓ Provide AM data analytics that help optimize processes parameters using Machine Learning
- ✓ Integrate AM data with Simulation (CAE) and Design (CAD) tools.

## / Customer Testimonial

“Granta MI allows us to capture large amounts of data from all pieces of the AM puzzle... and to make valuable correlations that can be used to streamline the development of AM parts.”

EWI



# / The Granta MI for Additive Manufacturing Solution

## Traceability and Capture of Vital AM Data

Granta MI™ is the leading materials information management system. Apply this proven software to capture vital AM data for your team, enterprise or research project in one place, with full traceability. Granta MI for Additive Manufacturing includes a data structure ('schema') based on extensive experience from world-leading AM projects. Flexible admin tools let you configure this template to your specific requirements, enabling rapid implementation.

Some of the features:

- Import 'logfiles' directly from AM machines (e.g. Renishaw, EOS, Arcam, and SLM Solution).
- Manage complete process info: powders, builds, machine parameters and parts.
- Ensure controlled workflows for the lab and the enterprise.
- Consolidate your AM data, browse it through a fast, easy-to-use web interface and share it across your organization with controlled access.



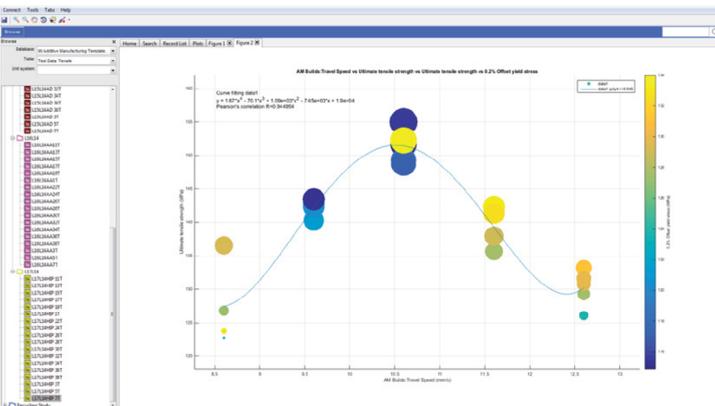
AM part image courtesy of Renishaw plc.

## Data Analytics Powered By Machine Learning

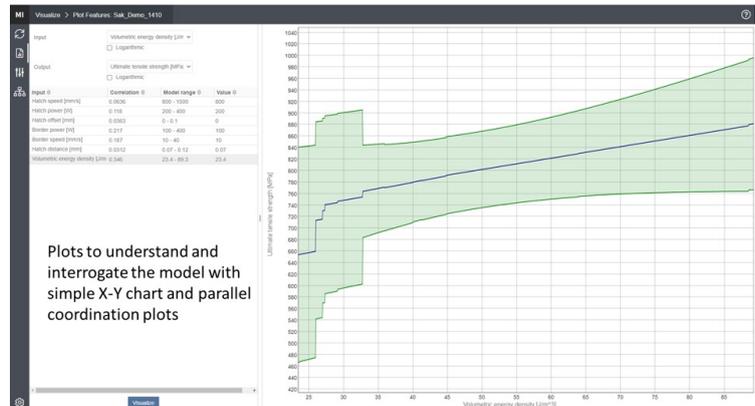
With all the critical data in one place, users can mine the resulting rich information resource to extract crucial understanding. The **MI MatAnalyzer** app helps basic visualization and understanding of vital relationships between material properties and process parameters.

By creating a neural network across the AM data, the **MI Machine Learning** add-on supercharges analytics to:

- ✓ Visualize data that was 'sparse' or 'noisy'
- ✓ Quickly determine the impact across the AM process of a change to one of the inputs
- ✓ Find out what has the biggest impact on an AM material property



Basic AM data analytics using MI MatAnalyzer



Advanced data analytics using MI Machine Learning

## Integration with Engineering Design and Simulation Tools

Granta MI ensures consistency and control. From initial assignment to using our apps within CAD to choosing full material models for CAE tools, users access the right data fast that is fully traceable to its source. This data can include users' own AM machine — and material-specific data — speeding AM development processes and certifying products at lower cost.

## Select Machines and Materials: Senvol Database™

The Senvol Database™ is the leading reference resource with details of all industrial (i.e. professional-grade) additive manufacturing machines and materials. Browse and search based on material type, property or compatible machines. Compare machines based on supported processes, manufacturer, part size, cost or materials. Focus on the most likely routes to achieve project goals, save time and generate new ideas.

## / Leveraging Industry Best Practices from Industry-Wide Projects

**DRAMA** was aimed to accelerate the uptake of metal powder bed additive manufacturing in the aerospace additive supply base. Granta MI is developing the digital AM knowledge-base repository and software tools for the facilities' digital twin model.

The **AMAZE** project involves 28 corporations and research institutions in developing rapid production of large, defect-free AM metallic components. Granta MI captures and securely shares project data, enabling data comparison, enhanced production knowledge, process refinement, simulation integration and R&D coordination.

**DREAM** will address the challenge of distortion in Selective Laser Melting (SLM). Granta MI is developing the data exchange strategy with machine and modelling tools for the transmission of process parameters and distortion correction.

Find out more about the collaborative R&D projects that the Ansys Materials team are involved with for additive manufacturing [HERE](#)

## What do I Buy?

- **Ansys Granta MI - Enterprise Server** is the core database system, including data import, export and analysis tools.
- **Ansys Granta MI - User** enables users to access and query the system and use the data via web apps and tools embedded in CAD/CAE.
- **Ansys Granta MI - Additive Manufacturing Template** provides data structures designed for AM projects.
- **Ansys Granta MI - Machine Learning** is an add-on for advanced data analytics creating a neural network for your AM data.
- **Ansys Granta Advanced Materials - Additive Manufacturing** provides access to the Senvol Database™.



/ Request Your Demo

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