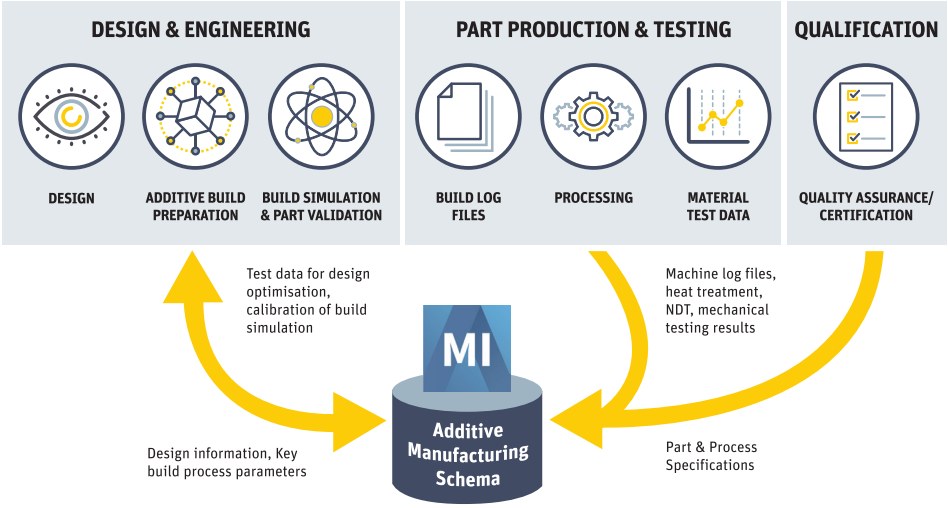
ANSYS GRANTA MI for Additive Manufacturing

How can users achieve the full potential of Additive Manufacturing (AM)? With the ANSYS® GRANTA MI™ AM solution, engineers capture and analyze the right information from their AM projects so solutions get to market faster.



Improve understanding of critical relationships between properties and processes. Future-proof AM research and development by ensuring engineering teams are prepared for product or part qualification.

The problem

AM promises to transform manufacturing. But only by understanding process parameters and their effect on materials can organizations control part performance, consistency and quality. 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.

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?

GRANTA MI helps answer these questions.

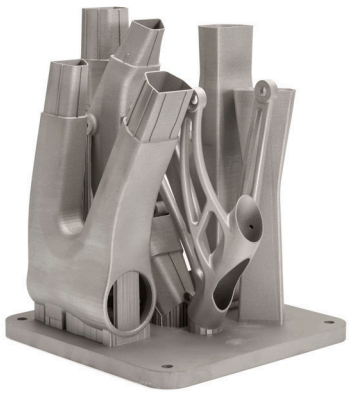
GRANTA Material Intelligence

Key benefits

- Ensure traceability and capture of AM data.
- Provide AM data analytics that help optimize processes.
- Integrate AM data with CAE and CAD systems.

Example customer

"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**



AM part image courtesy of Renishaw plc.

The GRANTA MI AM Solution

Traceability and capture of vital AM data

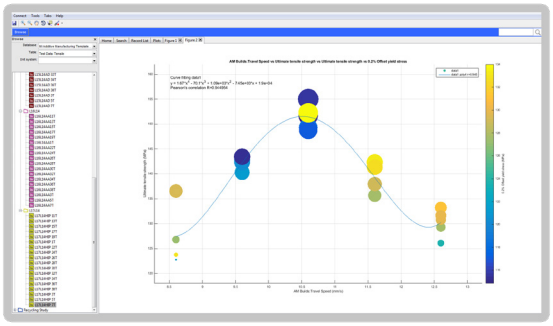
GRANTA MI™ is the leading materials information management system. Apply this proven software to capture vital AM data for your team, enterprise or research project in one place, with full traceability. GRANTA MI includes a data structure ('schema') based on extensive experience from world-leading AM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

- Import 'logfiles' directly from AM machines (examples from recent projects include 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 data analytics

With all the critical data in one place, users can mine the resulting rich information resource to extract crucial understanding. The GRANTA MI:Mat Analyzer app helps visualize and understand vital relationships between material properties and process parameters.

- Compare and analyze data to deepen user understanding of parts and processes.
- Export data for input to simulation; capture and share simulation results to help optimize part design and production.
- Capture test and inspection results and feed this data into statistical analyses that determine mechanical properties.



Analyzing AM data in a GRANTA MI app.

Integration with CAD and CAE systems

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 and 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.

Senvol Database™: select machines and materials

The Senvol Database™ is the leading reference resource with details of over 550 AM machines and over 700 compatible 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.

Sharing industry best practices

GRANTA MI is optimized for AM based on experience of its use in several leading AM projects.

For example, 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.

What do you buy?

GRANTA MI - Enterprise Server is the core database system, including data import, export and analysis tools.

GRANTA MI - User enables users to access and query the system and use the data via user-friendly web apps and tools embedded in CAD/CAE.

GRANTA MI - Additive Manufacturing Template provides data structures designed for AM projects.

Advanced Materials - Additive Manufacturing provides access to the Senvol Database™.

GRANTA MI - Services are available to help you implement GRANTA MI and integrate with in-house tools and data sources.

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