

Materials Decision Support



Industrial relevance

- Make good materials selection and substitution decisions using a repeatable, auditable method—and present those decisions effectively
- Meet corporate objectives such as avoiding cost, designing to comply with regulations, and enabling global manufacturing
- Make more consistent materials choices and implement materials strategies, particularly in multi-site, multi-business enterprises
- Access and apply the materials data that you need to guide decision-making



Why do you need materials decision support?

To succeed, manufacturing enterprises need to do much more than simply deliver products that excel at their required function. They must meet wider product design objectives that allow them to address strategic drivers such as cost, environmental legislation, and global manufacturing. Materials and process choices are central to these objectives. And these decisions should be optimized not just for individual designers, but across the enterprise. Achieving these goals can be worth millions of dollars.

Without the right tools, materials experts, designers, and engineers face many problems:

- **“I want to enable designers to make systematic, repeatable choices”**—to select materials, designers need to consider multiple, often conflicting, objectives in the specific context of their engineering application. This can be a difficult problem, so it is often tempting to fall back on familiar materials or to use what has been used before. If this means that designers do not make the *best* choice, then the company loses out in poorer product performance or higher costs. And, if no systematic process is used, it will be harder to diagnose problems or to redesign the product at a later date.
- **“I often need to find a cheaper material/process to do the same job”**—materials substitution can be a challenge, whether driven by cost or by another factor, such as supply issues or new regulations. You need to find a material—often a completely different class of material—that delivers similar or better performance for your application, without introducing new problems. This often takes a lot of time and mistakes can be very costly.
- **“Our company wants to limit proliferation of materials choices”**—if you have many designers making materials and process choices (particularly across a large, dispersed business) then your company may end up specifying many more grades or suppliers than it needs. With no way to coordinate these choices, the inevitable result is higher costs.
- **“We need to position the materials we produce against competition”**—for materials producers, differentiating products on factors other than price-per-unit-weight is becoming increasingly important. What tools can help them to do this?

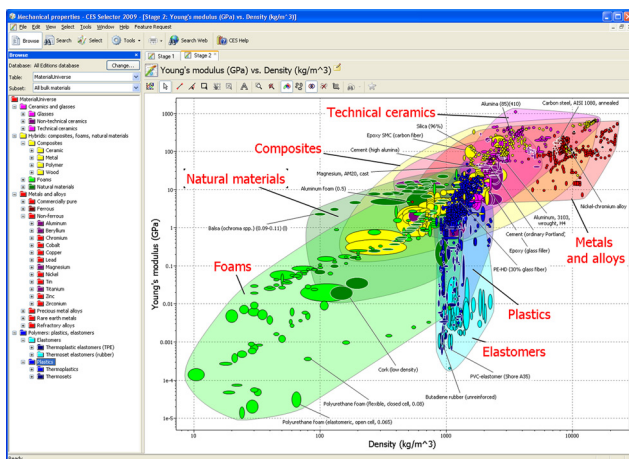
“CES Selector is allowing us to ask ‘what if?’ questions upfront in a comprehensive manner. Access to data is one thing; analytical tools for filtering that data are another: CES Selector is a potent mix of the two that can only increase the likelihood of us being able to innovate.”
—Foster & Partners

More case studies at
grantadesign.com/products/ces/

Granta's solution

Granta provides a range of tools to help you:

- Get the data that you need in one place for ease of decision-making—with **GRANTA MI™** you can capture, manage, and use data from testing, QA, suppliers, production, and other sources. This data can be combined with reference information—Granta's **data products** include, for example, **MaterialUniverse**, which provides engineering, eco, and economic data for over 3,000 engineering materials.
- **CES Selector™** is powerful PC-based software that aids critical decisions on materials, processes, and eco design. Its rational selection tools, based on methodology developed by Granta founder Prof Mike Ashby, help materials experts and product designers to analyze materials and process choices, optimizing performance, cost, and environmental properties. CES Selector property charts help you to present materials decisions in a compelling visual manner.
- **GRANTA MI:Optimize** is a simple-to-use web-browser-based tool that ranks materials against design objectives specified through a 'wizard-style' user interface. The tool can be configured to apply your organization's 'business rules'. In this way, you give designers a tool to aid their creativity, while also providing guidance in line with corporate strategy and helping to ensure consistency.



CES Selector plots materials property data for materials described in the MaterialUniverse data module. This supports materials selection and substitution decisions.

The development and application of these tools is supported by the **Materials Strategy Consortium**, a collaboration of leading manufacturing enterprises with members including Emerson Electric, Fortune Brands, TRW Automotive, Rhodia, Sulzer, and Baker-Hughes. Members are able to guide software development, ensuring that their needs are met, and receive added benefits of networking and training.

Further Information

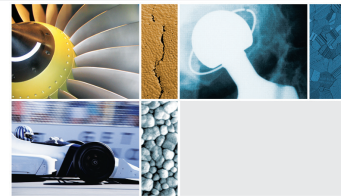
GRANTA MI—www.grantadesign.com/products/mi/

CES Selector—www.grantadesign.com/products/ces/

Granta data products—www.grantadesign.com/products/data/

The Materials Strategy Consortium - www.grantadesign.com/strategy/

White paper, "Optimizing Materials Strategy - can you afford not to?" - www.grantadesign.com/papers/



Solution features

- Assembles all necessary materials information in one place
- Analyzes this information using 'cost per unit of function' principles
- Captures expert analyses in easy-to-use browser-based tools for re-use by designers
- Enables better and more consistent decisions



The Materials Strategy Consortium is a collaborative project that drives the development of software for systematic materials selection, substitution, and cost optimization.



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