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GRANTA SELECTOR

# Release Notes

## 2021 R1

### **/ Evaluation of early-stage battery pack designs >>**

Ansys GRANTA Selector now includes the [new Battery Designer tool](#) and a [Battery Cells data table](#). Rapidly evaluate early-stage designs of multi-cell battery modules and packs, and easily compare different cell choices and module or pack designs.

### **/ The latest data at your fingertips >>**

Significant updates have been made to the data available in GRANTA Selector, particularly in the latest versions of [JAHM Curve Data](#), [StahlDat SX](#) (part of [Global Metal Specifications](#)), and the [Senvol additive manufacturing database](#). Whatever your specialty, GRANTA Selector ensures that you have the data you need, where you need it.

### **/ Integrated materials selection and simulation tools >>**

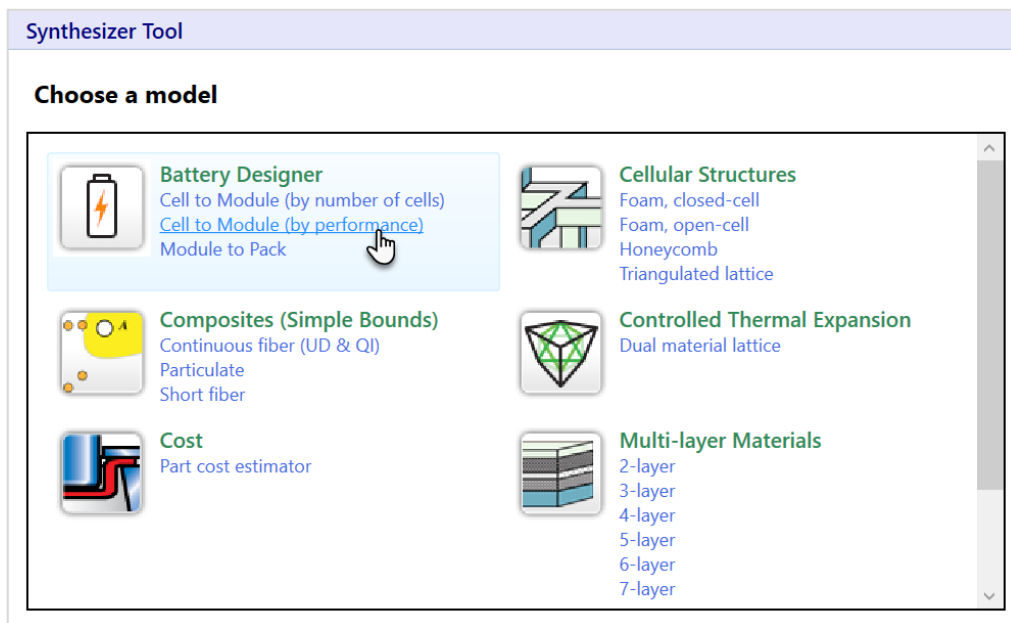
Combining the right material with the right design has never been easier, with [improved workflows and exporters](#) linking Ansys GRANTA Selector with Ansys Workbench.

# 1 Detailed Descriptions

## 1.1 Evaluate early-stage battery pack designs

### 1.1.1 Compare battery pack designs with the Synthesizer tool

A **Battery Designer** tool has been added to Synthesizer for early-stage design of multi-cell battery modules and packs – facilitating fast iterations of multiple design configurations.



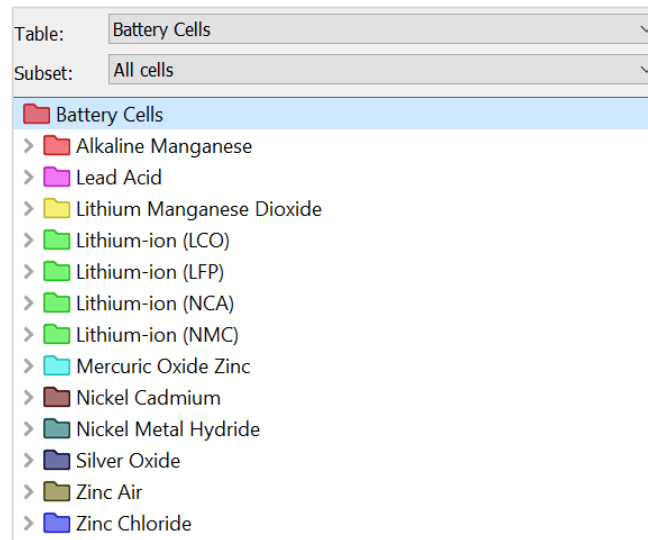
This tool draws on the [Battery Cells data table](#) and calculates the estimated electrical and thermal outputs of user-defined cell configurations in multi-cell battery modules and multi-cell/module battery packs. Modules can be specified by either cell configuration or performance requirements, and Ragone charts plotted in GRANTA Selector using the Chart Stage.

#### Benefits:

- Assess the link between battery module design and performance
- Rapidly iterate multiple design configurations
- Enable equivalent comparison between different cells and module or pack designs

### 1.1.3 New Battery Cells data table in MaterialUniverse

The *Battery Cells* table contains over 120 records, each representing a generic battery cell type. Records include information on cell size, geometry, energy, power, nominal ratings, and charge and discharge properties.



#### Benefits:

- Evaluate cell performance metrics and their trade-offs
- Quickly compare equivalent performance of cells in battery modules or packs

## 1.2 Latest updates to core and specialist data

### 1.2.1 JAHM Curve Data

*JAHM Curve Data is part of the Basic Materials bundle (always available with GRANTA Selector)*

Over 5,000 new materials have been added to *JAHM Curve Data*, bringing the total number of metals, alloys, ceramics, polymers, elements, compounds, functional materials, composite and natural materials in this comprehensive dataset to 8,500.

This release includes:

- 900 new hydrocarbon and molten salt records.
- New data for several curves in existing metal and alloy records:
  - *Creep*
  - *S-N Fatigue*
  - *Stress-strain in Compression*
- Two new curves:
  - *Isochronous Creep*
  - *Surface Tension*
- New *State* property, to allow filtering by material state at a given temperature (*solid, liquid, gas or solid+liquid*).

#### **Benefits:**

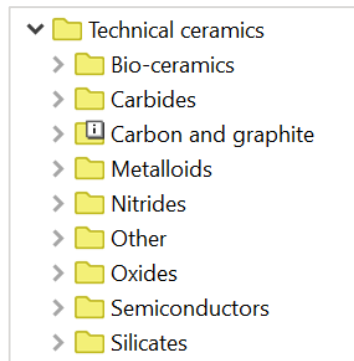
- Compare materials data at a wide range of temperatures and find, compare and export the right data to support simulation.
- Access to temperature-dependent properties and stress-strain curves to support material selection and simulation.
- Filter for materials that have the specific data needed for the type of analysis you are performing.

### 1.2.2 MaterialUniverse

*MaterialUniverse is part of the Basic Materials bundle (always available with GRANTA Selector)*

In addition to the new *Battery Cells* table, the following improvements and updates have been made for this release:

- New prices available for all 4000+ materials in *MaterialUniverse*, generated using Ansys Granta's price model based on data from world commodity markets.
- Improved folder structure for *Ceramics and Glasses*, including more granularity in the *Technical Ceramics* folder and grouping by process.



- Twenty seven new records added, improving selection results across multiple industries:
  - 15 structural steels
  - 12 aluminium alloys
  - 1 titanium alloy
- Enhanced sustainability data:
  - Risk indices for critical materials reflect latest changes to EU and US Critical Materials lists
  - Embodied energy and CO<sub>2</sub> footprint now included for typical grades
  - Recycle fraction in current supply updated
  - Labor costs updated for the Eco Audit tool

#### Benefits:

- Access the latest version of this unique dataset that covers technical, economic and environmental properties for over 4000 materials.

### 1.2.3 Global Metal Specifications

*Global Metal Specifications is part of the Advanced Materials – Metals bundle*

This release incorporates the latest version of *StahlDat SX* (August 2020), including 30 new records and 14 new standard attributes, plus 66 new meta-attributes providing depth and detail.

Other updates to *StahlDat SX* include:

- *Yield Strength, 0.2% Proof strength and 1.0% Proof strength* consolidated into a single **Yield Strength** attribute to allow better comparison and searching across the database. Additional information has been added to the Notes where appropriate.
- Design Notes have been added for several new and existing attributes.
- *Source Material Class* has been added to the release layout, providing information about the material class as stated in the original specification.
- *Alternate name* has been removed and the data moved to *Equivalent/similar grades*.

**Benefits:**

- Access to the latest version of the *StahlDat SX* data with additional standard attributes and meta-attributes, improving richness and depth of available data.
- Continued access to the *StahlDat SX*, *ASM Alloy finder*, *MI-21* and *Steelspec* datasets as part of *Global Metal Specifications* – searchable, comparable and selectable.

### 1.2.4 Global Polymers

*Global Polymers* is part of the *Advanced Materials – Polymers bundle*

More than 1,000 new plastics datasheets have been added to the *Global Polymers Plastics* (formerly *Prospector Plastics*) data table, and the *Additives* table now contains over 15,000 additive materials.

Both *Global Polymers Plastics* and *Global Polymers Additives* have been updated, and now include improved searchability of several properties, for example suitability for compostable packaging, and whether a grade meets International Electrotechnical Commission Standards.

Exporters have been updated to improve the export of material properties for use in simulation to Abaqus, Altair Inspire, Ansys Mechanical APDL (Ansys Classic), Ansys Workbench, MatML, Nastran, Creo Parametric (ProENGINEER Wildfire) and Solidworks.

**Benefits:**

- Access and compare the latest data on polymers and polymer additives in this key area of industry and research.
- Easily export your data for further simulation or investigation.

### 1.2.5 Senvol

*Senvol* is part of the *Advanced Materials – Additives bundle*

This release sees the addition of over 800 new materials processed by additive manufacturing, and over 290 industrial additive manufacturing machines, increasing the dataset to over 3,000 materials and 1,480 machine records.

Classification of materials has also been improved – the number of unspecified material types has been reduced to facilitate searching for specific records in the tree structure.

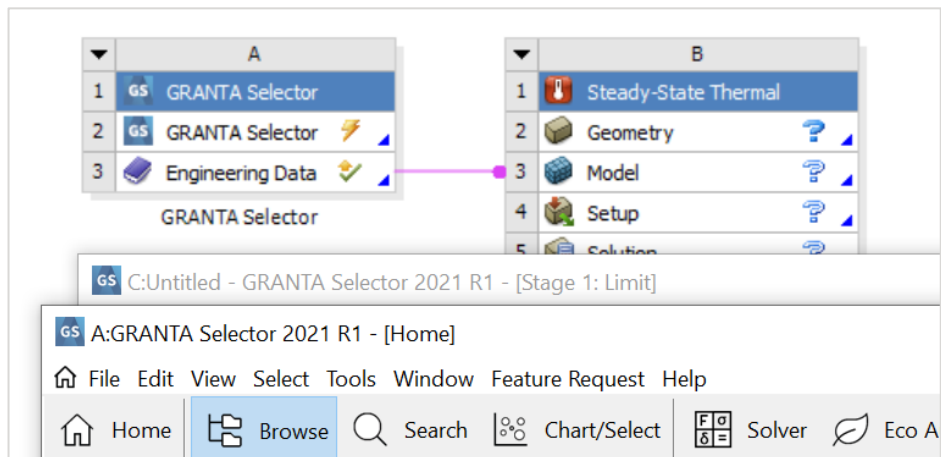
**Benefits:**

- Access the latest data on materials and industrial machines in the rapidly developing field of additive manufacturing.
- Compare performance of materials produced by AM and traditional manufacturing.
- Quickly search, identify and compare AM material grades based on material type.
- Differentiate between true grades and grades with similar characteristics.

### 1.3 Improved Ansys Workbench integration

The following usability improvements were made for either *2021 R1* or the *2020 R2.1 Service Pack*:

- Multiple instances of GRANTA Selector can now be opened from within Ansys Workbench.
- Workbench is no longer suspended while Selector runs.
- Data exporters for the *Global Polymers* data table export more properties.
- If GRANTA Selector is not installed, users can now view information in Ansys Workbench about Selector and learn more about installing it.



#### Benefits:

- Flexibility and ease-of-use when carrying out materials selection or accessing materials data for simulation via Ansys Workbench.

## 2 Feedback

Ansys Granta welcomes your feedback on any improvements you would like to see in the *GRANTA Selector* system, its data or documentation.

Please send your ideas using the **Feature Request** button on the main toolbar. Alternatively, you can email your suggestions to [support@grantadesign.com](mailto:support@grantadesign.com).

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