Material Data
ANSYS Granta Selector

Installation, getting started and introduction, license usage and recommendations

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Hamburg, 2025 June 19th

HELMHOLTZ

DESY.

Agenda

1. ANSYS Granta Selector
2. ANSYS Granta – Product overview
3. ANSYS Granta Selector – GUI
4. ANSYS Granta Software at DESY/EuXFEL
5. Tutorial – How to use ANSYS Granta Selector
6. 6. Q&A

1. ANSYS Granta Selector

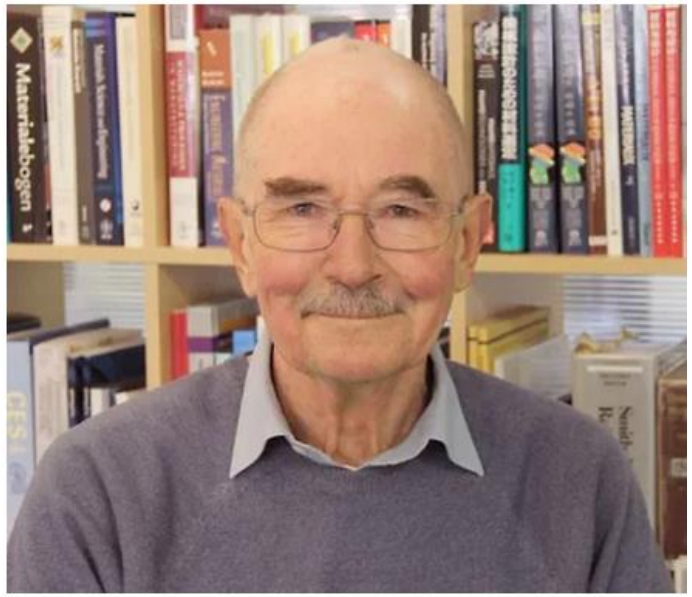
Reliable material data for FE- and Fluid Flow Analyses

- In addition to the other boundary conditions, reliable material data are necessary for good results
  => especially non-linear data, temperature depended data, fatique material data are not accessable for free
  => hard to find matrial data with „good quality“
  => organize own material tests (very expansive manufacturing of material probes for stress-strain curves, but in-house possible with A. Ermakov, ZM), but no temperature-depend material test possible

- GRANTA Software for material data developed by **Prof. Mike Ashby** (Cambridge University, link: https://www.ansys.com/authors/mike-ashby)

- ANSYS purchased the software in the beginning of 2019

- Additional information can be found here:
  link: https://www.ansys.com/products/materials/granta-selector



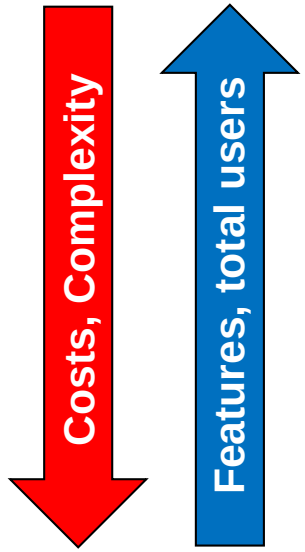
2. ANSYS Granta – Product overview

Different Granta product lines

Granta Selector => Local installation (stand-alone software), no common enterprise database, max. 250 user-specific material datasets can be added

Granta MI => „Material Intelligence“, pre-configured for usage in CAD and Simulation, server based database for all users

Granta MI Enterprise => „Material Intelligence“, full custom specific solution, own workflows/processes possible, server based database for all users

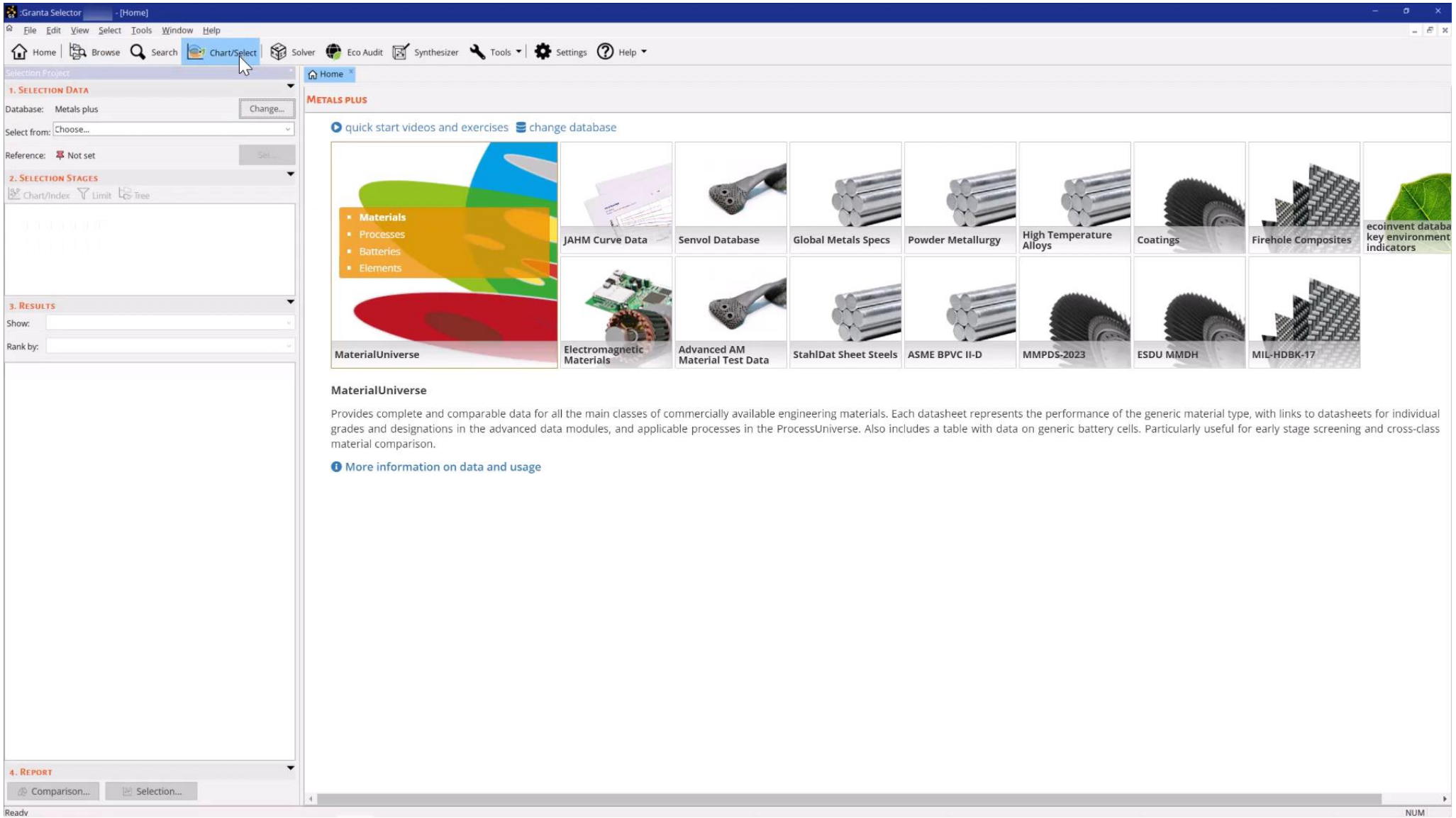


- Test at DESY Zeuthen/Hamburg and European XFEL is currently running
- We leased **one license** with two additional material packs:
  1) Advanced Materials – Metals
  2) Advanced Materials – High Temperature Alloys

3. ANSYS Granta Selector – GUI

User interface

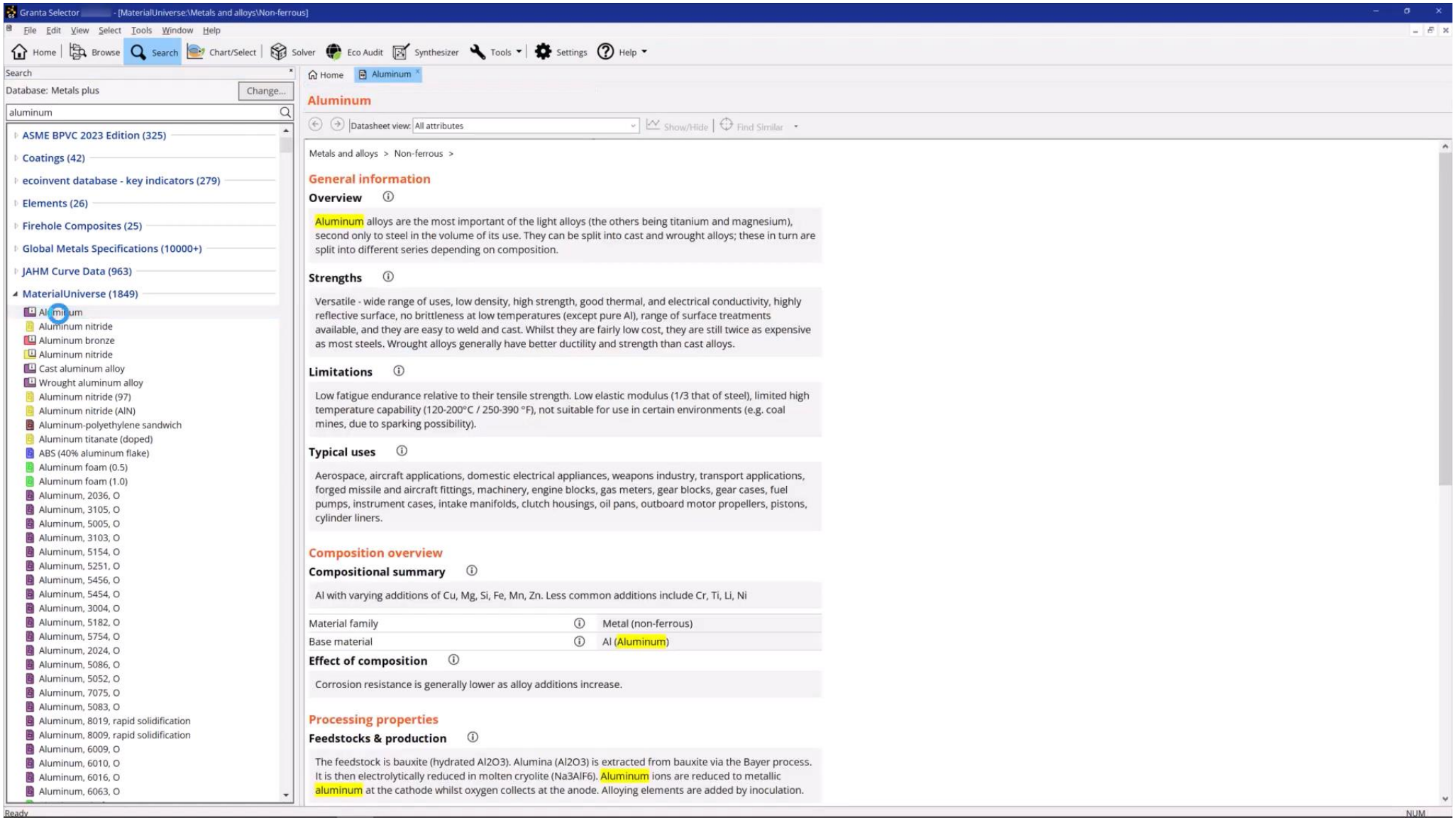
- Start screen



3. ANSYS Granta Selector – GUI

User interface

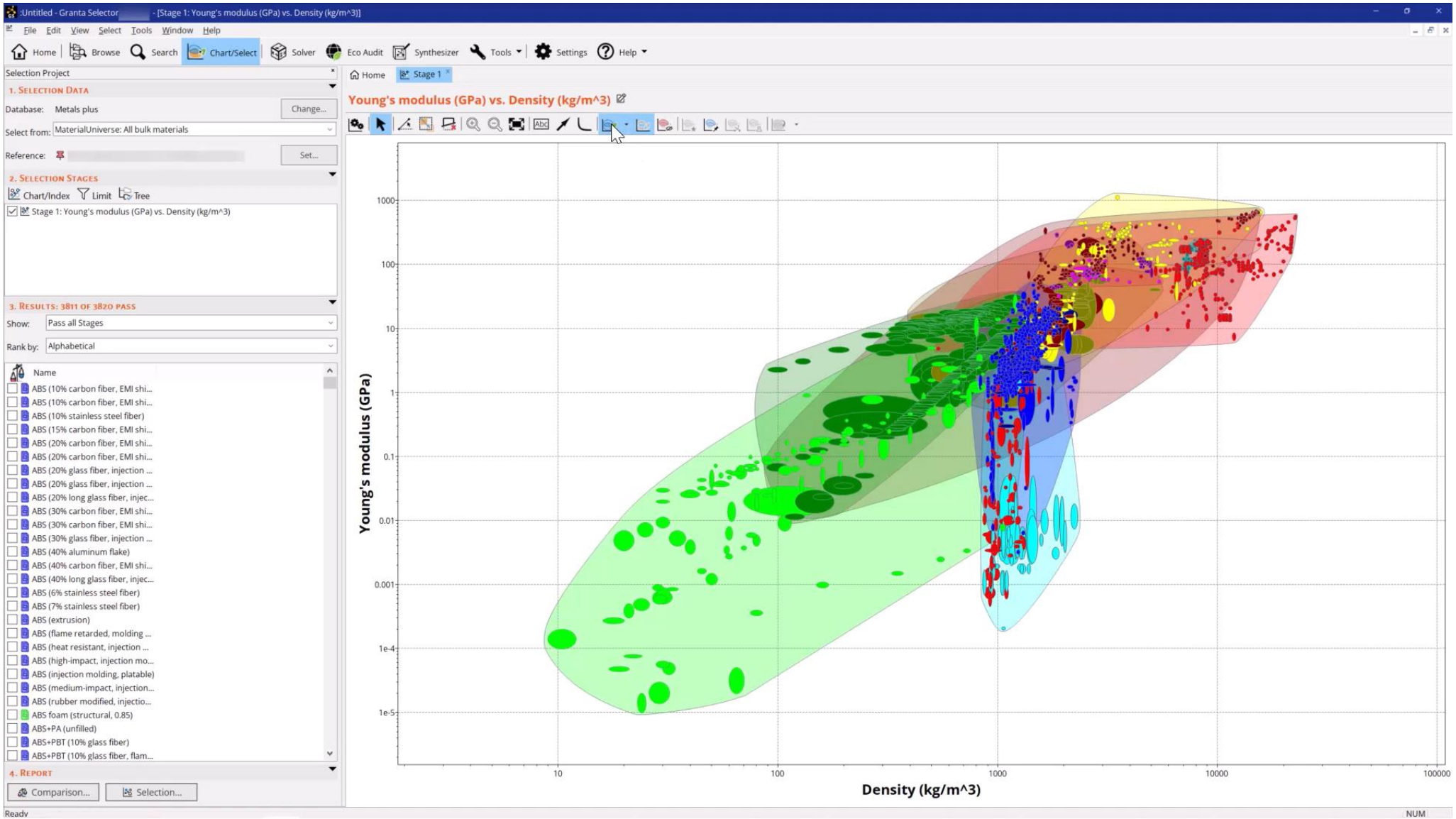
- Example



3. ANSYS Granta Selector – GUI

User interface

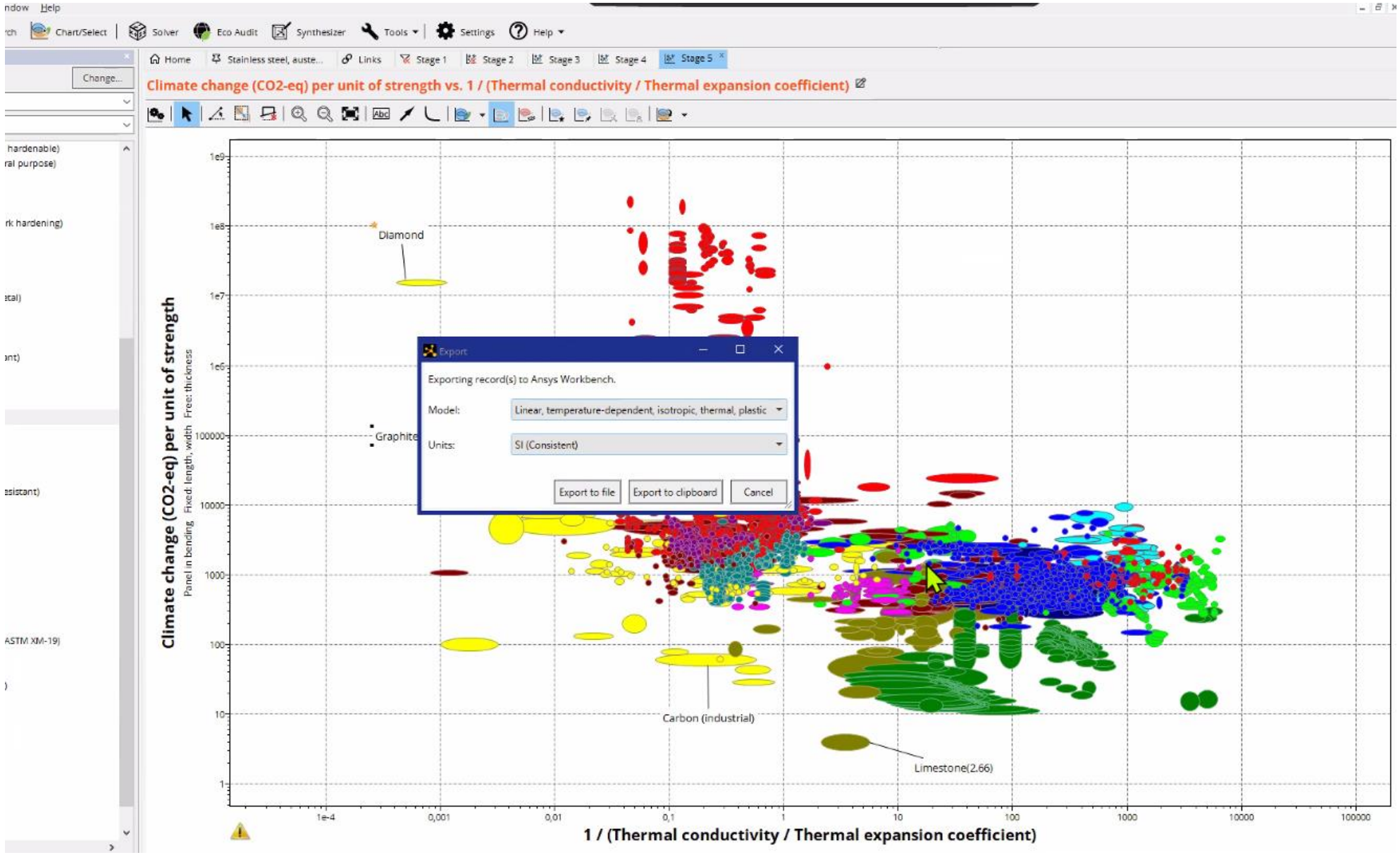
- Example



3. ANSYS Granta Selector – GUI

User interface

- Example



4. ANSYS Granta Software at DESY/EuXFEL

More details, limitations, recommendation, general usage

- Every user installs their own environment in parallel with other ANSYS products
- ANSYS Granta Selector is a stand-alone tool
- Attention: we´re running only one license in our ANSYS License Pool
  => Fast access, search and export and a final exit from te ANSYS Granta Program/GUI is necessary to release the Granta license
- Export via *.XML is recommended
  => all exported data can be stored in the simulation rpoject
  => reuse of all exported material (didn´t requires a Granta License)
- Installation files can be found here (Latest version V242):
  => Path: **S:\user\groups\zm1\4all\public\ZM1_Software\Ansys\ANSYS_V242\Granta_Selector**
  => If you don´t have access yet, ask ansys-support@desy.de

5. Tutorial – How to use ANSYS Granta Selector

Looking for additional help

Main: https://www.youtube.com/watch?v=QtoE12a_-Go&list=PL0lZXwHtV6Ok_HeBdykQT3nDQJa3RchIB

1. Browse a database in Granta Selctor: https://youtu.be/QtoE12a_-Go?si=ck5JW9DWOcG6INJr
2. Search database: https://youtu.be/DDk6Wo6rc_g?si=0QGE94EO3qwaOU40
3. Filter records by material property: https://youtu.be/dd3b8k_fbNE?si=LCnNrfzCgduNzeUb
4. Compare materials and data: https://youtu.be/lzmH-vdvGjc?si=6D7UxelVyKfpx4Ci
5. Plot and compare data on a chart: https://youtu.be/TwEyIwLZE60?si=qRRIUpbkqqqGUzia
6. Saving Data and reports: https://youtu.be/6-2isbNZa30?si=zmNBEyd2KtVq8cwA
7. About ANSYS Granta: https://youtu.be/pJZt5zwPC4Y?si=lajD_sd6yXNDpyXf
8. Identify a substitute material using Find Similar: https://youtu.be/Np6LqGTEbSE?si=eCmBWDWCVnG5IQRn

Thank you!

6. Q&A

Questions about ANSYS Granta Selector

1) Is there a simple, tabular overview of the materials included (we intend to purchase/rent Advanced Metals and High Temperature Alloys)?

=> Answer from Mr. Steinbeck-Behrens/CADFEM:

No, there is no ‘simple’ list. For High Temperature Alloys there would only be 79, Metals almost 100,000 in the Global Metals Specifications alone, and a meeting in which we look through the materials would probably be less time-consuming for me than compiling such a list. If you are looking for a specific material, sometimes a ‘search strategy’ with name components helps to at least find similar materials. Please find attached the PDF from Ansys with a text description.

- If you have further questions, please write a mail to martin.lemke@desy.de

6. Q&A

Questions about ANSYS Granta Selector

2) Is the installation of the software a module that can be called up at every ANSYS workstation?

=> Answer from Mr. Steinbeck-Behrens/CADFEM:

The software has its own installation. So the answer is: Where it is installed and there is access to the licence server. For us - CADFEM internally - Ansys Granta Selector is rolled out via a software kiosk, like many Ansys products, and not via individual installation. From this point of view, the internal CADFEM answer is yes. It's just not a feature of the software, but the result of installation management.

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6. Q&A

Questions about ANSYS Granta Selector

3) The user material data is stored locally in a file - is this correct or how does this relate to user material data?

=> Answer from Mr. Steinbeck-Behrens/CADFEM:

User material data is part of a material selection process, e.g. to view own data in comparison with the reference data or to compare material data created with the ‘Synthesiser’ tools. And everything associated with the selection process can be saved in the project file. This ‘project file’ then also contains the user material data.

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Questions about ANSYS Granta Selector

4) Are the self-created user material data loaded in a kind of project session in one go by opening the ‘local data file’ in the interface and can therefore also be called up together with the other data using the search functions and filter and display options (diagrams) and can therefore also be compared?

=> Answer from Mr. Steinbeck-Behrens/CADFEM:

Yes. (I would just not call it a ‘local data file’, but a ‘project file’, because it is not a file with just the ‘data’. This can then be defined as an initial project due to the way it works).

- If you have further questions, please write a mail to martin.lemke@desy.de

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4) Are the sources for the material data traceable or named/visible in the data?

=> Answer from Mr. Steinbeck-Behrens/CADFEM:

Yes, in some tables the source is clear from the context, e.g. if the specification and associated organisation are named in Global Metals Specifications. In such cases, only the data provided by one source is included. In Material Universe, there is a global source reference in each data sheet, and occasionally a comment on the data sources in individual entries. In Material Universe, there are always several sources from which a data sheet was derived. Entries in Material Universe that Granta itself has derived from similarity analyses are marked with an *.

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