

CES4.5 Release Notes

The enhancements in CES4.5 are described in detail in the following sections.

Software Enhancements

Functional Data (CES SELECTOR, CONSTRUCTOR and WEB)

The 'Array' functional data from CES4.1 has been split into two new functional data types:

Grid Data: A multi-parameter grid can be created and populated with data, e.g. Fatigue Strength as a function of Cycles, Temperature, Stress Ratio, and K_T . If the grid is fully populated, values can be interpolated over this grid at any value of the parameters (independent variables) and used in selection.

Series Data: A number of x-y curves (or series) can be created, where each series has a fixed value of one or more other parameters e.g. a set of Stress – Strain curves at various Temperatures and Strain rates. The data can be interpolated along each series, but not between them.

Array functional data from previous CES databases can be upgraded to the new formats.

'Expression' functional data from CES4.1 has become the new functional data type: **Maths Data**. Expression functional data from previous CES databases can be upgraded to the new format.

In CES SELECTOR and CONSTRUCTOR the presentation of functional data has been revised. When functional data is displayed as a graph in its Functional Graph window, a Legend can be displayed, giving details of what is plotted. The Legend also has a Data view, allowing the user to see the raw data in numeric form at the same time as the graph. It is possible to copy this data into the clipboard for pasting into other Windows applications e.g. Microsoft Excel.

In CES SELECTOR more than one Functional Graph window can be open at a time, for a different record and attribute combination.

In CES SELECTOR and CES WEB functional data can be viewed as a graph on the datasheet.

Parameter Pre-sets (CES SELECTOR, CONSTRUCTOR and WEB)

In addition to a default value, a parameter may have other pre-set values, which can be named e.g. Room Temperature.

Importing Data to CES CONSTRUCTOR

When importing data via *File/Import*, it is recommended that the first row of data (after the initial row containing field names) is a 'dummy' record, with all the fields filled in with the correct type of data. For a long text attribute, it is necessary for the 'dummy' field to contain more than 256 characters. If the long text attribute fields in the dummy record do not contain more than 256 characters, then long text data in subsequent records will be truncated to 255 characters. This is due to a known bug in the Microsoft import driver that is used by CES CONSTRUCTOR. The dummy record can be deleted after a successful import.

When importing discrete data, the import will look at existing discrete types.

- If a matching discrete type name is found, values in the imported field are matched to the existing discrete values. If no value match is found, a new discrete value is created.

- If a matching discrete type is not found, then a new discrete type will be created. The unique values in the imported field will become its discrete values.

Database Export to CES WEB

A new application has been created to export data from a CES4.5 database and import it into CES4.5 WEB.

FE Export from CES WEB

It is now possible to export data from the MIL-HDBK-5 (MMPDS) web database for six different FE applications: ABAQUS 5.1, ANSYS 5, COSMOS, NASTRAN, PATRAN 2.5 and ProEngineer. Data can be exported in Isotropic or Orthotropic formats for all programs except ProEngineer.

Functional Data Helper

Granta Design Limited provides a Microsoft Excel Add-in in the 'User Area' of its web site that converts functional data in an Excel spreadsheet to a form valid for CES CONSTRUCTOR. Only Microsoft Excel is supported at present. Full instructions are given on the web site.

<http://www.grantadesign.com/members/updates/index.htm>

Database Enhancements

MIL-Handbook-5 +17 Database

MIL-HDBK-5 Data

The database has been updated and revised to include the latest data from MIL-HDBK-5J (now MMPDS-01). There are over 300 new or revised datasheets, including 4 new alloys.

PMP Data

Data from the Preliminary Material Properties Handbook is available alongside MIL-HDBK-5 data. These 78 emerging materials have not yet met the criteria for inclusion in the MIL Handbook, and so have been released separately. The PMP-HDBK database follows a similar general format to the MIL-HDBK-5 database, both in the organisation of the materials trees (classifying each consecutively in terms of Alloy, Temper/Condition, Form, Dimension and Statistical Basis) and in terms of the presentation of the properties of each alloy. The database contains 24 new alloys, represented by 278 design data records and 162 graphical data records.

IDES Plastics Database

The IDES Plastics database presents around 47,000 datasheets for specific plastic resin grades from around 400 suppliers worldwide; around 43,500 ASTM and 8,700 ISO datasheets. Data includes: Physical, Mechanical, Impact, Hardness, Thermal, Electrical, Flammability, UL Ratings, Optical, Film, Elastomeric, Aging and Processing properties. The datasheets are collated by IDES Inc. and provided in CES under license.

CAMPUS[®] Plastics Database

The CES CAMPUS[®] Plastics database has been updated with the latest information. There are now 4,650 polymer grades from 27 producers in 6,176 datasheets. Polymer data has been extended to include additional TPE and Film Grade properties and take advantage of the new functional data format for Strain, Time, Temperature at constant stress Creep charts.

Moldflow Data

The Moldflow database is shipped as standard with the CES Optimal Polymer Selector (OPS) only. It contains a record for each plastic grade for which you can simulate injection molding using Moldflow's off-the-shelf simulation products – about 8,000 grades in total from around 300 suppliers. These grades are linked to the POLYMERUNIVERSE table. The data is supplied by the Moldflow Corporation.

Eco-Selector Database

The Eco-Selector database is shipped as standard with the CES Materials Eco-Selector product only. The database comprises the MATERIALUNIVERSE and PROCESSUNIVERSE augmented with about 27 eco-data attributes for each of the 3,000 materials.

The Eco-Selector can be used as a reference source, or for material selection to minimize the environmental impact of one of the phases of the material life-cycle: production, manufacture, use and disposal.

MATERIALUNIVERSE (and POLYMERUNIVERSE)

There are 17 new materials, including 3 new titaniums (Ti-3Al-5Mo, T-6Al-2Sn-2Zr-2Mo and Ti-15Mo-3Al-3Nb).

The polymer datasheets now contain the ISO 1043 standard abbreviation in a separate data field, allowing easier identification, comparison and filtering.

PROCESSUNIVERSE

There are 14 new or revised PROCESSUNIVERSE records, all but two in the Shaping subset.

The layout of the PROCESSUNIVERSE datasheets has been improved and some properties have been renamed for greater clarity.

Many of the process schematics have been upgraded to colour diagrams.

A new Surface Treatment property has been added, *Curved surface coverage*.

User's Manual Supplement

CES4.5 is shipped with a User's Manual Supplement. It is not a general replacement for the CES4.1 User's Manual and users wishing to familiarize themselves with the CES4.5 software are advised to begin with the CES4.1 manual.

Limitations

Input and Editing of Functional Data (CES CONSTRUCTOR)

It is only possible to input or edit Maths and Grid functional data within CES CONSTRUCTOR, it is not possible to input or edit Series functional data via the CES CONSTRUCTOR interface yet. However it is possible to enter data for both Series and Grid data via the GML language. Please contact Granta Design for more details.

Updating Databases (CES CONSTRUCTOR)

The update feature in CES CONSTRUCTOR has been disabled. Therefore it is not possible to merge an existing database with the CES4.5 databases supplied with this release. This should not be confused with *upgrading*. It is possible to upgrade a CES4.1 database to the CES4.5 format.

If you have edited your CES4.1 database in CES CONSTRUCTOR and it is important to preserve these edits, please contact Granta Design for further information.

CES LAB

CES LAB 1.3 is released in April 2004 and will be compatible with CES4.5 CONSTRUCTOR. Please contact Granta Design for more details.

Exporting Databases to CES WEB

Currently it is not possible to export Maths data to a CES WEB database. If your CES database contains Maths data and you attempt to export it to CES WEB, you will be warned and the data will be ignored.

Feedback

The expert staff at Granta Design can provide advice on database design issues, and can provide a consulting service to help with major database development projects.

Granta Design would welcome your feedback on any improvements you would like to see in the CES system, its data or documentation.

email: product.support@grantadesign.com

There is a general CES FAQ at the following location that may answer some of your questions.

<http://www.grantadesign.com/members/kbase.htm>