

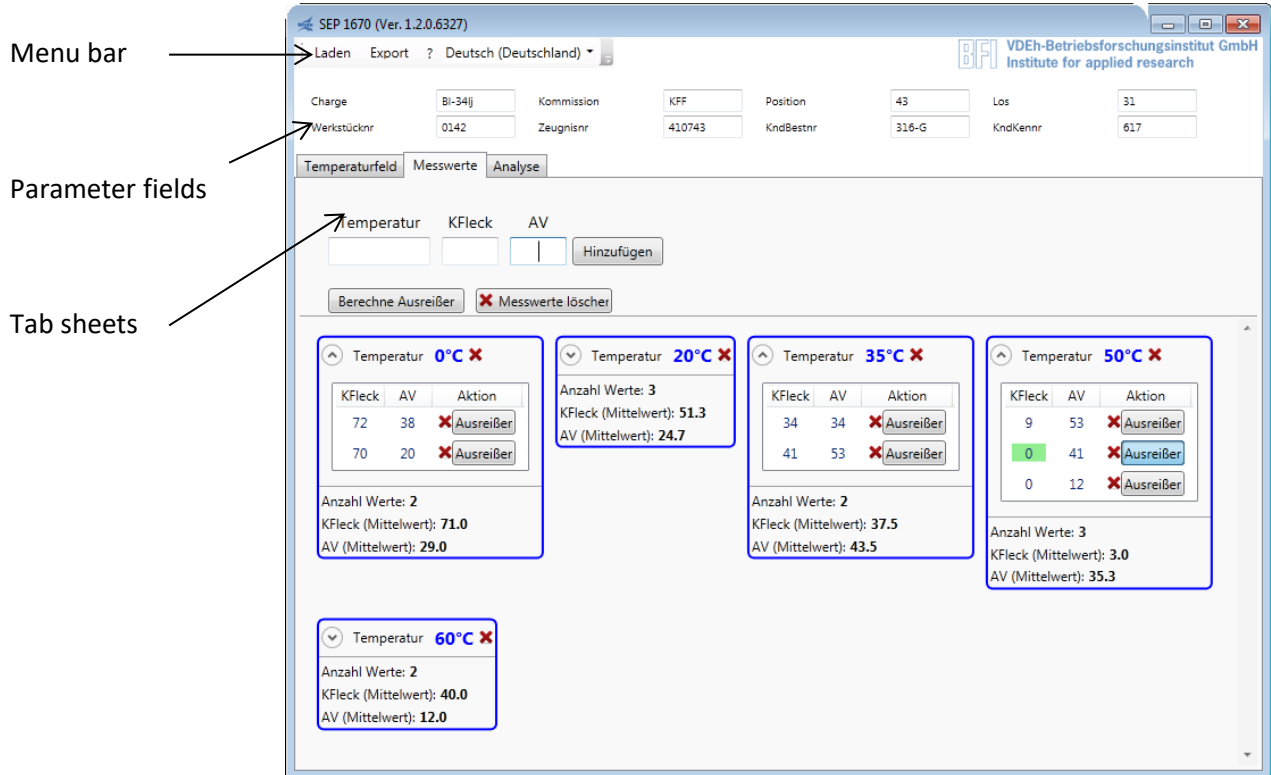
Brief Manual

SEP 1670 – FATT-Calculation Software

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Program Interface

The program interface consists of **Menu bar**, **Parameter fields** and **Tab Sheets**. The parameter fields include general information as charge, position and component number which will appear in the exported results. The tab sheets **Field of temperatures** and **Measurements** include temperatures and corresponding measurements; the **Analysis** tab graphically displays the results of calculation.

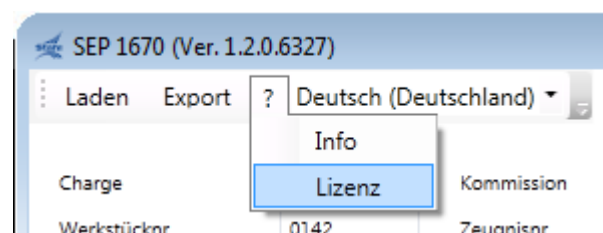


The menu bar

The menu item **Laden** allows restoring a previously saved program session with all settings and measurements. Therefore, the corresponding file has to be loaded in the program-specific xml format *.sep or as an Excel file *.xls.

The menu item **Export** allows to save the results in the program-specific xml format *.sep or as an Excel file *.xls or alternatively as a printable report (*.pdf).

The menu item **?**, **Info** opens an information window containing contact data. Via **?**, **Lizenz** the Licence Manager is started.



The program offers a language change, selectable from the menu items **Deutsch (Deutschland)**, **Englisch (Großbritannien)** and **Englisch (USA)**.

In language mode **Englisch (USA)** the units °F and ft·lbf be used automatically.

The parameter fields

The fields Charge, part no., Commission, etc. record data which is displayed together with the evaluation result. The intention is to cover all data necessary to identify a certain measurement. The fields are configured provisionally and can be adapted arbitrarily to the required input data.

Charge	Bln-E-01	Kommission	DEF	Position	111	Los	XY_123456
Werkstücknr	0815	Zeugnisnr	112233	KndBestnr	987654	KndKennr	999

The Tab Sheets

Field of temperatures

For FATT determination, the program allows to define the field of temperatures for testing at first. It has to be ensured that the notch-impact test pieces cover a range of crystallinity (brittle fraction, F_B) between 20% and 80%. According to the recommendations of the SEP 1670 the temperature fields for FATT determination are pre-set at program start. A click on the red cross besides a temperature allows to delete the temperatures one by one. The button **Delete all** deletes the entire temperature field and allows individual setup for the measurement.

The button **Add** allows complementing the field of temperatures by individual temperatures.

The button **Init field** in combination with one input value in the field **Tstart** allows arranging a new field of temperatures around T_{start} according to SEP 1670, Section 4.3. The starting value T_{start} should be the $FATT_{spec}$ value specified by the purchaser. If other empirical values are available for the component as a whole or for the sampling location on the component, the manufacturer and the purchaser may agree upon a different starting value. For this case all existing temperatures are deleted.

Temperaturfeld
Messwerte
Analyse

Tstart = [°C] Temperatur

T = [°C] Hinzufügen

T = -30	[°C]	✗
T = -20	[°C]	✗
T = 0	[°C]	✗
T = 20	[°C]	✗
T = 40	[°C]	✗
T = 60	[°C]	✗
T = 100	[°C]	✗

✗ Alle löschen

Measurements

Having defined the testing temperatures, the measurements can be inserted within the tab **Measurements**. Pressing the button **Add** accepts the input of measured values for brittle fraction (CSpot) and the notch-impact energy (A_V) for the corresponding temperature into the list. In case the input temperature is not yet contained in the field of temperatures, it will be automatically added so that the measurements can also be added without previous definition of a field of temperatures.

Temperaturfeld
Messwerte
Analyse

Temperatur KFleck AV Hinzufügen

0 12 37

Berechne Ausreißer ✗ Messwerte löschen

Temperatur 0 °C ✗

KFleck	AV	Aktion
76	36	✗ Ausreißer
70	38	✗ Ausreißer
12	37	✗ Ausreißer

Anzahl Werte: 3
KFleck (Mittelwert): 52.7
AV (Mittelwert): 37.0

Temperatur 20 °C ✗

KFleck	AV	Aktion
69	41	✗ Ausreißer
50	56	✗ Ausreißer
65	40	✗ Ausreißer

Anzahl Werte: 3
KFleck (Mittelwert): 61.3
AV (Mittelwert): 45.7

A click on the red cross besides a temperature allows to delete the measurement or the entire temperature of measurement from the list.

Below the list the number of measured values and the mean value for brittle fraction and notch-impact energy are displayed.

The Button **Calculate outlier** executes the identification of outliers for the brittle fraction according to SEP 1670, marking all corresponding measurements in red. They are treated according to SEP 1670, Section 5.3.3. If an additional impact test has to be performed, the previously identified outlier is marked by the button **Outlier** as such and will be disregarded for the calculation of the best-fit curve. In order to make this visible, the corresponding value for the brittle fraction will be marked green in the list.

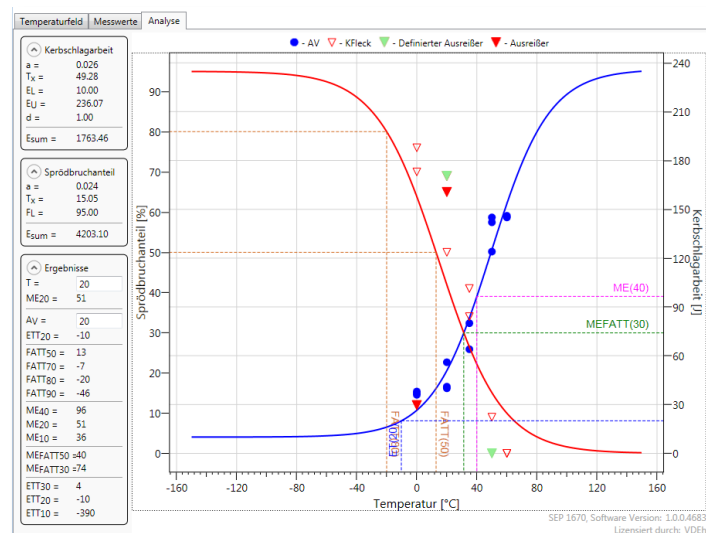
Pressing the Button **Delete measures** deletes **all** measured values for **all** temperatures. The field of temperatures is maintained.

Analysis

Following the input of all measured values and having selected the tab **Analysis**, the measurements and the calculated best-fit curve are graphically displayed.

Herein, outliers considered in the calculation are displayed in red, while identified outliers disregarded in the calculation are marked in green.

Left to the graphic is a list of all numeric result parameters for the best-fit curve for **notch-impac energy** and **brittle fraction**.



Characteristic values like ME and ETT, as defined in SEP 1670 and derived from the best-fit curve, are presented in the list **results**. Herein, also the manual input of temperature and impact energy values is possible in order to read out individual results for the characteristic values. As mentioned at the beginning, the result can be exported in different formats. Additionally, it is possible to save the graphical result via the context menu as an image file or to copy it to the clipboard in order to directly import it into custom test certificates.

The Configuration File

Essential parameters of the program and the output results can be individually adapted by using the parameter file „config.xml“ in the program folder. This file is also necessary for the batch mode described in the following chapter where it defines the output of automatic processing. The xml file is provided with comments. Therefore for a complete description of all possible program parameters please refer to this file.

The Licence Manager

If during program start only a preliminary licence with expiration date is available, the licence manager is displayed, which allows to order a valid licence for **BFI_SEP_1670**. A click of a mouse on the button **Request for a licence** opens a dialogue window for the input of user data. When all data are filled in, the licence can be directly ordered via e-mail.

Upon reception of the reply e-mail including the licence key, this has to be copied and pasted into the field **Licence Key**. Pressing the button **Save Licence** completes the procedure. The licence manager is accessible anytime via the question mark in the menu bar.

Lizenz Manager

Lizenz Status:

Gültig

Lizenz läuft aus am: 31.01.2011

Bitte fordern Sie rechtzeitig eine unlimitierte Lizenz an!

Maschinen ID:

CM7+EM/IsHJCn7phgOZ3Ww==

Lizenznehmer:

Name:

Organisation:

Email:

Tele:

Fax:

Lizenziert durch: VDEh

Lizenz Schlüssel:

tgAA8kcNgwekss8AF9I4EP8ywE4AE5HbWU9I09yZ2FuaXNhdGlvbj0VGVs
ZWZvbj0RW1haWw9I0ZheDQjTGJjZW5jZWRCeT1WREVoR40p9avbCPv9ck
2V8VVUn9WXLQMSAKR0Nt9vHI7i4GJ5Ks48VaP8K3pZUs3ZJ1s

Lizenz anfordern Lizenz speichern Abbrechen

The Batch Mode

In order to enable an automatic processing of measurement results, there is a command line version of the software available, which allows a script-based execution without user interaction.

The command line command has the following form:

BFI_SEP_Batch.exe <config.xml> <data>,

where the data can be xls or xml files. The file BFI_SEP_1670.bat in the program directory contains an example for such a script and starts a test run using example data. Within the batch mode the configuration file defines the required output. Therefore, the following xml elements are relevant:

picture	output of graphical results as image file
report	output as pdf report
xml	output as xml file
xls	output in Excel format

The sub-element **File**, contained by any of these elements, sets the file name of the corresponding result files. It provides the possibility to access all parameter fields of a charge in order to generate unique file names. Constant character strings have to be put in quotation marks. A valid example would be

```
<File>Charge + "_" + Kommission + ".pdf"</File>
```

which leads to the file name „Bln-E-01_DEF.pdf“ for the example data.

The command line program can only be started with a valid licence.