WebTool – User Guide

Tobias Loga and Jens Calisti / IWU / 17-11-2011
www.building-typology-eu

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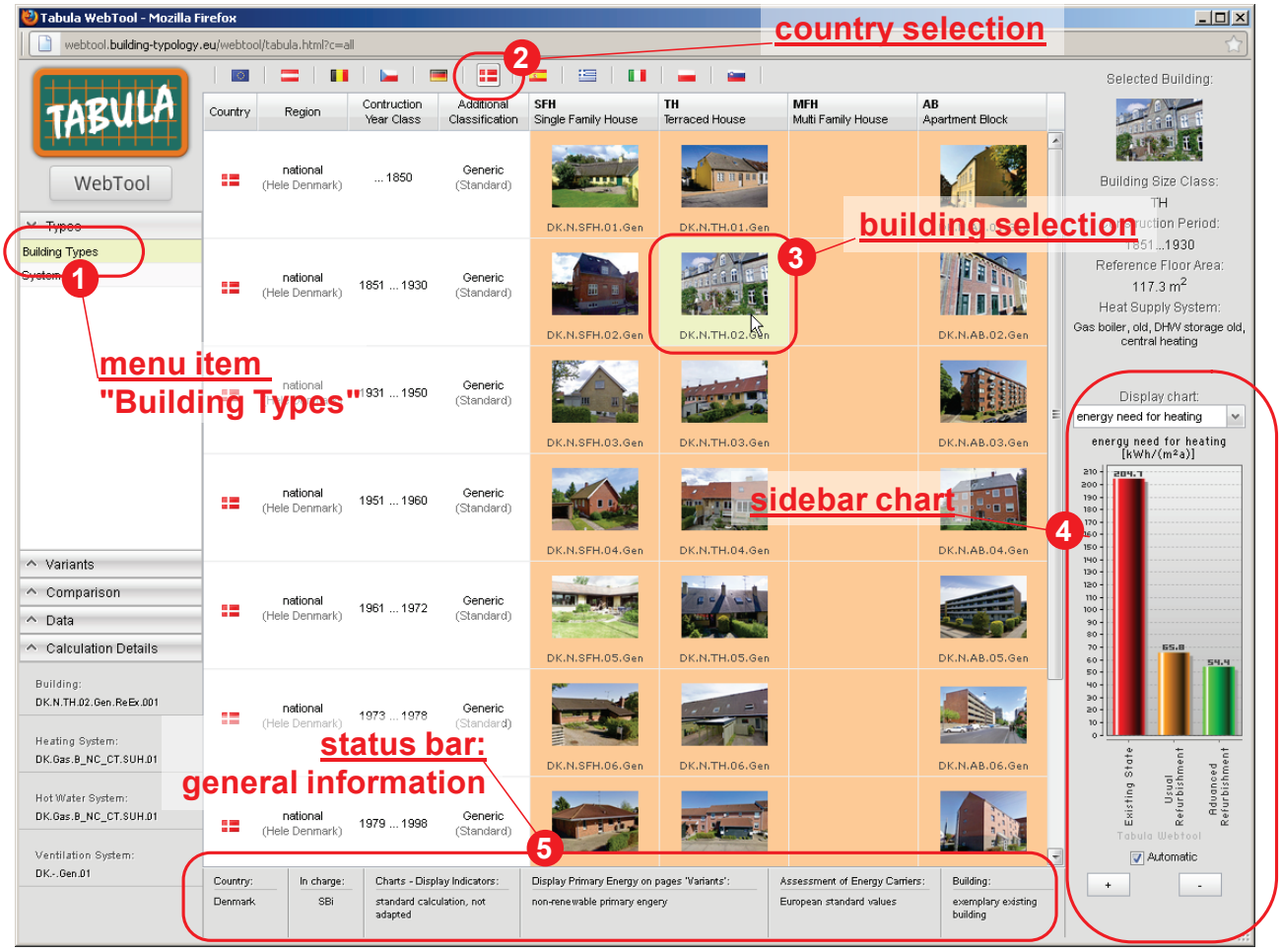
1 Purpose of the TABULA WebTool

The TABULA WebTool has been created within the framework of the Intelligent Energy Project TABULA. The objective of the development was to disseminate the general idea of national building typologies to building experts from all European countries and to give them an understanding of the concrete implementation according to the TABULA agreements:

- the division of residential building stocks in size and age classes;
- data of exemplary buildings: visual appearance, commonly found construction elements and corresponding U-values;
- data of exemplary heat supply systems: commonly found system types and their energy performance indicators;
- typical values for the energy consumption by energy carriers;
- energy saving measures on two quality levels and their impact on the energy consumption;
- standard reference calculation procedure based on an agreed data format, user conditions and national climatic data;
- calibration of the standard calculation procedure to the typical level of measured consumption.

More information about the building typology systematics can be found at:
www.building-typology.eu.

2 Country and Building Selection



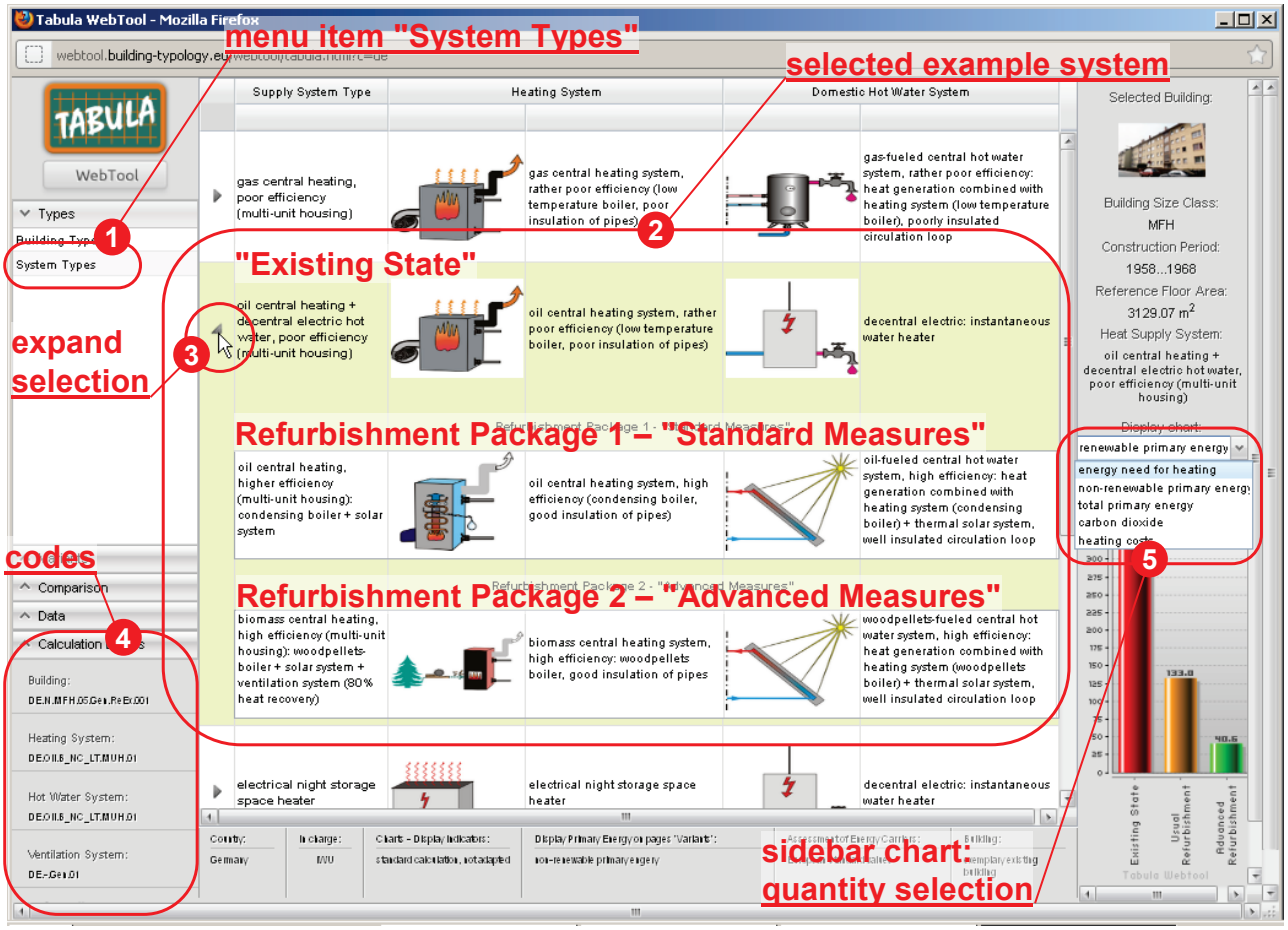
The webtool always starts at the menu item "Building Types" ❶. At this page a country can be selected by click on the respective flag ❷. All those countries are listed for which a building typology on the basis of the TABULA definitions has been elaborated.

A matrix will appear which is ordered by building size (4 columns) and by construction year class (a certain number of rows, depending on the country). The matrix symbolizes the generic building types of a country, in some cases also special types are mentioned at the bottom part of the building type matrix. Each building type is represented by an example building, which consists of the photo and the dataset of the building (see clause 6 below).

By click on a building photo ❸ the dataset of the building is selected and a calculation of the energy performance is executed. The result is immediately displayed by the side bar chart ❹: The quantity "energy need for heating" is an indicator for the thermal performance of the building envelope. The red bar is visualizing the existing state, the yellow and green bar are representing the building envelope quality after refurbishment by "usual" measures (commonly realised during renovation) and "advanced" measures (usually only realised in very ambitious renovations or research projects).

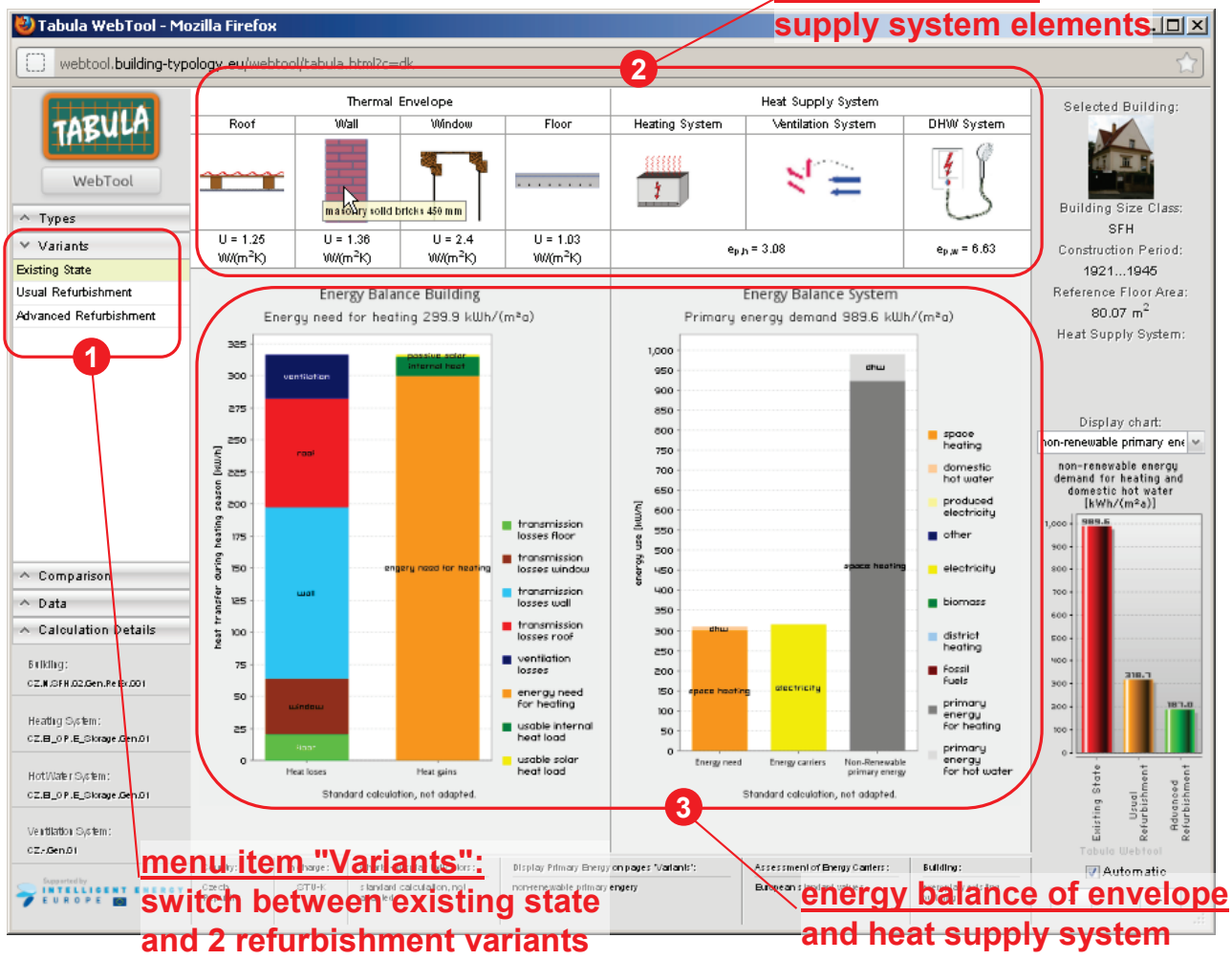
The status bar ❺ continuously provides information based on the current country & building selection and settings: Apart from the country and the organisation in charge of the dataset elaboration the status of the settings are presented (see chapter 8). On the right side the status bar shows whether an old or a more recently built house has been selected: For the newer buildings (building size class starting at 1995 or later) only the existing state is considered by the webtool since the focus is lying on renovation of existing buildings.

3 Selection of Heat Supply Systems



After selecting the menu item "System Types" ❶ a list of supply system types will appear ❷. The types are represented by data of exemplary systems of the respective country. For each country this list is supposed to reflect the most commonly found supply system types. For single-unit housing (building size classes SFH = "single family house" and TH = "terraced house") and for multi-unit housing (building size class MFH = "multi-family house" and AB = "apartment block") the supply system lists are different. The selection of the existing system can be expanded by clicking on the small arrow on the left side ❸. Then two possible types of system refurbishment are shown. The measures are exemplary and do not represent the whole spectrum of possible supply system upgradings. For a better orientation the database codes of the current supply system type are displayed on the left side of the status bar ❹. In order to get a first overview of the energy performance of the building/system combination the sidebar chart can be switched to the quantities non-renewable and total primary energy, carbon dioxide and heating costs ❺. The steps of these calculations can be tracked in the calculation sheets (see chapter 7).

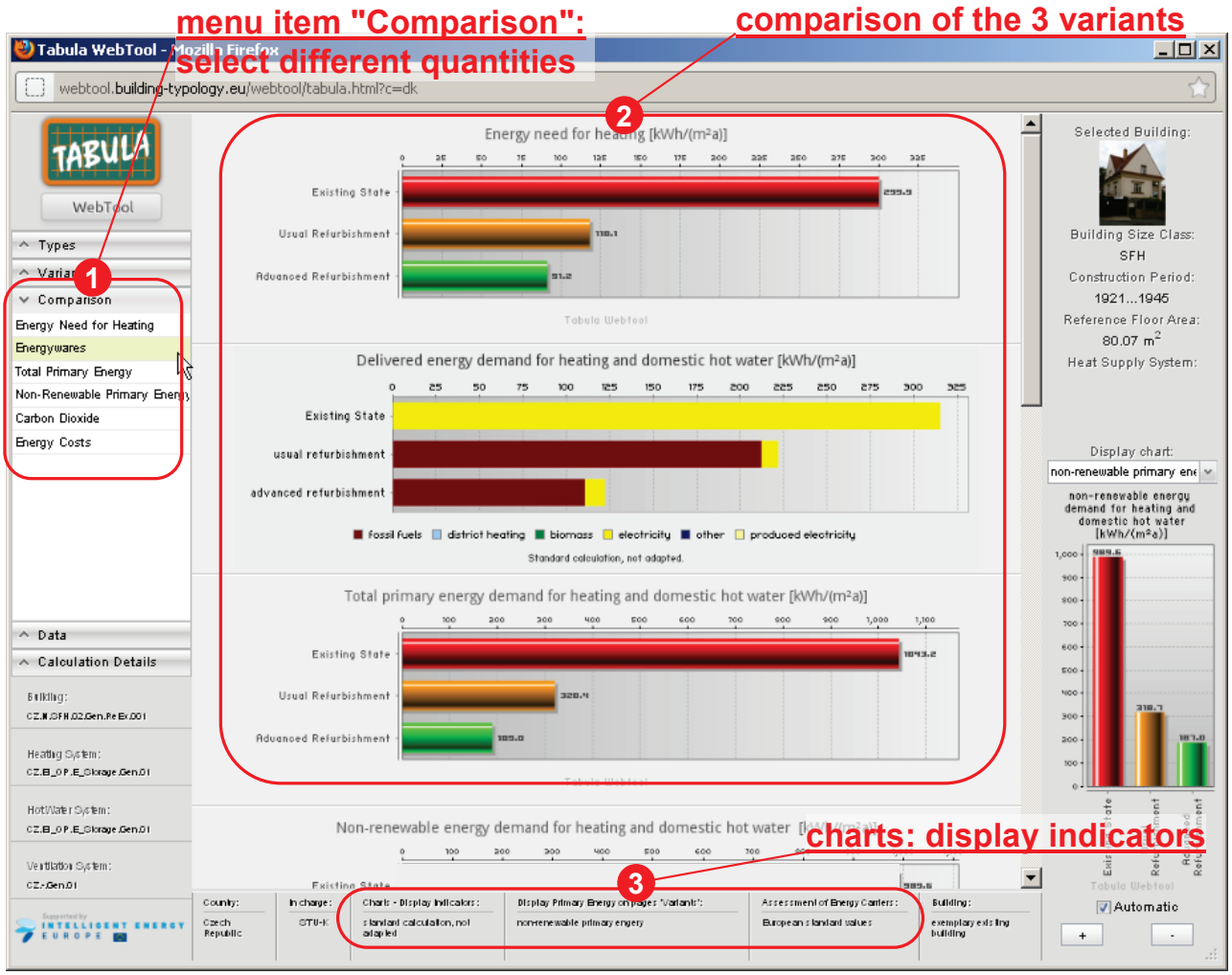
4 Energy Balance of 3 Variants



Under the menu item "Variants" an overview of the three variants of building/system combination is given ❶. It includes the pictures and U-values of the construction elements as well as the pictures and primary energy expenditure factors of the heat supply systems ❷. By moving the mouse pointer over the pictures a description of the elements will appear.

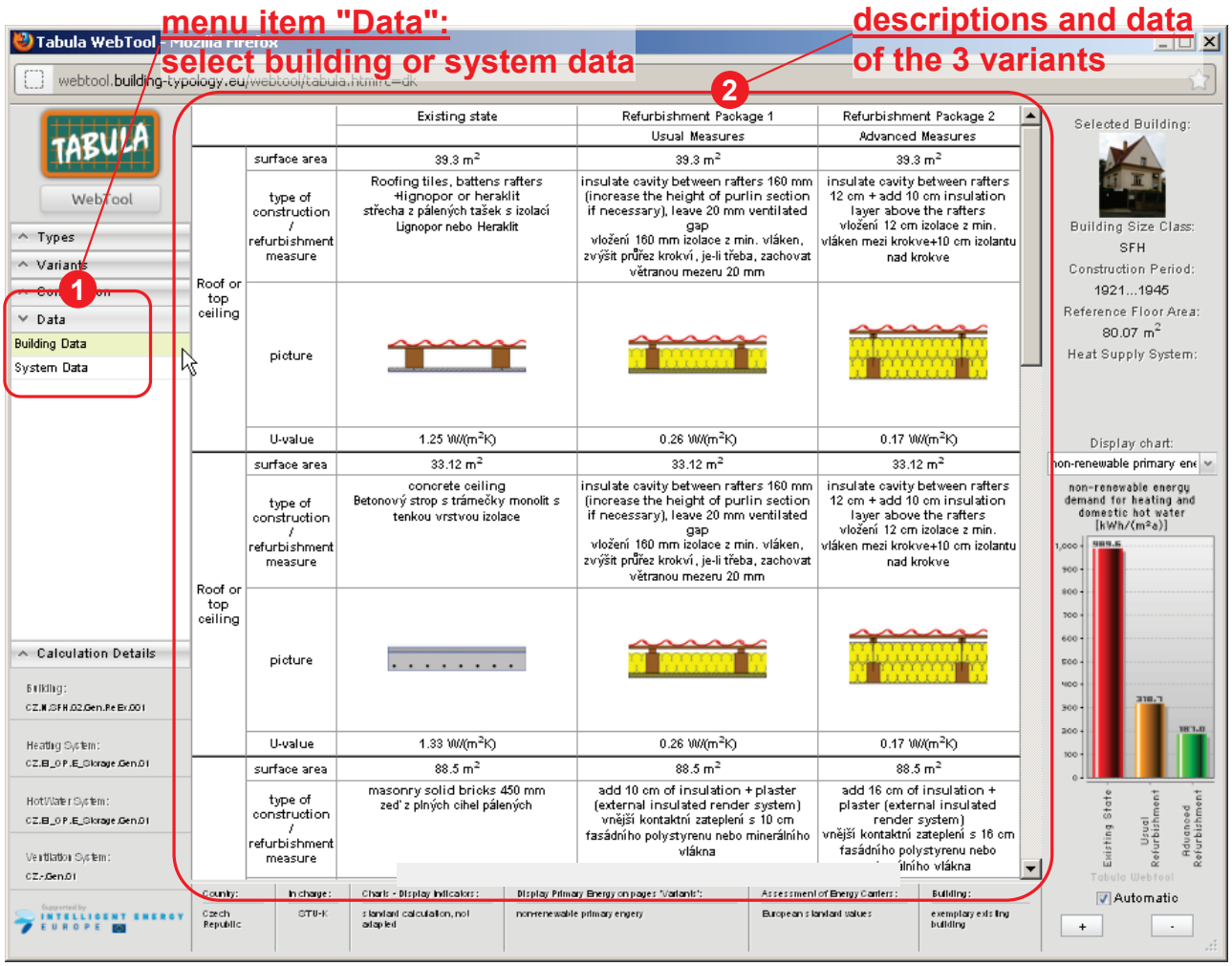
The energy balance of the building, the energy use by energy carriers as well as the primary energy demand of the building variant is displayed by the two charts ❸. These values are an output of the calculation sheets (see chapter 7).

5 Energy Carrier Assessment



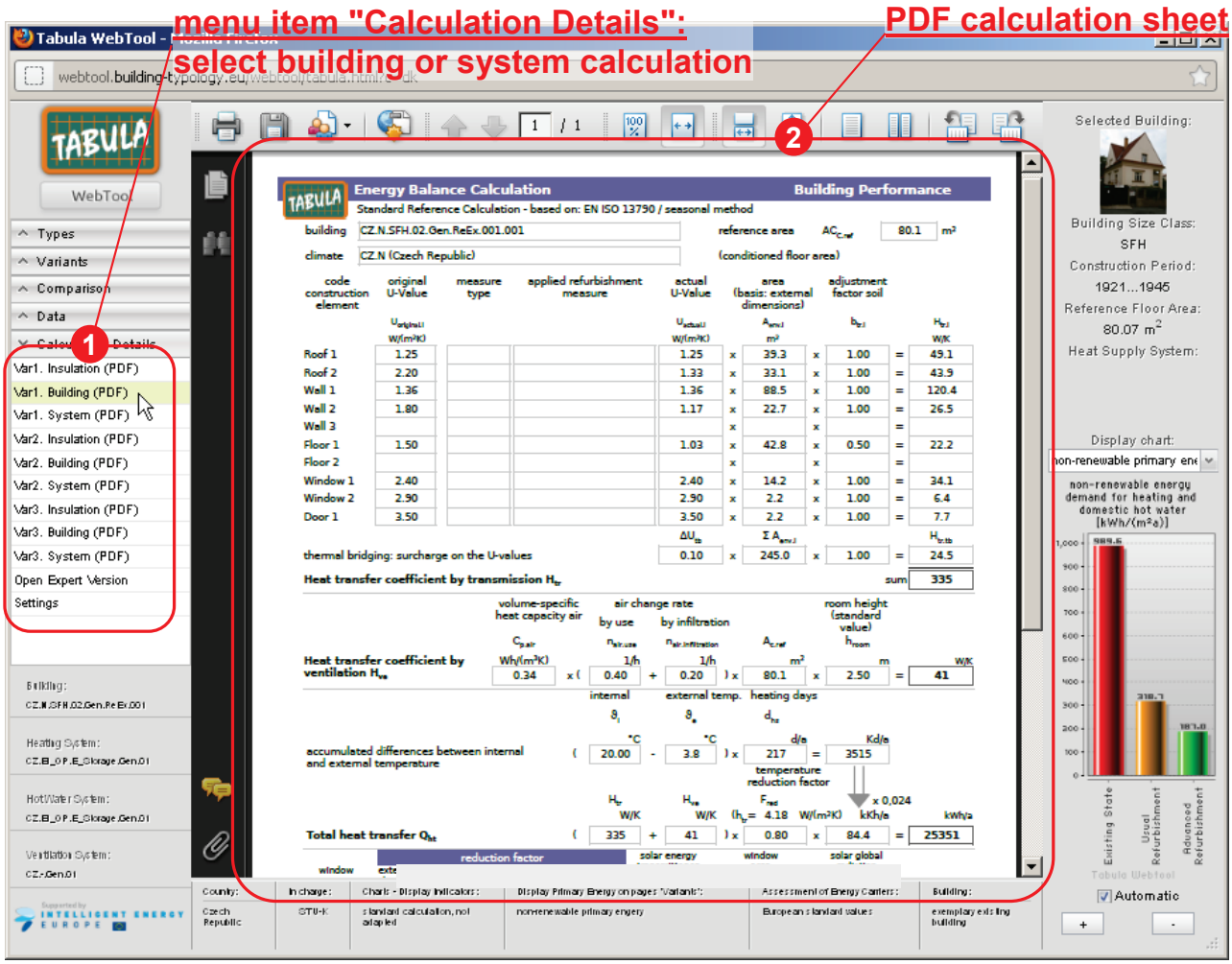
This page enables a direct comparison of the three building variants in terms of the most important energy performance indicators. A click on one of the quantities ❶ will unhide the respective bar chart ❷. The results also depend on the settings (see chapter 8)❸.

6 Data Overview for the selected Example Building



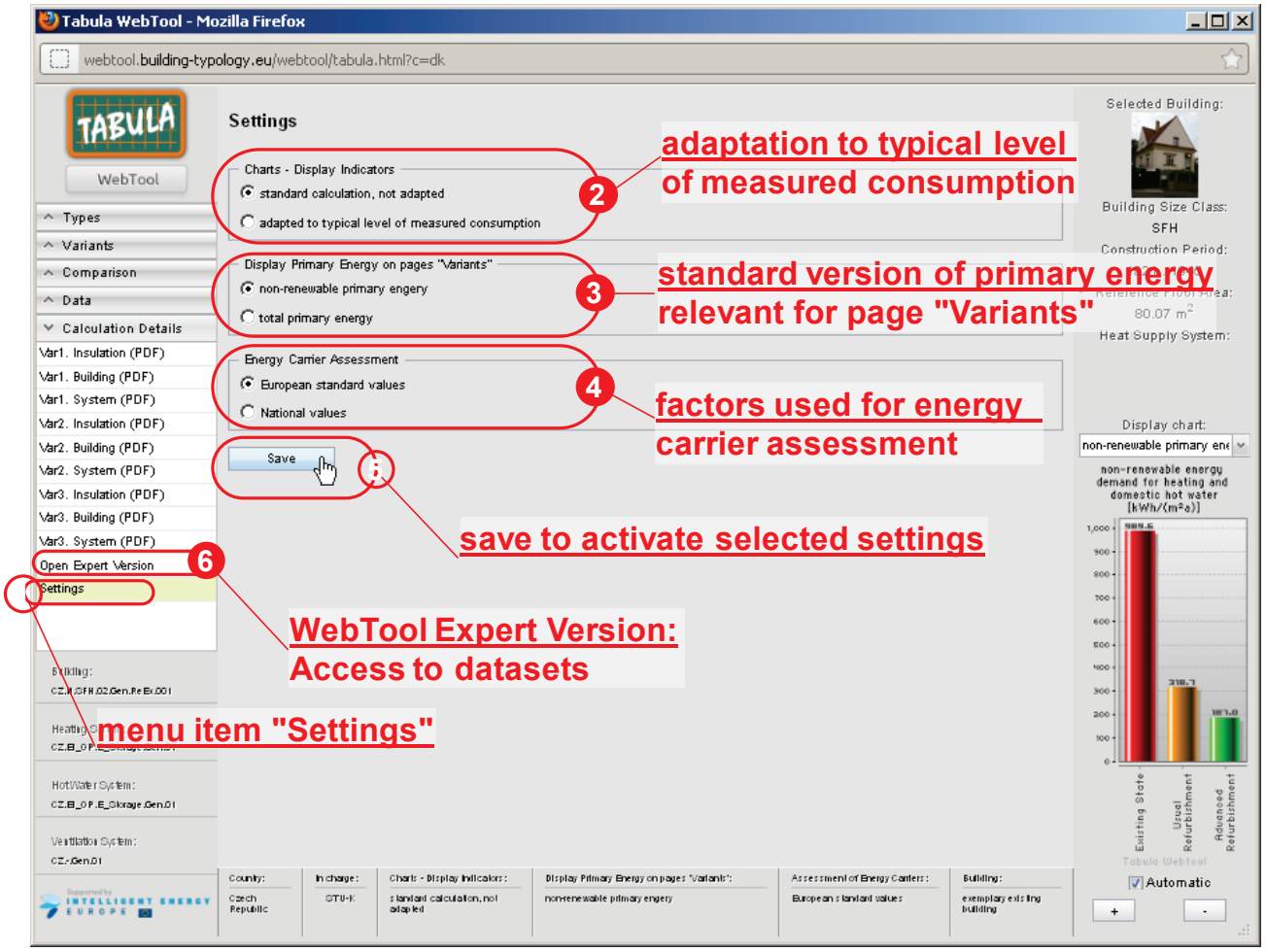
Under the menu item "Data" the building as well as the system data can be displayed ❶. Both pages consist of 3 columns showing the data of the variants: Existing State as well as Refurbishment Package 1 and 2 ❷

7 Online Calculation Sheets



The menu item "Calculation Details" ❶ allows a tracking of the energy balance of the three building variants. After clicking on one of the sheet labels a PDF sheet is generated by loading the selected building and system dataset from the TABULA web database and populating a predefined calculation sheet ❷ with the corresponding values. This simple energy performance calculation procedure is based on the respective CEN standards. For more detailed information consult the TABULA website at www.building-typology.eu.

8 Settings



A number of calculation options are available on the page "Settings" ❶:

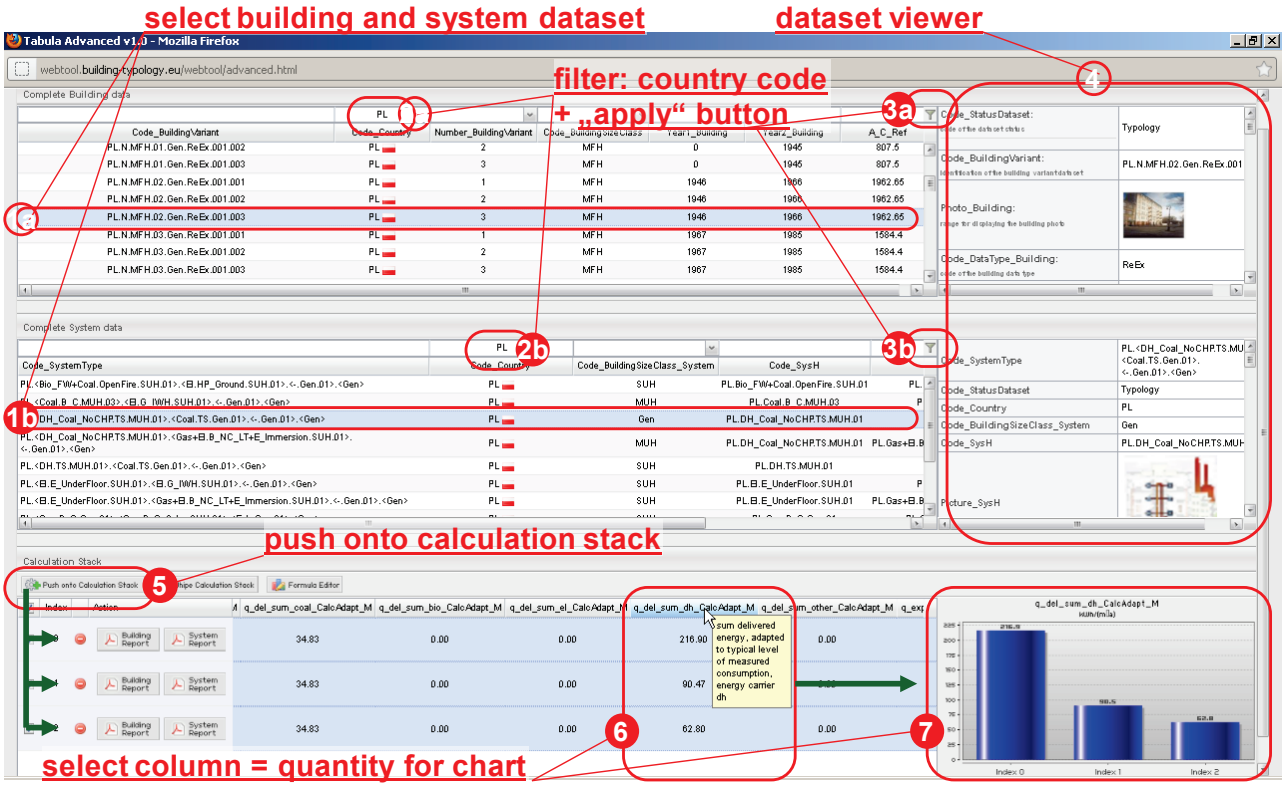
- **Toggle between standard calculation and calculation adapted to the typical level of measured consumption** ❷**:** In order to enable realistic statements as regards energy performance indicators and energy savings the ratio of typical levels of measured consumption to the standard calculation is supposed to be determined or estimated for each country. In case of estimations the calibration to the typical level of consumption is deemed preliminary - up to the time when statistical analyses of the correlation have been performed. If these values have not yet been determined for a country the adaptation factor 1.0 is used for all building and system types. The actual used factor is displayed at the bottom of the PDF calculation sheet for the energyware assessment.
- **Change of the primary energy type for the charts on the pages "Variants"** ❸**:** The columns representing the primary energy can be switched between "non-renewable" and "total" (including renewable energy).
- **Change of factors for the assessment of energy carriers** ❹**:** As default values the factors from EN 15603 Annex E are used. After changing this option national factors are applied – as far as available. The actual used assessment factors can be tracked in the respective PDF calculation sheet.

After changing an option the new parameters are activated by clicking on the "Save" button ❺.

Also the access to the Expert Version of the TABULA WebTool (see following chapter) can be found in this menu item ❻.

9 Expert Version

Detailed Data, Filter Functions and Online Calculation for individual Combinations of Buildings and Systems



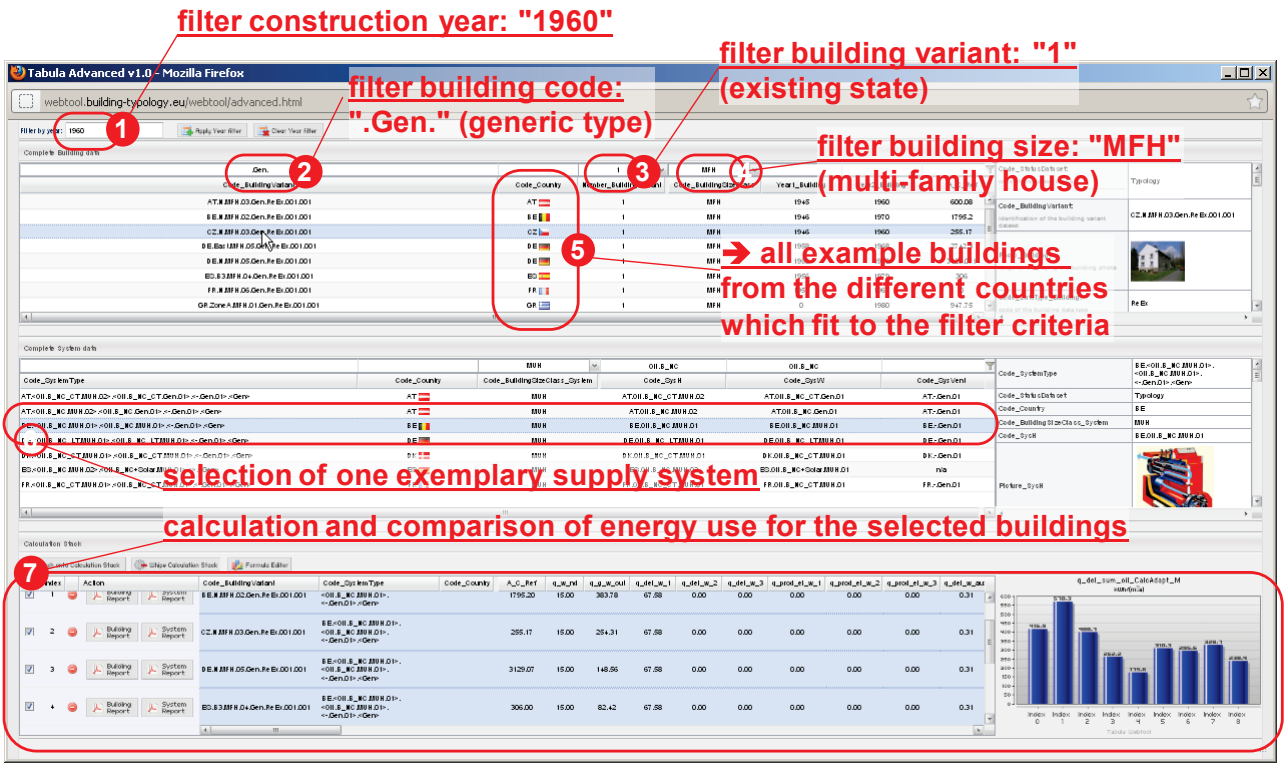
The expert version of the webtool gives direct access to the underlying data used by the standard webtool version. All available building and system datasets can be freely selected, combined and viewed in detail.

After starting the expert version a window will open with frames for selecting building 1a and system 1b datasets. Different types of filters can be used to select groups of datasets for buildings 2a and systems 2b. After entering filter parameters the "apply" button has to be clicked 3a 3b.

The selected datasets can be displayed by the dataset viewer 4.

After selecting a dataset of a building and of a system this combination will be pushed onto the calculation stack by clicking on the respective button 5. Any column in this area can be selected 6 to be displayed by the chart 7 (by clicking the column header cell).

Example Application of the WebTool Expert Version: Compare Energy Performance of Buildings of the same Type from different Countries



A possible application of the expert webtool version is to compare energy performance indicators for different buildings of the same age and class from different countries. This can be done by the following steps:

- select a certain year ❶ and apply the year filter.
- filter generic types (filter input ".Gen.") ❷, a certain building variant (e.g. number 1 = existing state) ❸, a certain size class (e.g. multi-family houses) ❹.
- After applying the filter button the respective datasets from all available countries will be listed ❺.
- If only the thermal envelope is in the focus all different example buildings can be calculated by use of one single supply system ❻.
- You can now push the building / system combinations onto the calculation stack and compare different quantities by selecting a column to be displayed by the chart ❼.

10 Technical Annotations

- The WebTool was optimised for Firefox 6, Google Chrome 12 and Internet Explorer 8 and requires Javascript and Cookies
- The WebTool will usually be started in it's own window. If you clicked on the "launch" / "open link" and no new window pops up: Check your popup-blocker!
- The calculation pages were designed in the Adobe Acrobat PD-Format (PDF). Normally PDFs are displayed inline e.g. directly in the Webtool browser window (Adobe Reader standard + browser standard settings). If your browser displays a "Save file"-dialog you can simply download the file, change the extension from ".iwu" to ".pdf" and view the file with your preferred PDF viewer software.