CA EPBD III MEETING MALMÖ

Core Theme 6: Validation rules in EPC software

Overview Luxembourg

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Objectives - Building data base & EPC validation

- Targets
  - → Better overview about the LU-building stock
  - → Improve the quality of the EPC's with build in plausibility checks
  - → Use one single database (with htlm-interface for experts)
- Performing statistical analysis on different subjects like
  - → Energy efficiency
  - → Key figures e.g. surface ratio,…
  - → Optimisation potential e.g. more selective subsidies
- Performing an automated EPC validation
  - → Based on different key figures
  - → Establish a governmental control mechanism to improve the quality of EPC calculations

Data base - Collecting and processing data

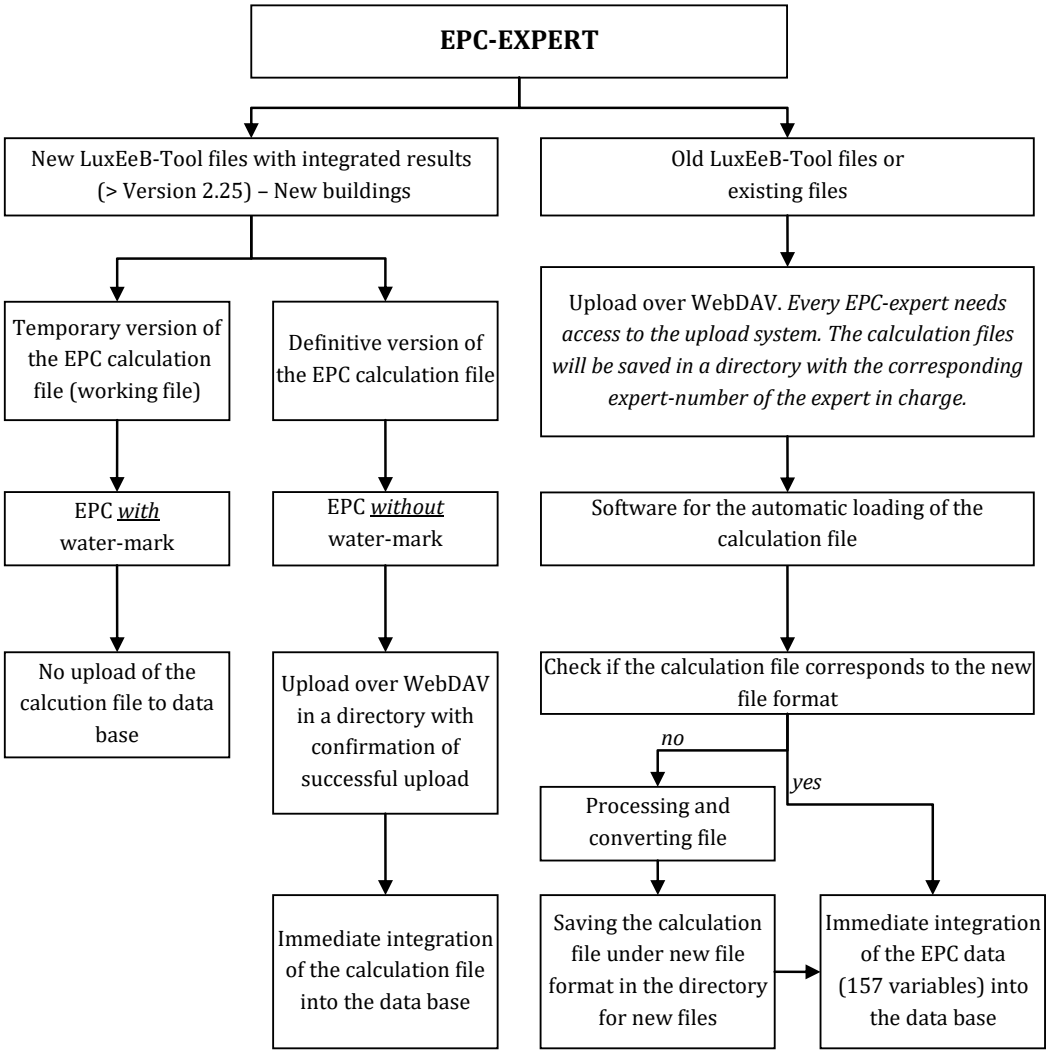
- Modifying the existing EPC calculation files
  - → An old calculation file only contains the raw data of a building; no results or other data for statistical analysis and validation.
  - → The new EPC-file contain about 160 VARIABLES to allow these analysis.
- Classification and composition of variables
  - → Building level (Surfaces, U values,…)
  - → Energy level (energy use for heating,...)
  - → Building systems level (heating systems, energy source,…)
- Problem: old EPS's are not applicable for a reasonable use (lots of buildings)
  - → develop a methodology and tool to convert these EPC's into the new format.

lf.N°	Daten	Variablenname
1	Nummer des Energiepasses	res_cpe
2	Nummer des Ausstellers	Ausstellernummer
3	Anzahl der Geschosse	res_geschosse
4	Wohneinheiten	res_we
5	Datum der Ausstellung	res_date
6	Energieeffizienzklasse	Effizienzklasse_Buchstabe
7	Wärmeschutzklasse	Wärmeschutzklasse_Buchsta
8	Effizienzklasse Umweltwirkung	Emissionsklasse_Buchstabe
9	Gebäudehüllfläche	ahülle
10	FX-korrigierte Gebäudehüllfläche	ahüllefx
11	Nettoheizleistung	res_ph
12	Lüftungsverlust	ht
13	Transmissionsverlust	hl
14	Wärmebrückenverlust	hwb
15	Temperatur- und flächenspezifische Wärmeverluste	hk_spez
16	Beheiztes Gebäudevolumen	Ve
17	Verhältnis Ai/Ve	res_av
18	Speicherkapazität	cwirk
19	Nutzungsgrad WRG der Lüftung	res_nl
20	Nutzungsgrad EWT	res_ewt
21	energetischer Luftwechsel	n_Lüftung
22	Energiebezugsfläche	res_an
23	mittlerer U-Wert	umean
24	Wärmebrückenzuschlag	wb
25	Luftdichtheitswert	n50Wert
26	Leistungskennwert Lüftung	res_ql_spez
27	Regelungsparameter	fg
28	Fensterflächenanteil	Fensterflächenanteil

152	Energieträger WW-Bereitung, Rapsöl	res_en_w_Roel
153	Energieträger WW-Bereitung, Strom	res_en_w_HK
154	Energieträger WW-Bereitung, KWK fossil	res_en_w_PK
155	Energieträger WW-Bereitung, KWK erneuerbar	res_en_w_KWK
156	Energieträger WW-Bereitung, Fernwärme	res_en_w_KG
157	Energieträger WW-Bereitung, Solarenergie	res_en_w_SO

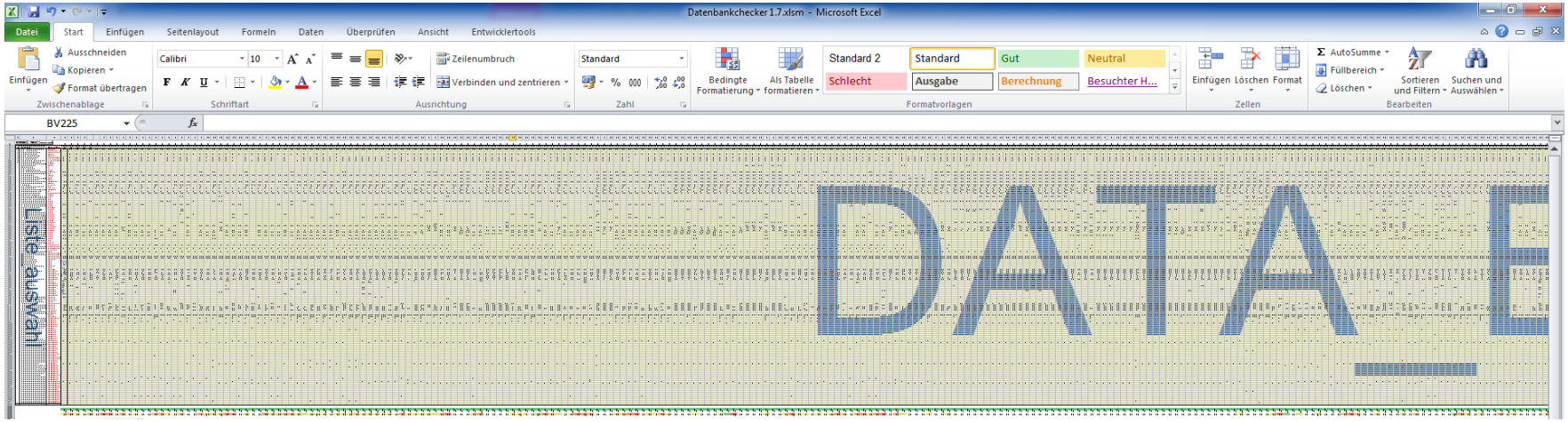
Data base - Collecting and processing data

- Overview on the upload and data processing procedure:



Data base – Data representation

- Excel TEST database with nearly 5,000 buildings:



Data base – Data representation

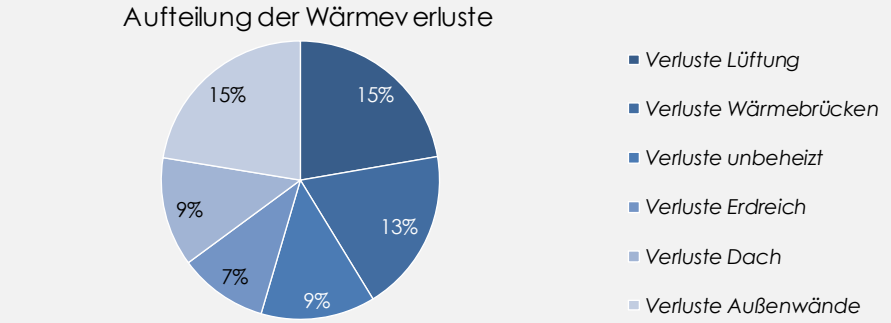
- Building characteristics (for each building of the data base):

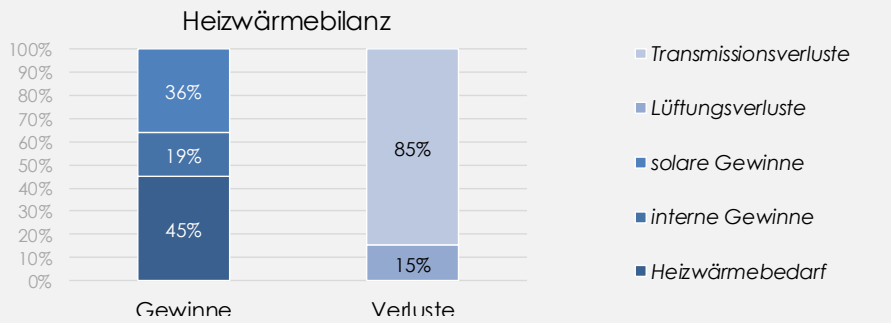
Gebäudesteckbrief — Gebäude N° 62

Heizwärmebedarf	**B**	42,7	kWh/(m²a)
Gesamt-Primärenergiebedarf	**B**	89,8	kWh/(m²a)

Baujahr	2012	mittlerer U-Wert	0,25	W/(m²K)
Wohneinheiten	1	Heizleistung	4,8	kW_{th}
Gebäudetyp	Wohnen EFH	Gebäudehülle	440	m²
PassNr.	P.20120524.6962.30.1.1	Wohnfläche	155	m²

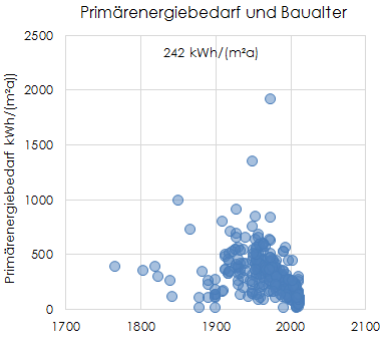
Heizung	Brennwertkessel	WW-Bereitung	Kessel
Energieträger	Erdgas	Energieträger	Erdgas
Solaranlage vorhanden	Nein	Spez. Heizleistung	31 W/m²

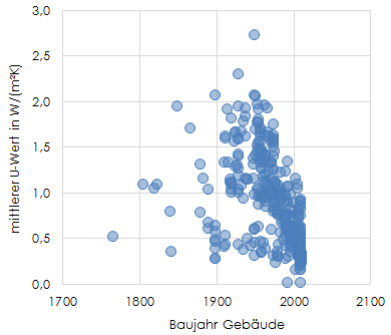


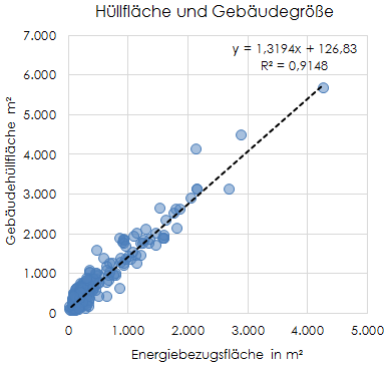


Data base – Data representation

- Graphical representation of the most important statistical data:







EPC validation and rules

- The EPC validation rules are based on an analysis of the following key figures and variables:

  → **Results** (e.g. ratio between the energy need for heating and the mean U-value,…)

  → **Basic calculation parameters** (e.g. regulation of the heating system, weather data,…)

  → **Building Elements** (e.g. U-values,…)

  → **Building Envelope** (e.g. ratio between the roof surface and the energy reference area)

  → **Building Systems** (e.g. meaningful combination of heating systems and energy sources → central-heating gas boiler electrically operated = X)

Data base & EPC validation – Current status & forecast

- The automated EPC validation has already been implemented into the new version of the EPC-software (LuxEeb).
- The field tests of the uploading system for new and existing EPC's as well as the data base system are currently in progress. It will start in Winter 2013.
- The combination of data base and EPC validation will allow the Luxembourg government to perform systematic controls of EPC's and ensure a higher quality.
- The automated statistical analysis will soon allow a better understanding of the Luxembourg building stock and besides that enable the Luxembourg government to take more selective political measures (e.g. subsidies).

Validation rules in EPC software

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