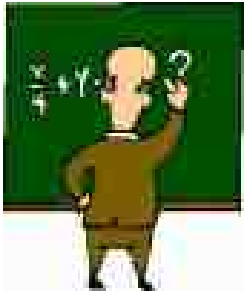


CEN Standards have been almost finalised. Some work has still to be done

A new hourly and monthly method to calculate the heating and cooling load has been prepared. No methodology for non A/C buildings!!!

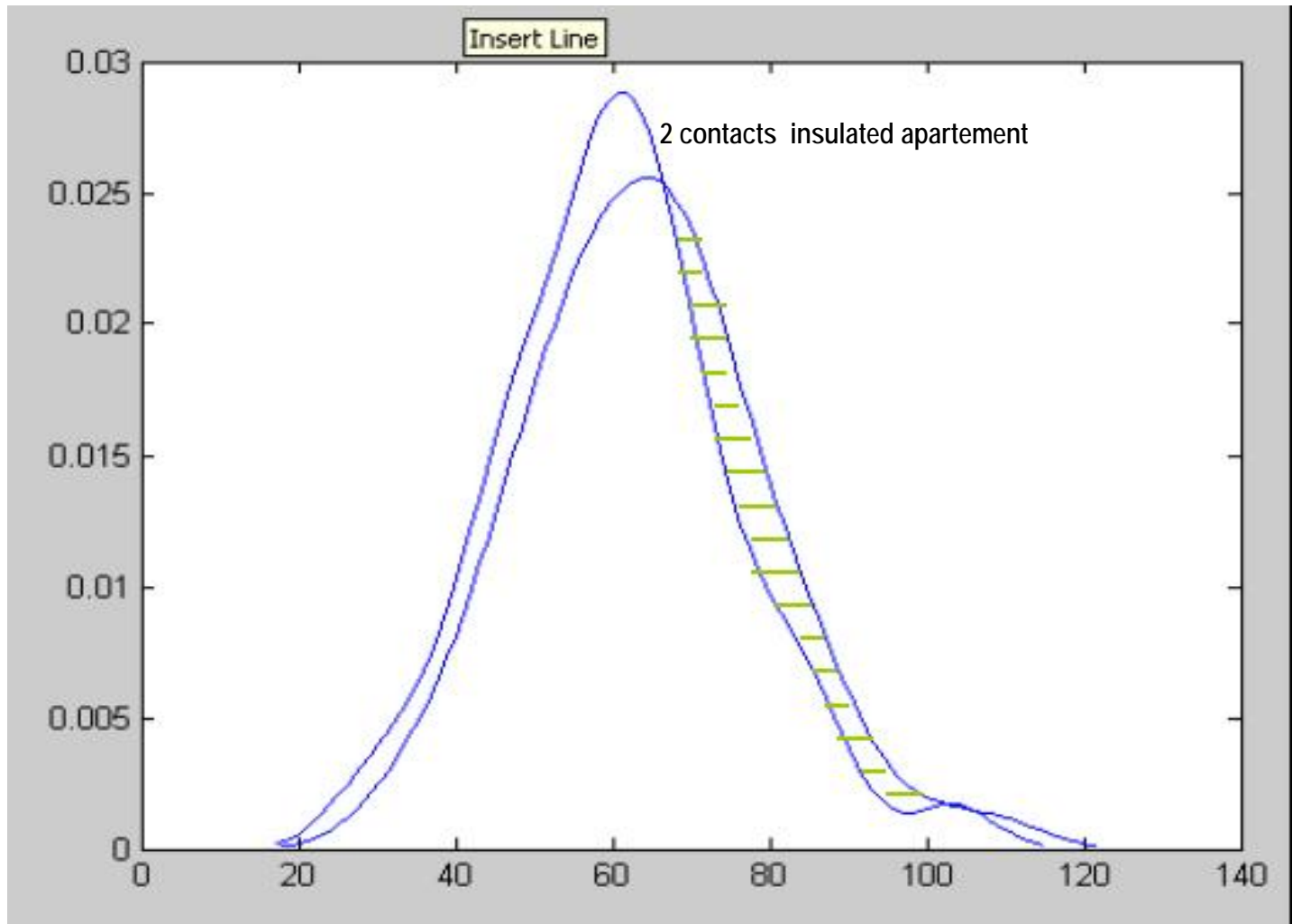
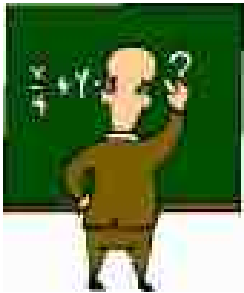
In parallel, a new standard to consider indoor environmental quality is proposed.

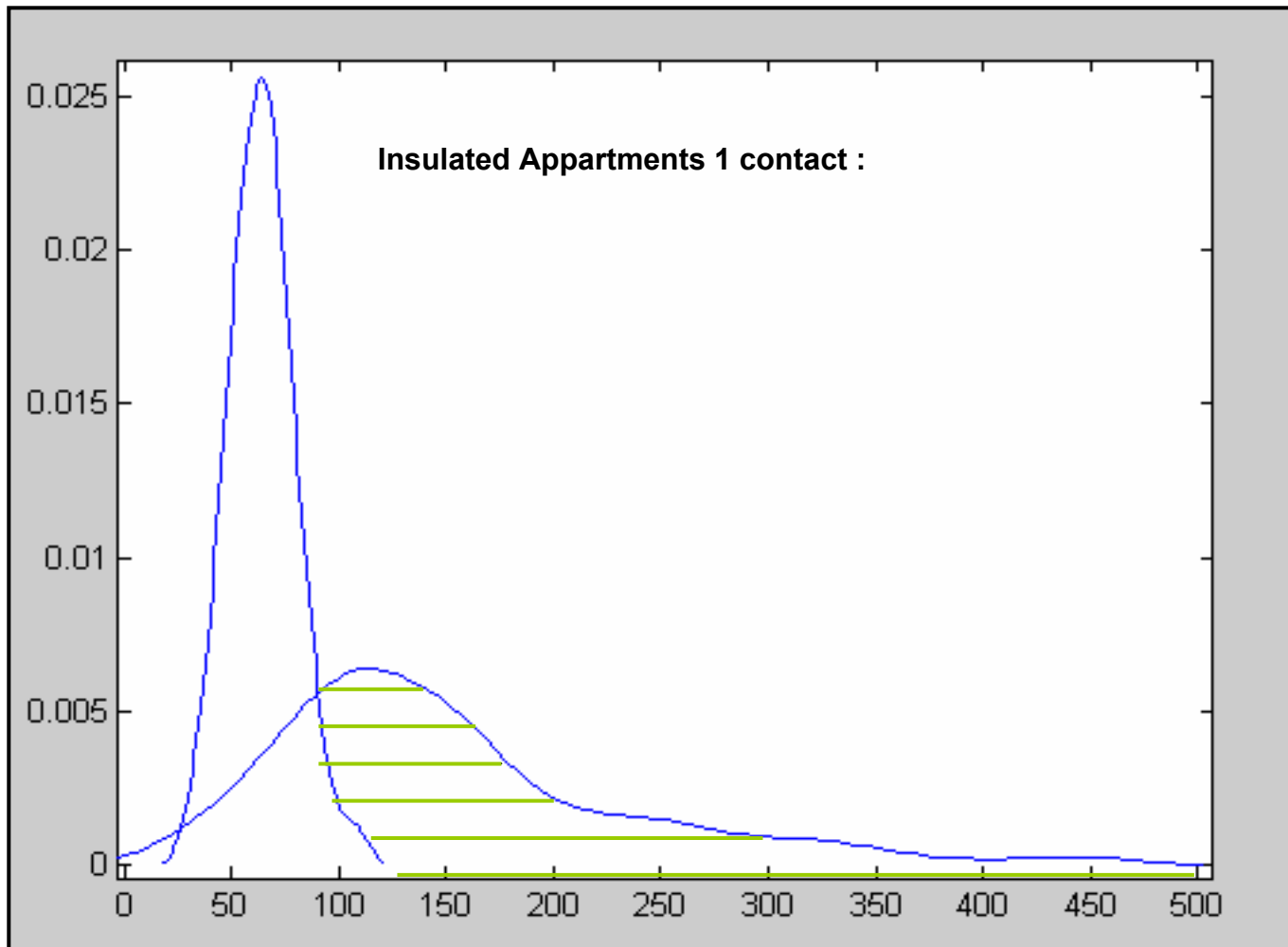
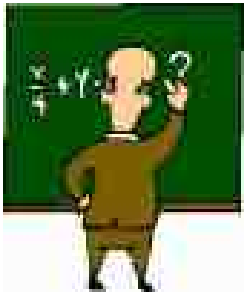
New Rating and Classification methodologies have been proposed

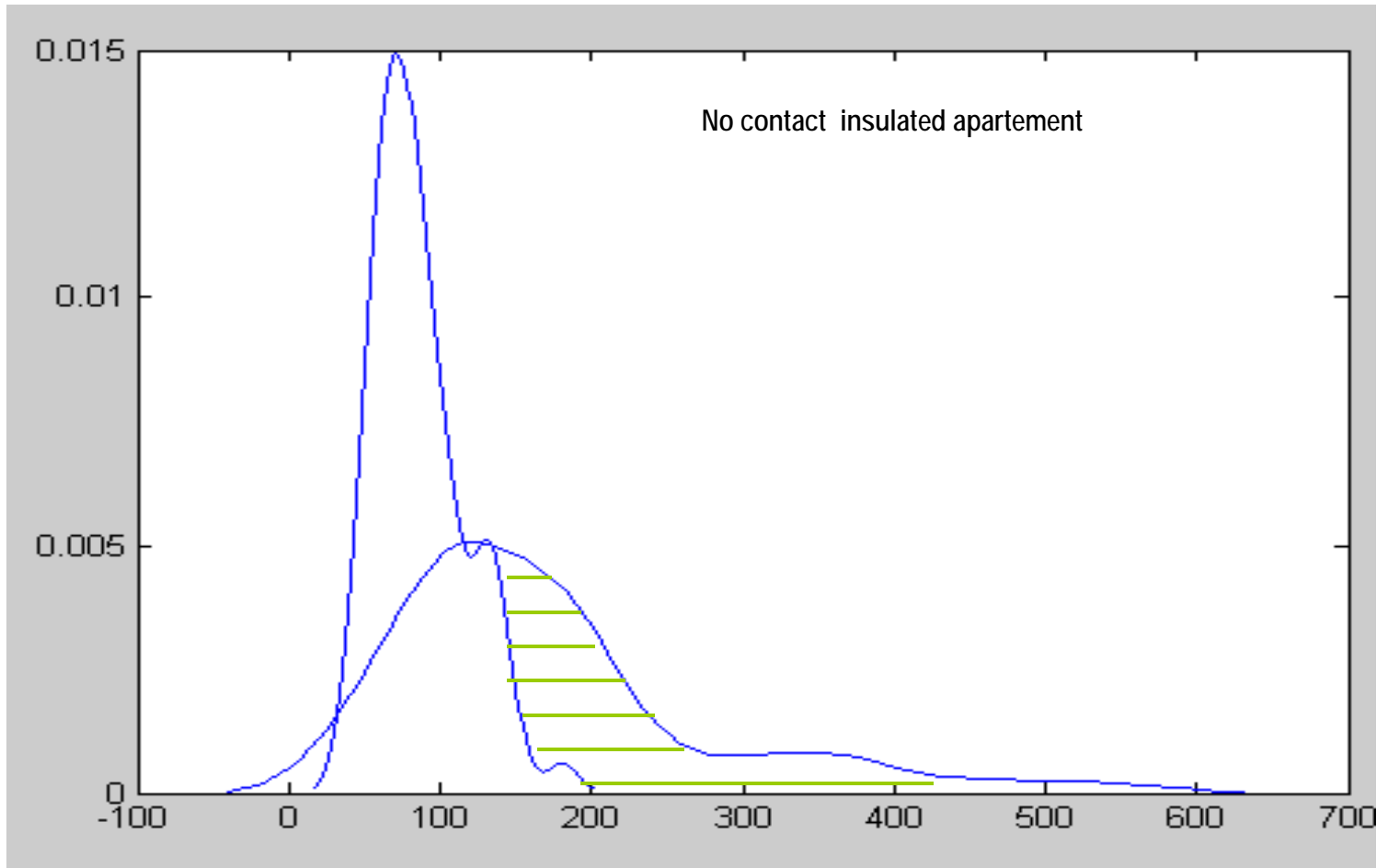
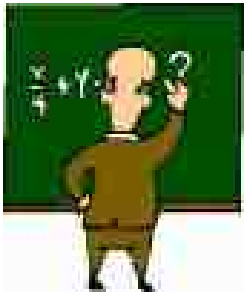


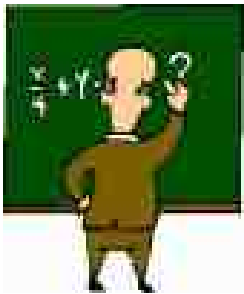
## Comparison between CEN and TRNSYS

	Heating CEN	Heating TRNSYS	Difference (%)	Cooling CEN	Cooling TRNSYS	Difference (%)
Athens	123310	136549	- 9,8	82315	91084	9,62
Amsterdam	293524	284349	- 3,3	2295	786	192









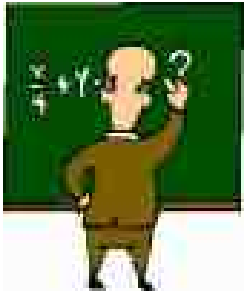
I have a fundamental disagreement on the way that the summer performance of buildings has to be expressed.

The CEN methodology proposes to calculate the cooling load of the buildings. This means that the building is considered under thermostatic control.

This is just the case of A/C buildings. By applying such a technique in non A/C buildings we overestimate the real needs for additional comfort while we pass the message that A/C is necessary at a certain degree.

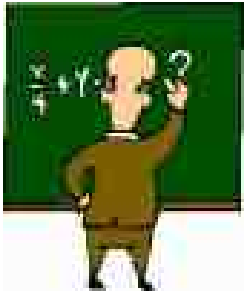
In my opinion this is wrong message and it has to be avoided. In parallel, such a methodology can not take into account the possible contribution of alternative and passive cooling techniques, while when it accounts for it it seriously underestimate it as an A/C building operates at much lower temperature than a non A/C one.

Thus, the contribution of passive cooling techniques that may have happened at temperatures higher than the set point temperature is not considered.



In parallel, new research on thermal comfort has shown that the comfort temperature in A/C and non A/C buildings is very different. Non A/C buildings present a 2-3 degrees higher comfort temperature. Please note that based on the findings on adaptive cooling research a new ASHRAE Standard has been prepared.

Variable indoor temperature comfort standards for buildings may result in remarkable savings in the energy needed for air conditioning, (Auliciems, 1990, Milne, 1995; Wilkins, 1995; Hensen and Centrenova, 2001). Energy savings of about 18 % are estimated over that from using a constant indoor temperature, (Stoops et al (2000)), while the corresponding energy savings for UK conditions have been estimated close to 10 %.

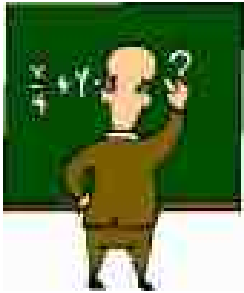


It is a pity not to consider fresh and updated ideas in the new standard. There are several ways to estimate the needs for additional comfort during the summer period without to consider that buildings are A/C .

One of the more accepted methodologies is the 'modified balance point' technique. Such a technique has been initiated by ASHRAE and present important advantages.

The basic advantage is that treats equally A/C and non A/C buildings. It allows for a variable indoor comfort temperature while it allows to integrate easily the possible contribution of alternative and passive cooling techniques.

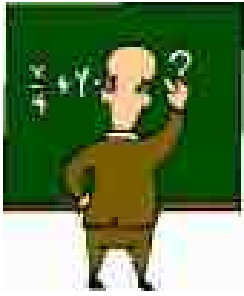
However, the major advantage of the technique is that it does not give the message that an A/C is necessary...



The proposed methodology does not propose a normalisation method for cooling.

The degree days methodology proposed mainly for the heating load it can not be used for the cooling because there is an important part of the load coming from solar and internal gains.

A possible normalisation method to consider is the climatic severity index developed in the frame of the Euroclass project.

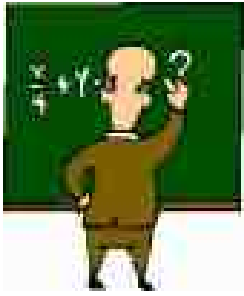


The proposed classification methodology, presents important problems that have to be considered as well.

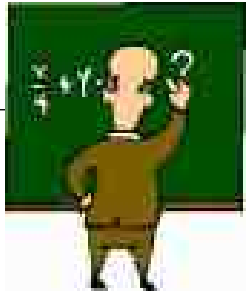
First it is a methodology that it does not correspond to the existing classification in the various MS. However, the main problem is that the methodology is almost linear while the distribution of the buildings stock is not linear and the distribution function among the different consumption zones is not of the same probability density!!!

Actually, there are much more advanced classification methods like the k means clustering or any statistical clustering that is based on the distribution of data according to their real position in the data base.

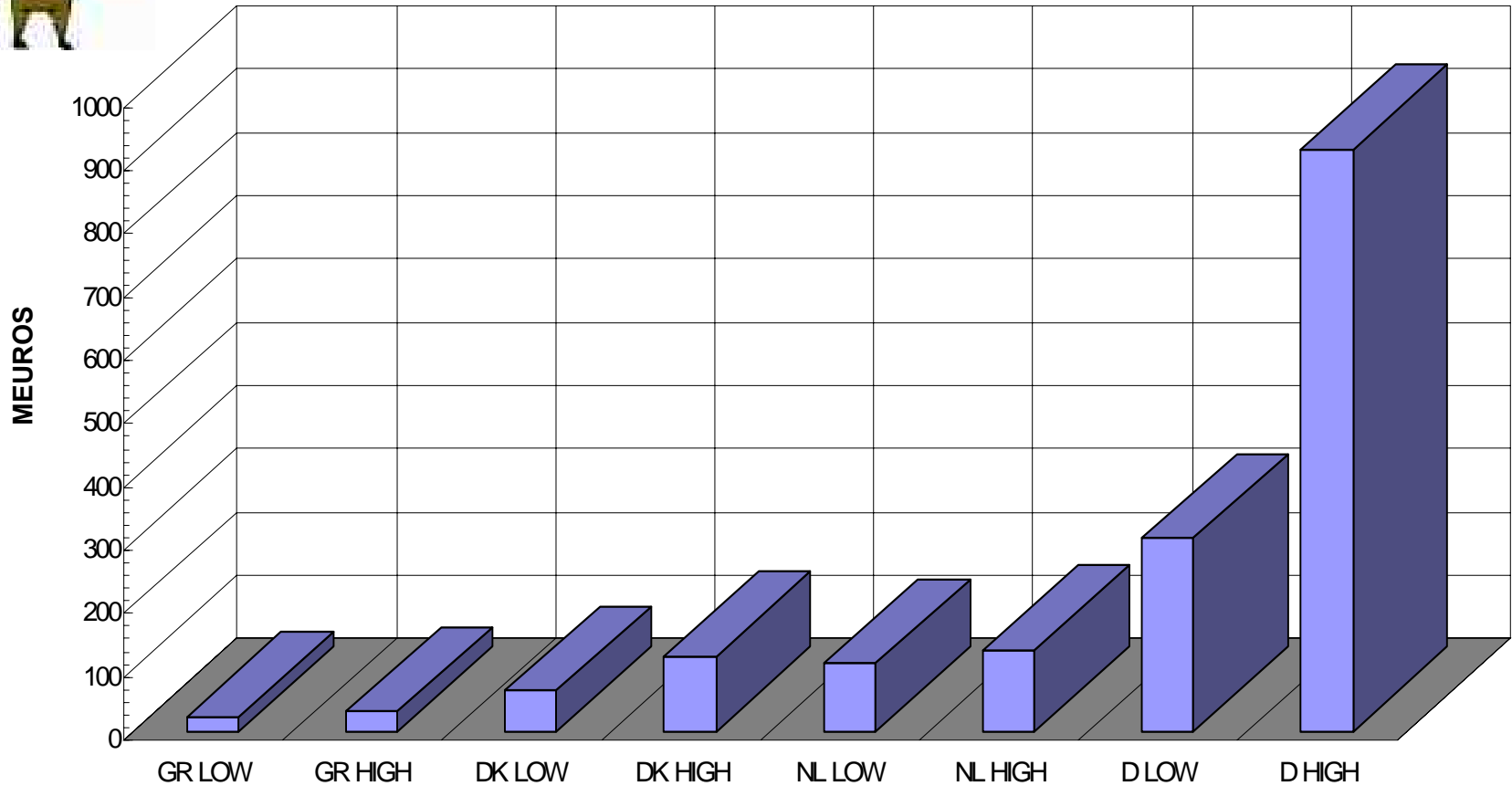
# The Impact of Certification in the Market



# The Impact of Certification in the Market

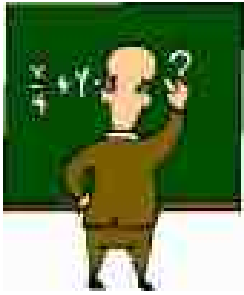


## SCENARIOS OF DIRECT COST

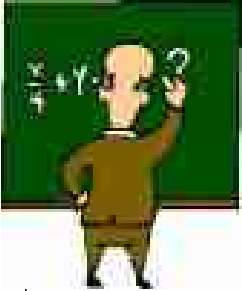


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# The Impact of Certification in the Market

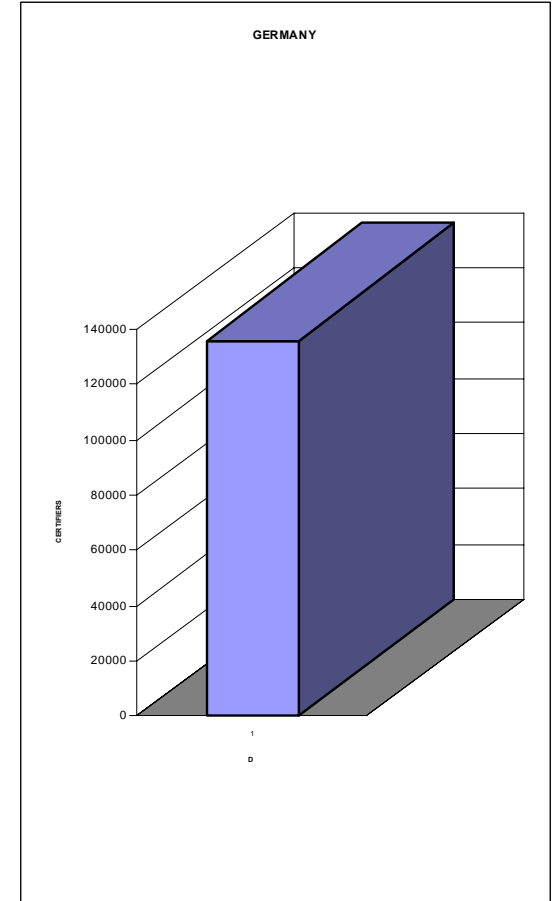
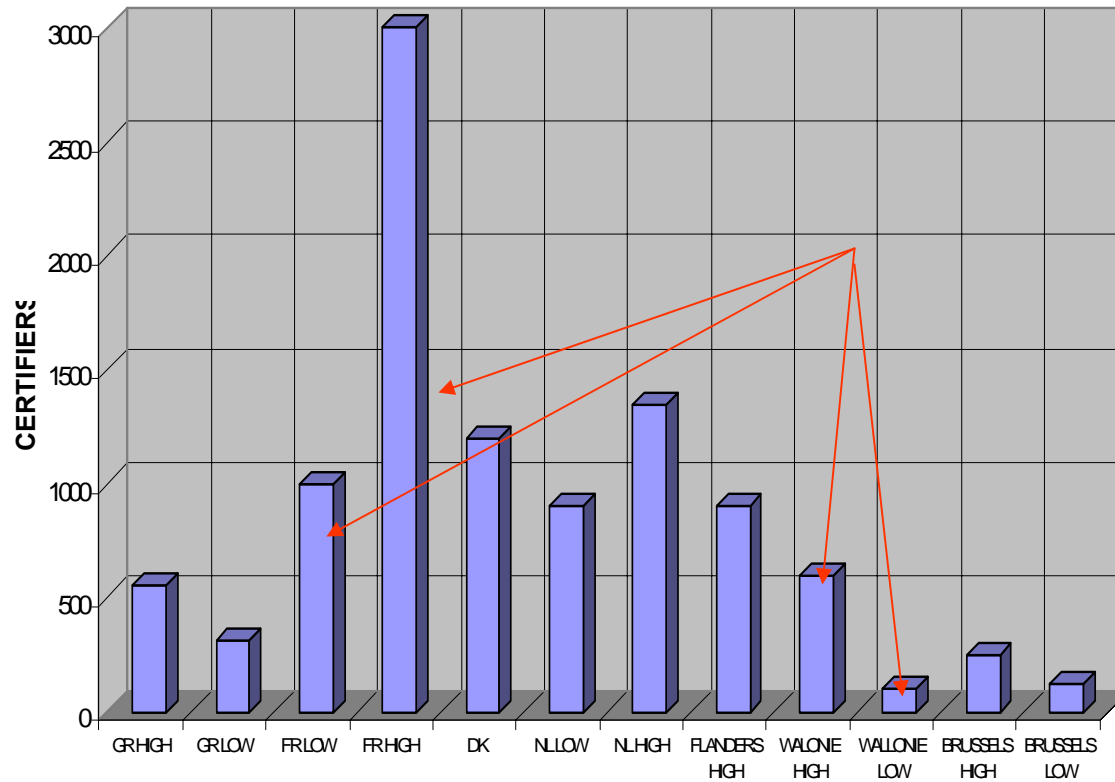


Number of New Buildings per year	Residential	72000	18000	363000	341	7617	49,500	135000
	Offices	n.a.	n.a.	5189	n.a.	204	5,560 (office and commercial)	10000
	Schools	n.a.	5	2344	n.a.	n.a.	135	100
	Commercial	n.a.	n.a.	5327	n.a.	447		4800
	Health Care	n.a.	0	904	n.a.	48	49	100
	Hotel / Catering	n.a.	n.a.	n.a.	n.a.	n.a.	500	n.a.
	Sport /Recreation	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Cottages		400	n.a.	n.a.		n.a.	n.a.
	Total or other non residential				27	299		
Number of Existing Buildings Sold or Rent per year	Residential	500000	166161	600000 sold 1500000 let	70225	113940	95,846/ 90,000 (sold/let)	1500000
	Offices	12000	n.a.	40000	n.a.	322	3,068/ 2,881	300000
	Schools	n.a.	n.a.	n.a.	n.a.	n.a.	432/ 405	n.a.
	Commercial	6000	n.a.	n.a.	n.a.	1859		100000
	Health Care	n.a.	n.a.	n.a.	n.a.	n.a.	15/13	n.a.
	Cottages		9685	n.a.	n.a.	n.a.		n.a.
	Other Tertiary				7314			
	Hotels						229/212	n.a.

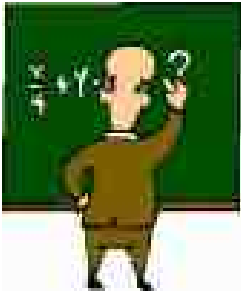


# The Impact of Certification in the Market

ESTIMATED NUMBER OF CERTIFIERS

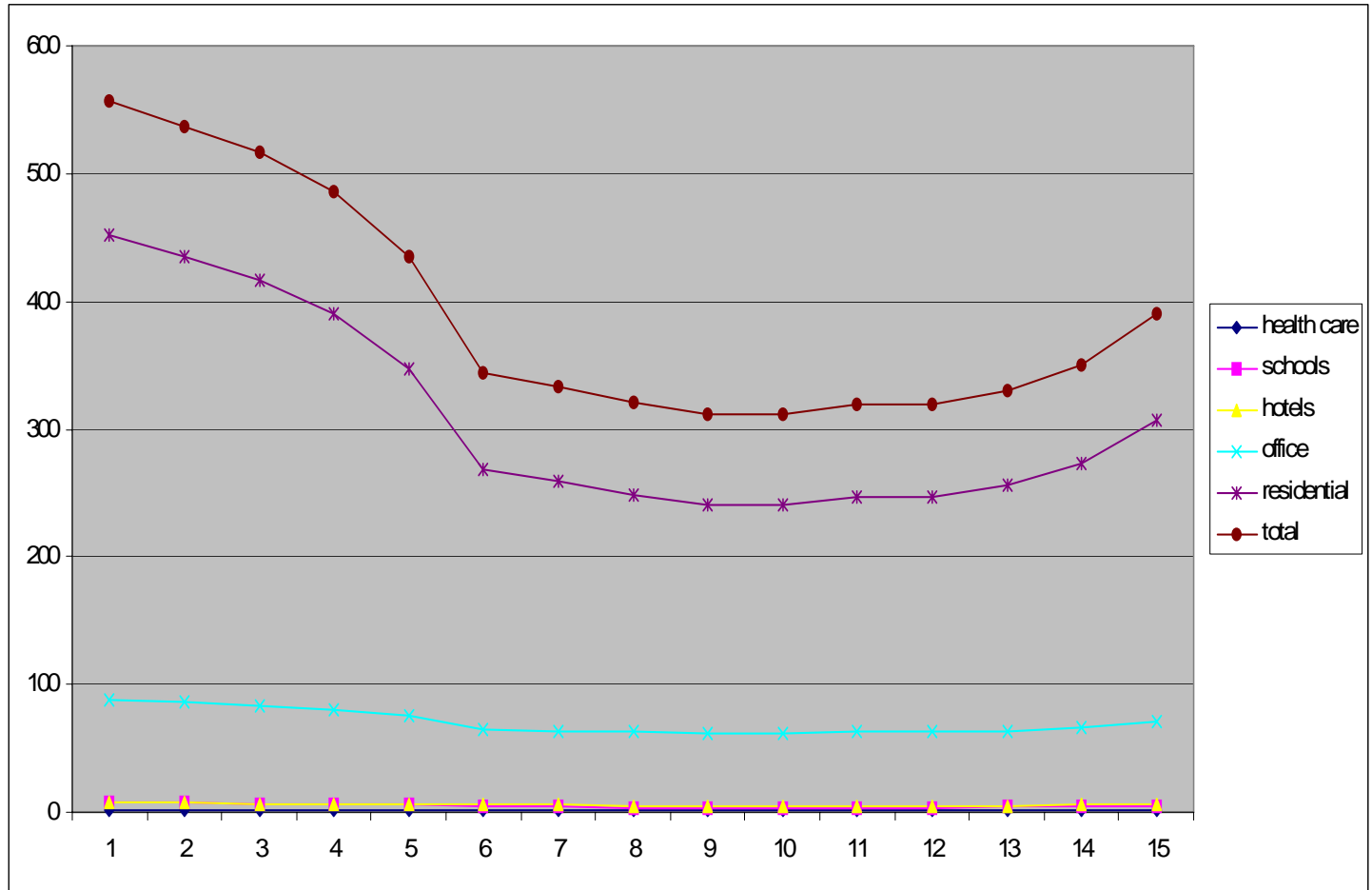
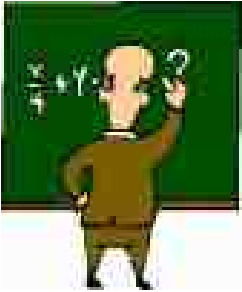


# The Impact of Certification in Labor



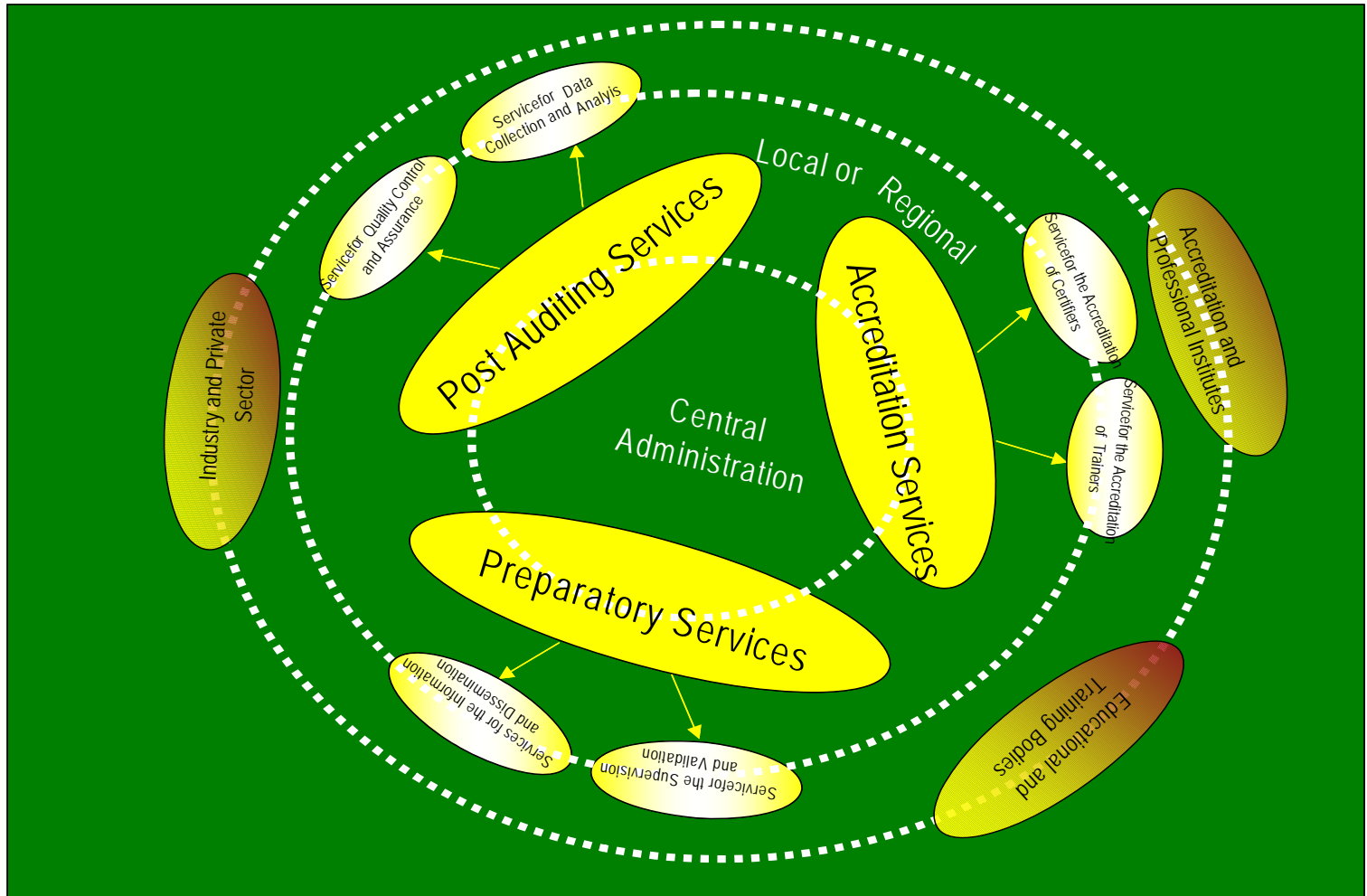
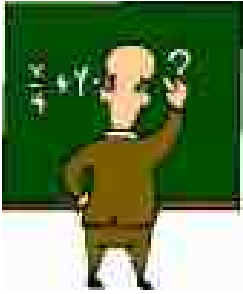
Year	New Buildings / Year	Percentage of let buildings already certified	Non Certified Buildings Let / Year	Percentage of Non Certified Sold buildings already certified	Non Certified Buildings Sold per year	Demolished / y	New certificates	Buildings Already Certified	Buildings without Certification	Total Stock
1	500	0	212	0	229	10	941	941	22369	23320
2	500	5	201	5	218	10	919	1860	21940	23810
3	500	10	191	10	206	10	897	2757	21533	24300
4	500	20	170	15	195	10	864	3621	21159	24790
5	500	40	127	20	183	10	810	4432	20839	25280
6	500	80	42	25	172	10	714	5146	20614	25770
7	500	80	42	30	160	10	703	5848	20402	26260
8	500	80	42	35	149	10	691	6540	20200	26750
9	500	80	42	40	137	10	680	7219	20011	27240
10	500	80	42	40	137	10	680	7899	19821	27730
11	500	75	53	40	137	10	690	8590	19620	28220
12	500	75	53	40	137	10	690	9280	19420	28710
13	500	70	64	40	137	10	701	9981	19209	29200
14	500	60	85	40	137	10	722	10703	18977	29690
15	500	40	127	40	137	10	765	11468	18702	30180

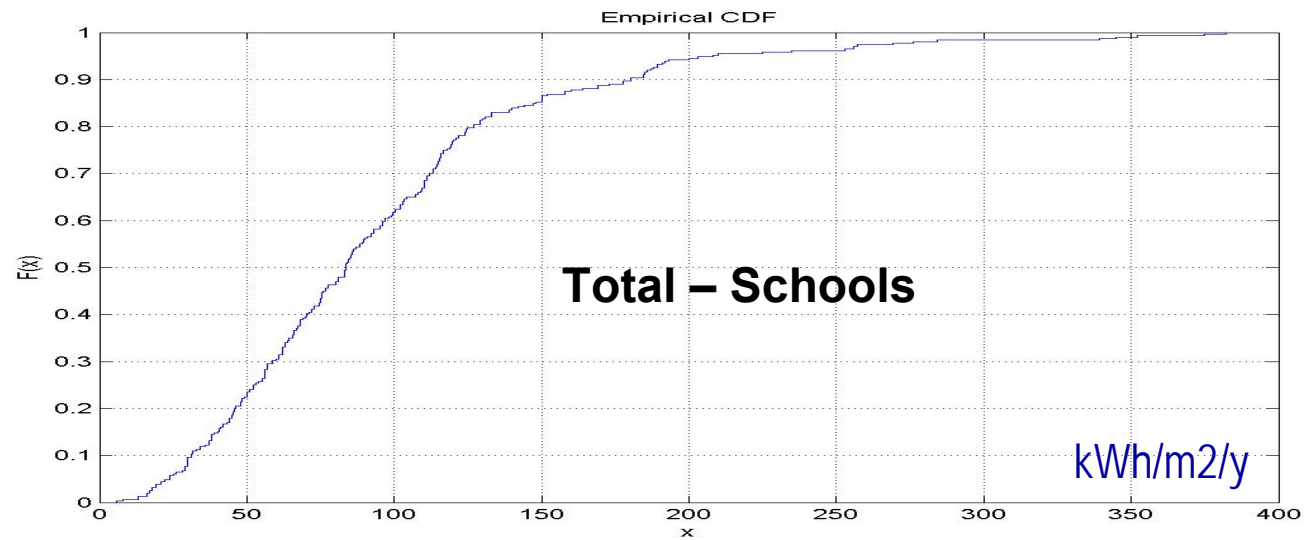
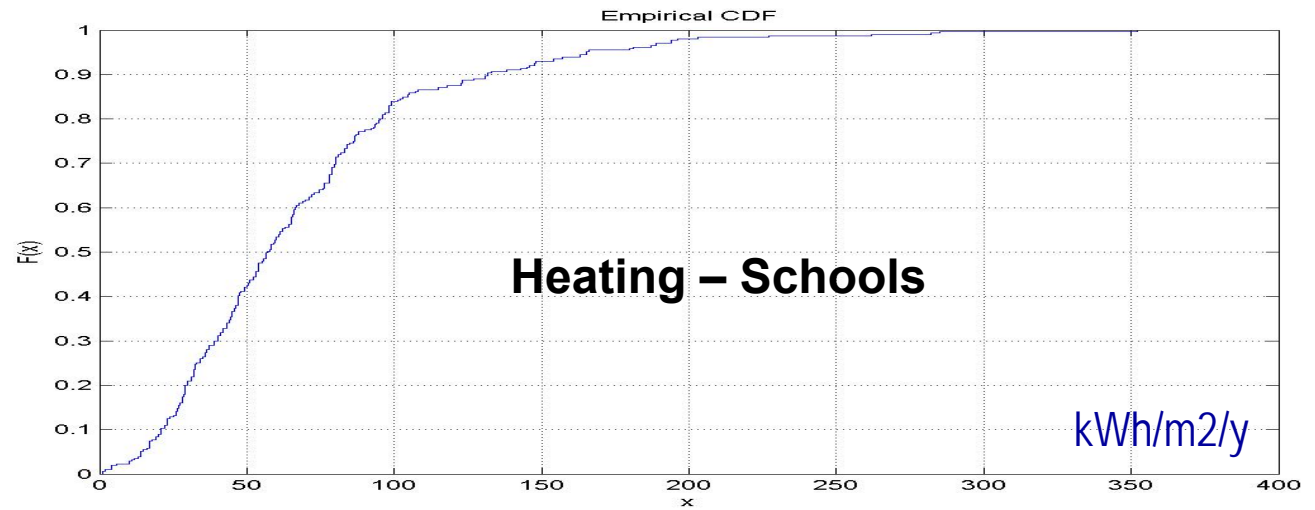
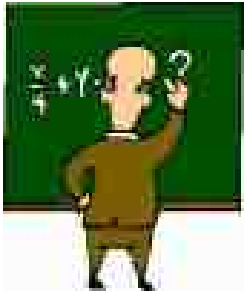
# The Impact of Certification in Labor

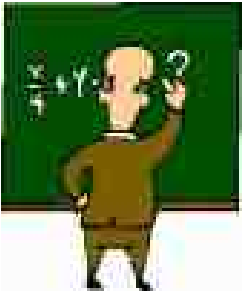


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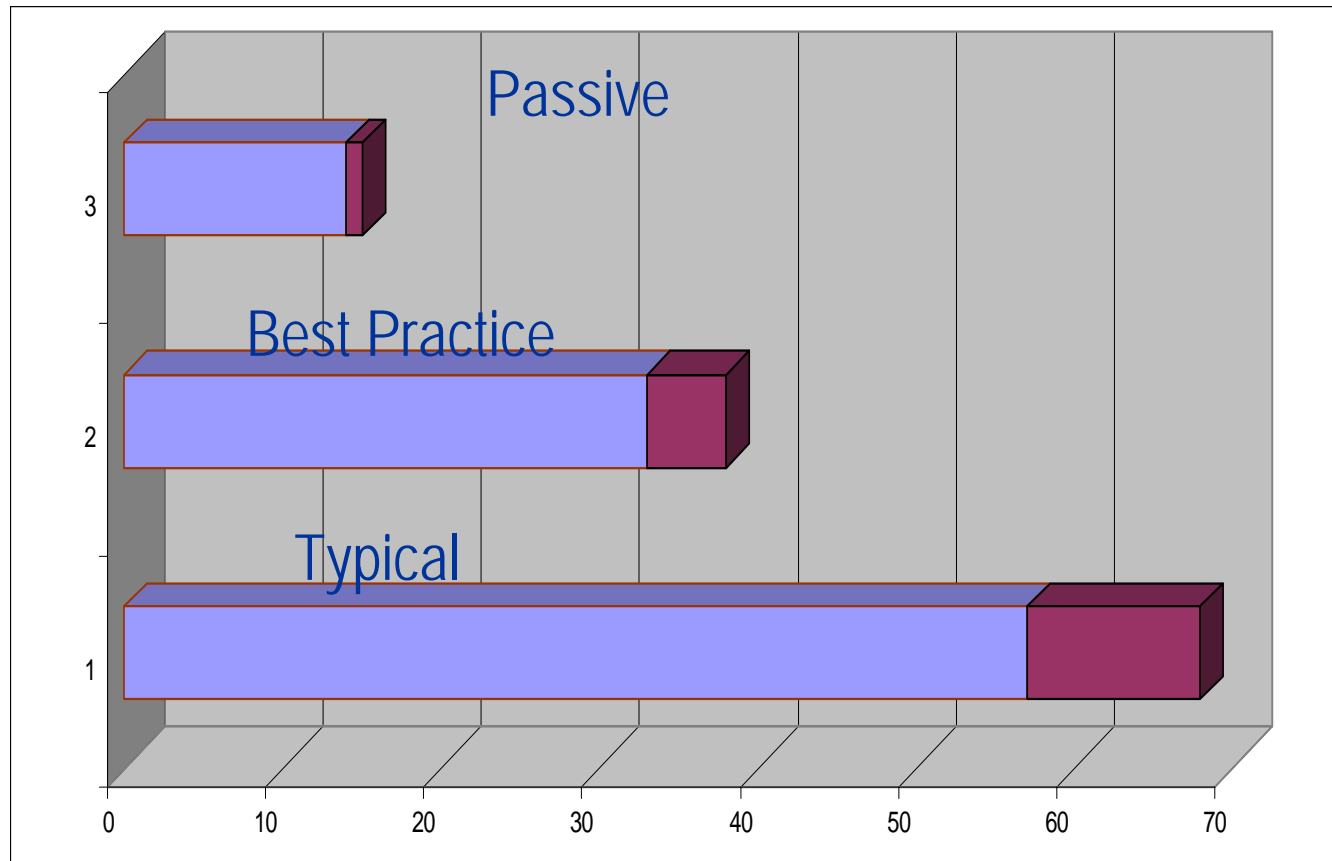
# The Impact of Certification in the National Administrations



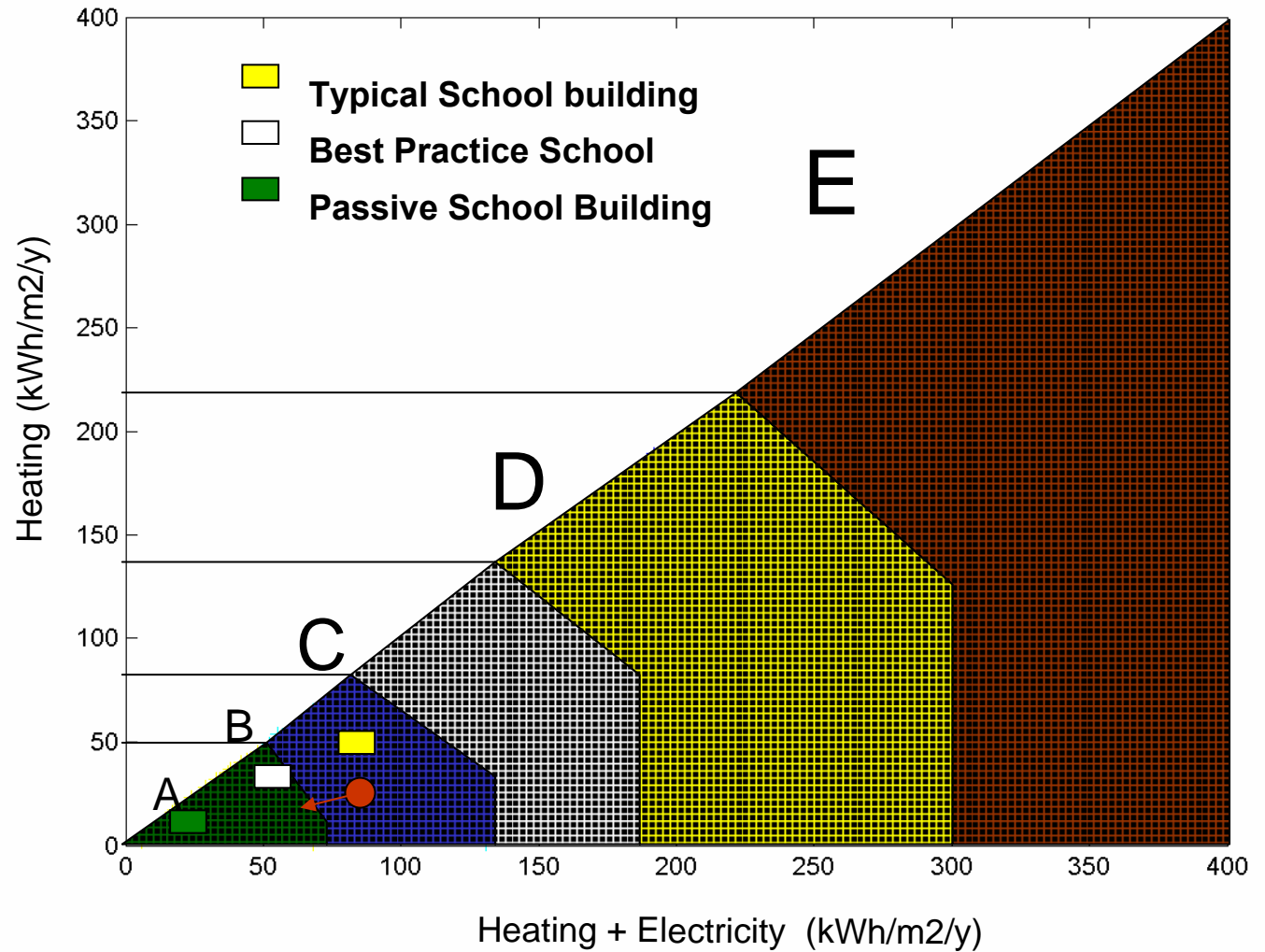
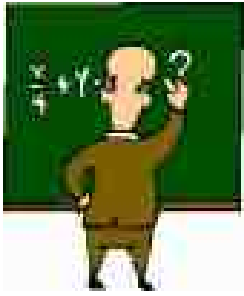




## Benchmarks for Schools







● All Buildings

★ Detached

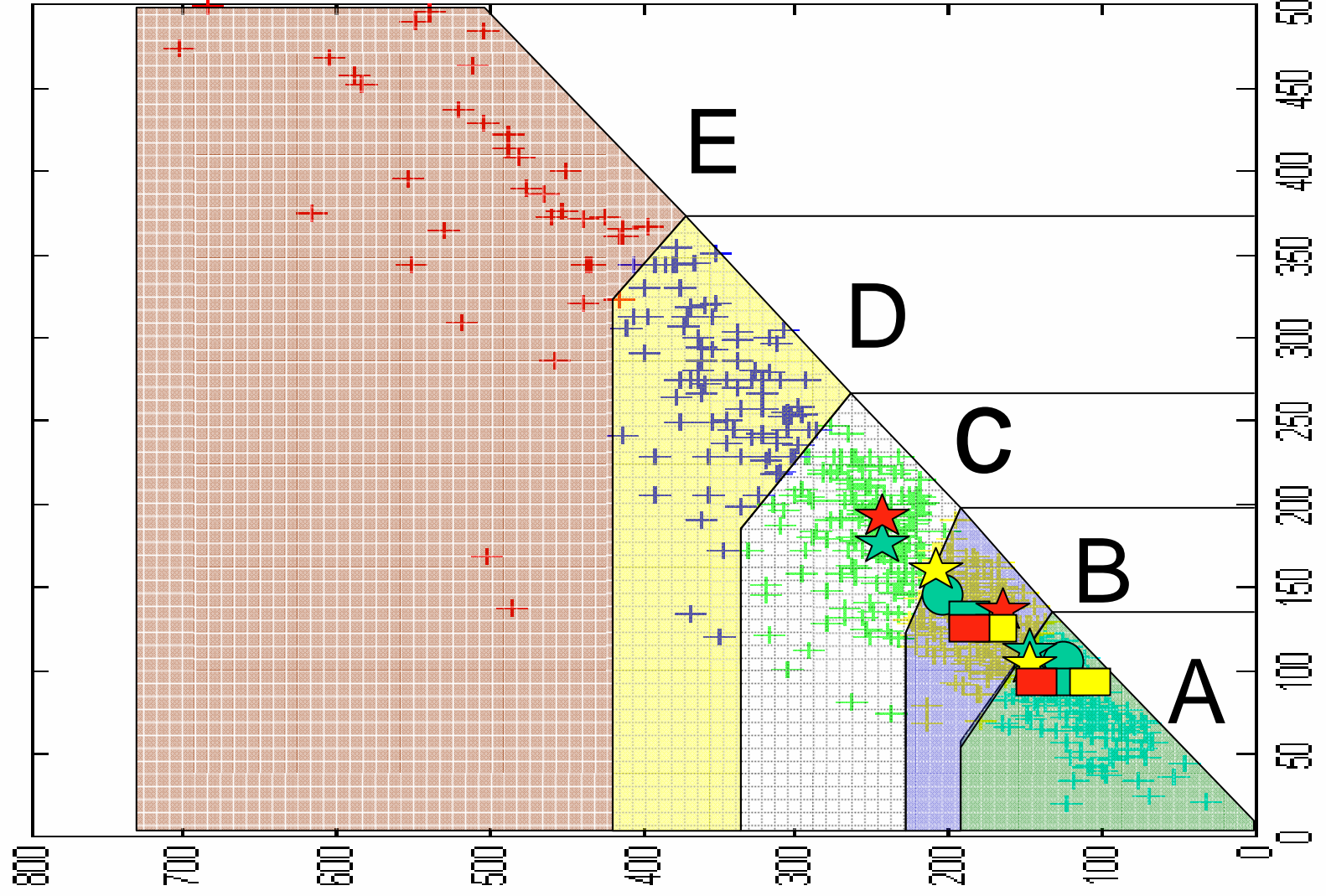
■ Apartment

★ Insulated Detached

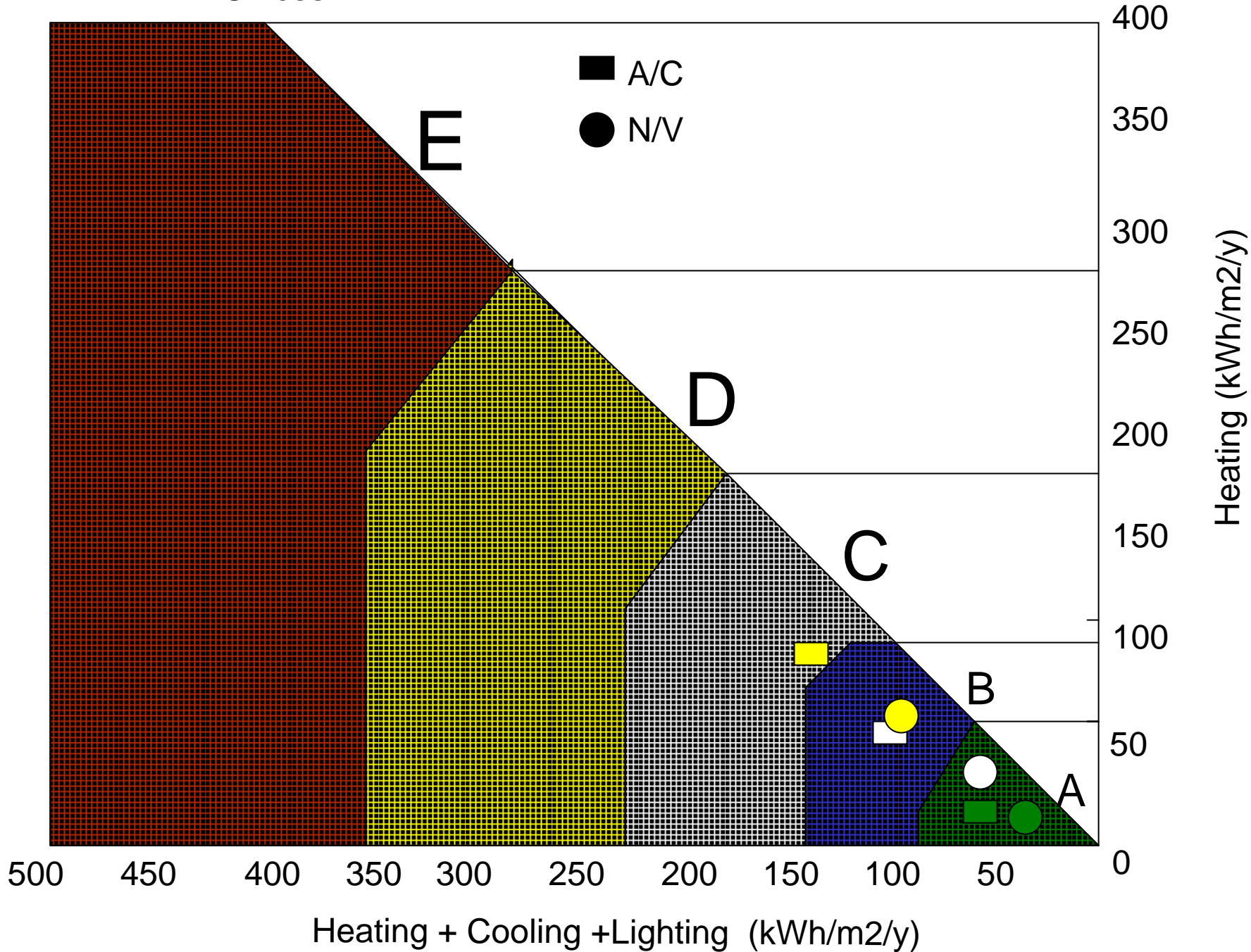
■ Insulated Apartment

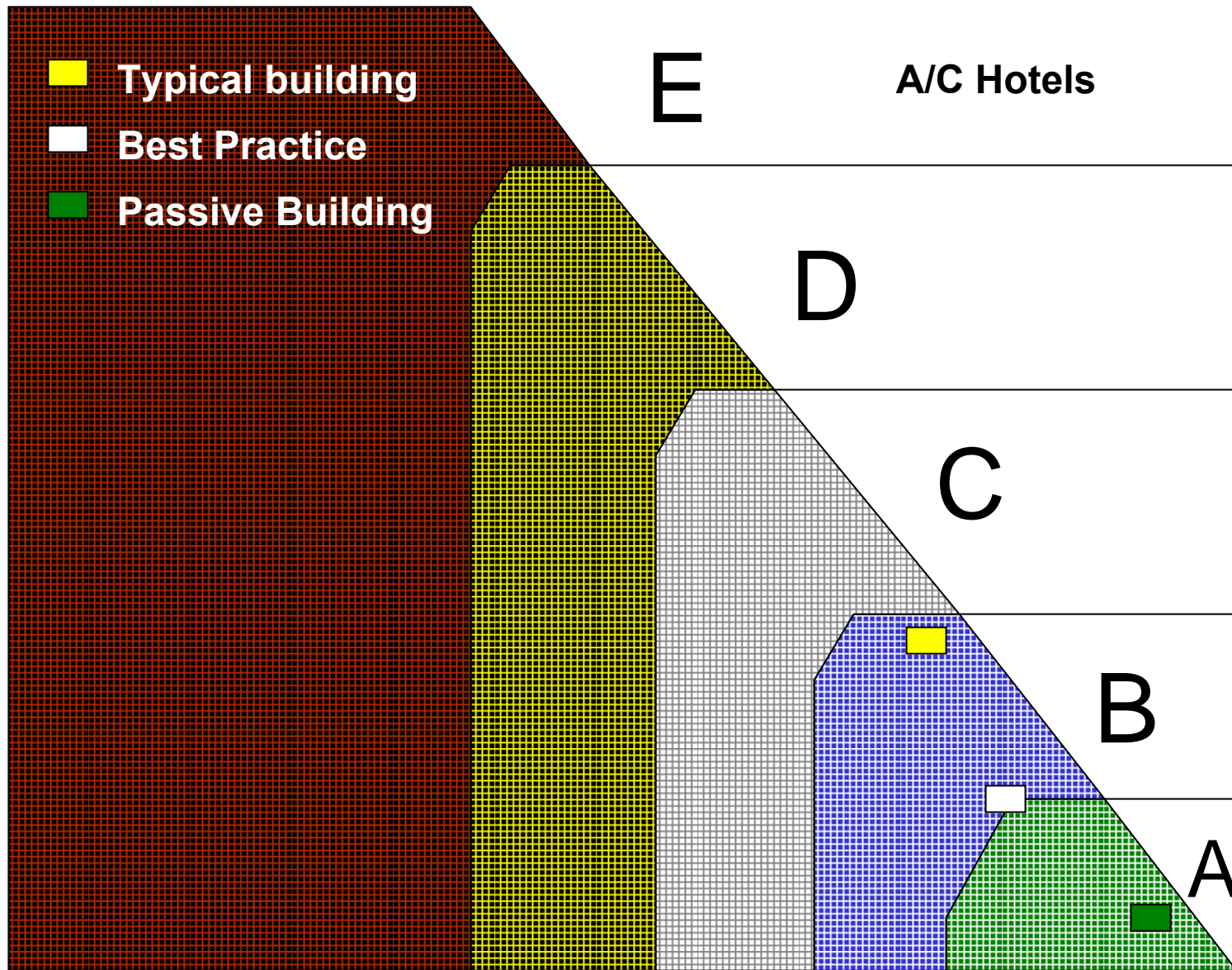
★ Non Insulated Detached

■ Non Insulated Apartment



All Offices

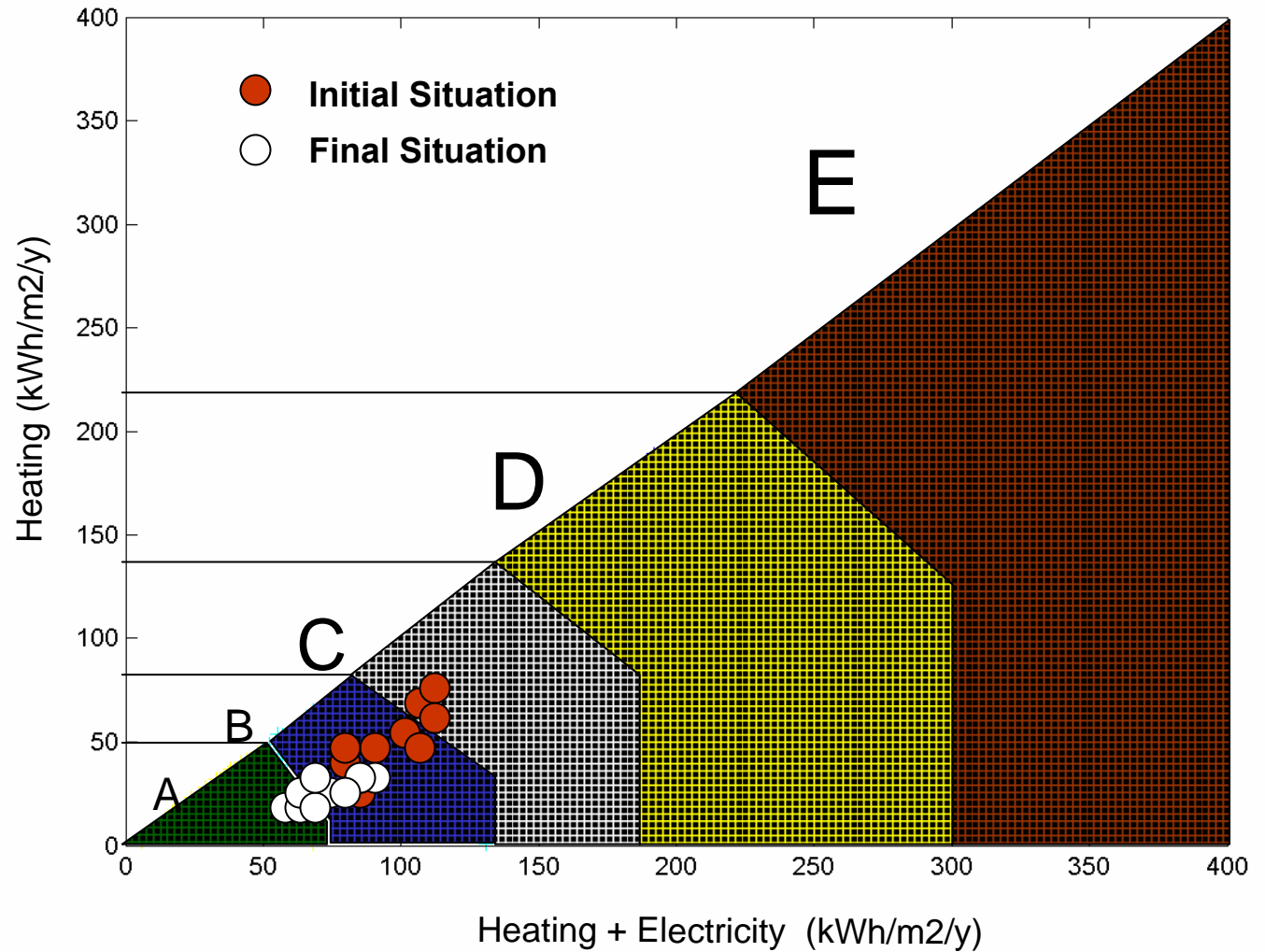
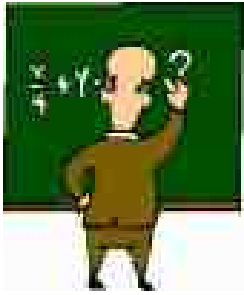




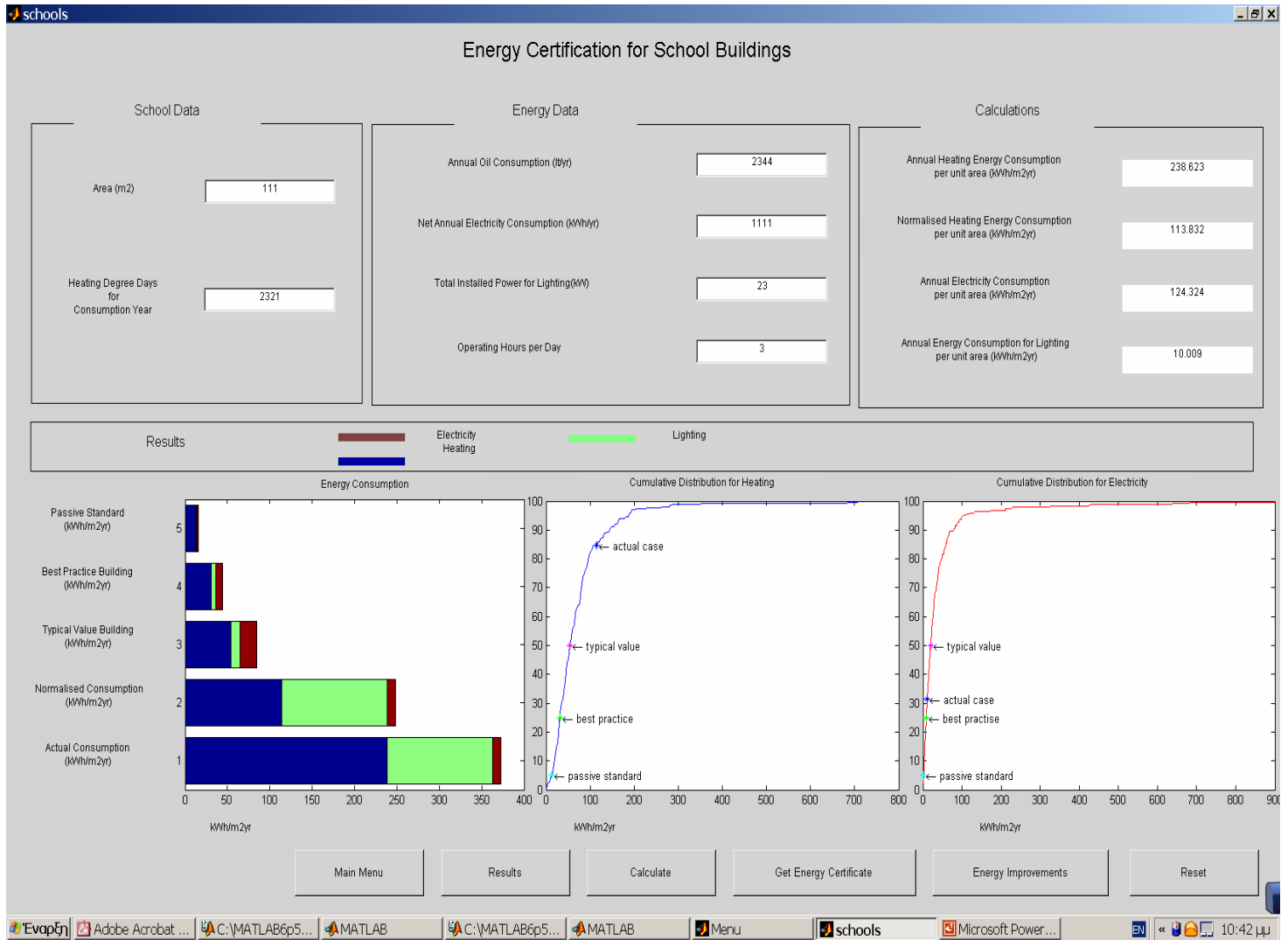
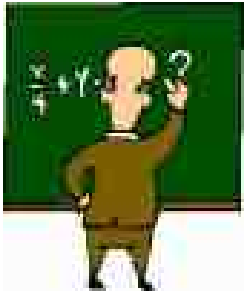
Heating (kWh/m<sup>2</sup>/y)

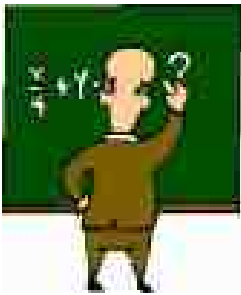
Heating + Cooling + Lighting (kWh/m<sup>2</sup>/y)

# POTENTIAL FOR ENERGY CONSERVATION



# DESIGN SUPPORT AND CERTIFICATION TOOL





# DESIGN SUPPORT AND CERTIFICATION TOOL

The screenshot shows the 'heatcoolnew' software interface, titled 'Calculation of Energy Use for Space Heating & Cooling for Residential Buildings'. The interface is divided into two main sections: 'Envelope Info' and 'Climatic Data'.

**Envelope Info:**

- Opaque Elements:
- Glazed Surfaces:
- Exposed perimeter of floor (m):
- Volume of building (qba):
- Sum of lengths of linear thermal bridges (m):
- Sum of linear thermal transmittances of thermal bridges (W/mK):
- Transmission Heat Loss coefficient through unheated spaces (W/K):
- Average power of internal gains (W):

**Climatic Data:**

	Heating period	Cooling period
Internal temperature of zone (°C)	<input type="text"/>	<input type="text"/>
Choose location	<input type="text"/>	
Air flow rate through the heated space (l/h)	<input type="text"/>	<input type="text"/>
Coefficient of performance for heating and cooling systems	<input type="text"/>	<input type="text"/>

Buttons: Exit, Calculate, Reset

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