

# Innovative Energy Management System with User-feedback

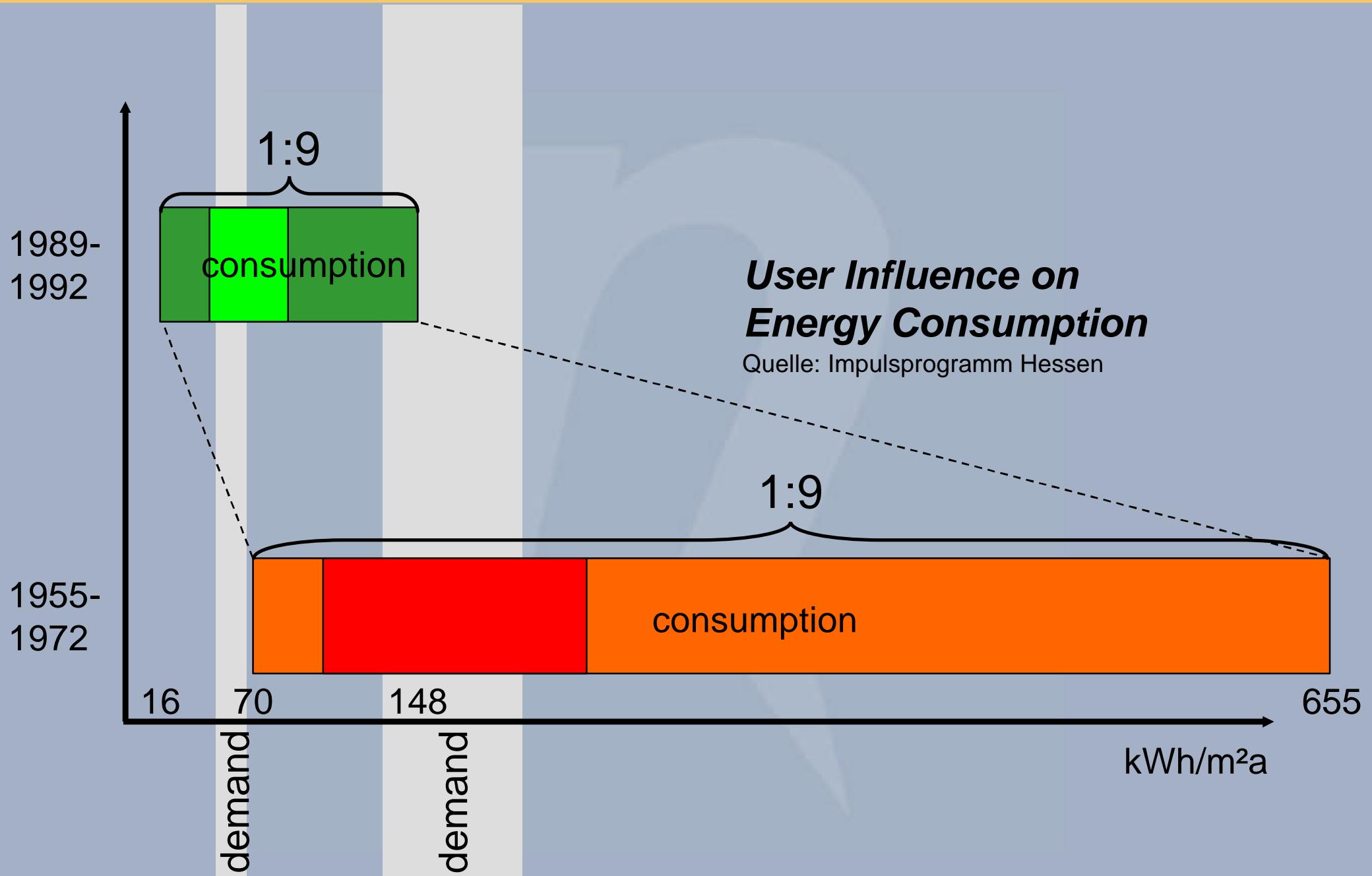
Ingo Stadler

Sascha Beverungen

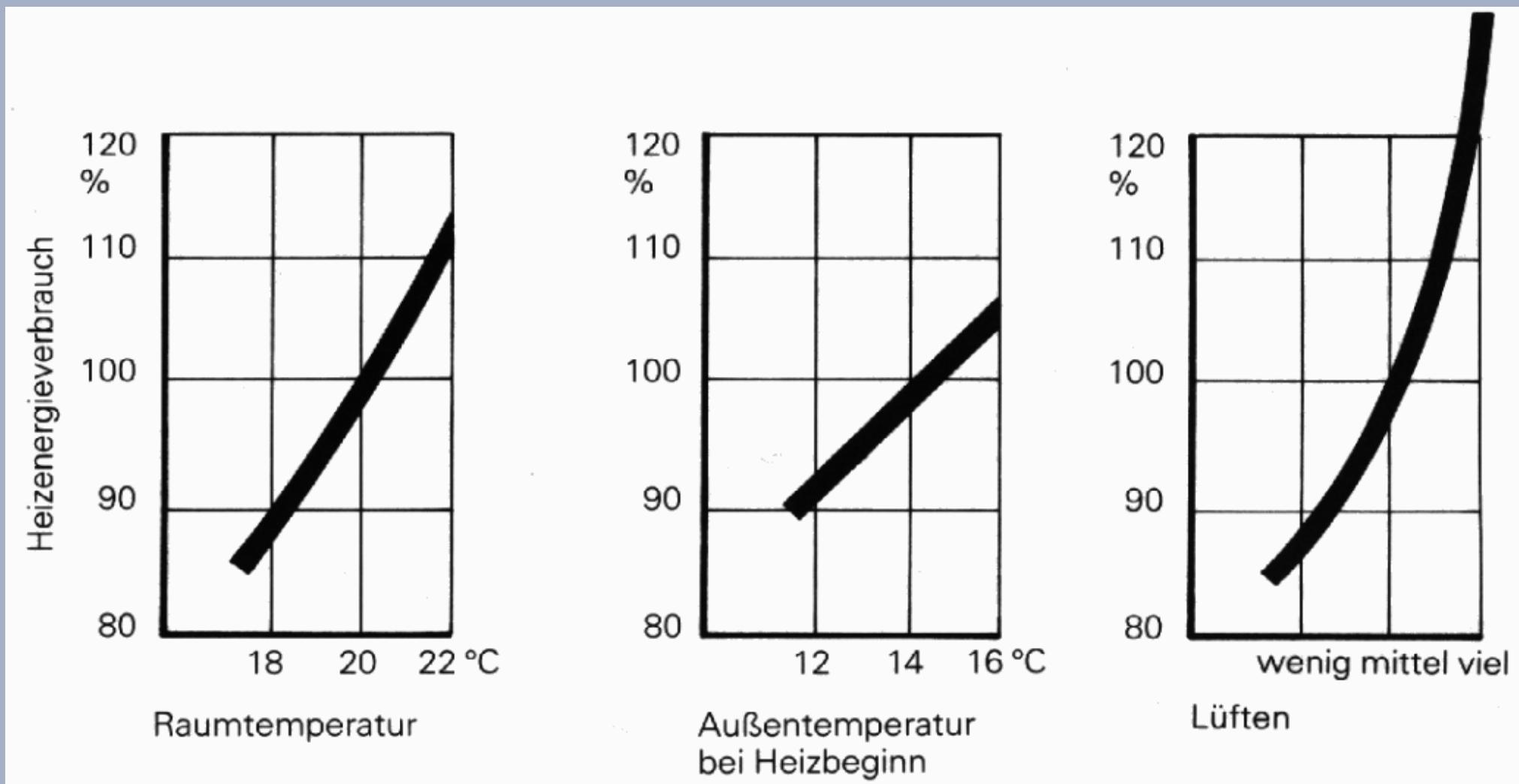
Saša Bukvic-Schäfer

# Why are we talking about user feedback methods?

Motivation

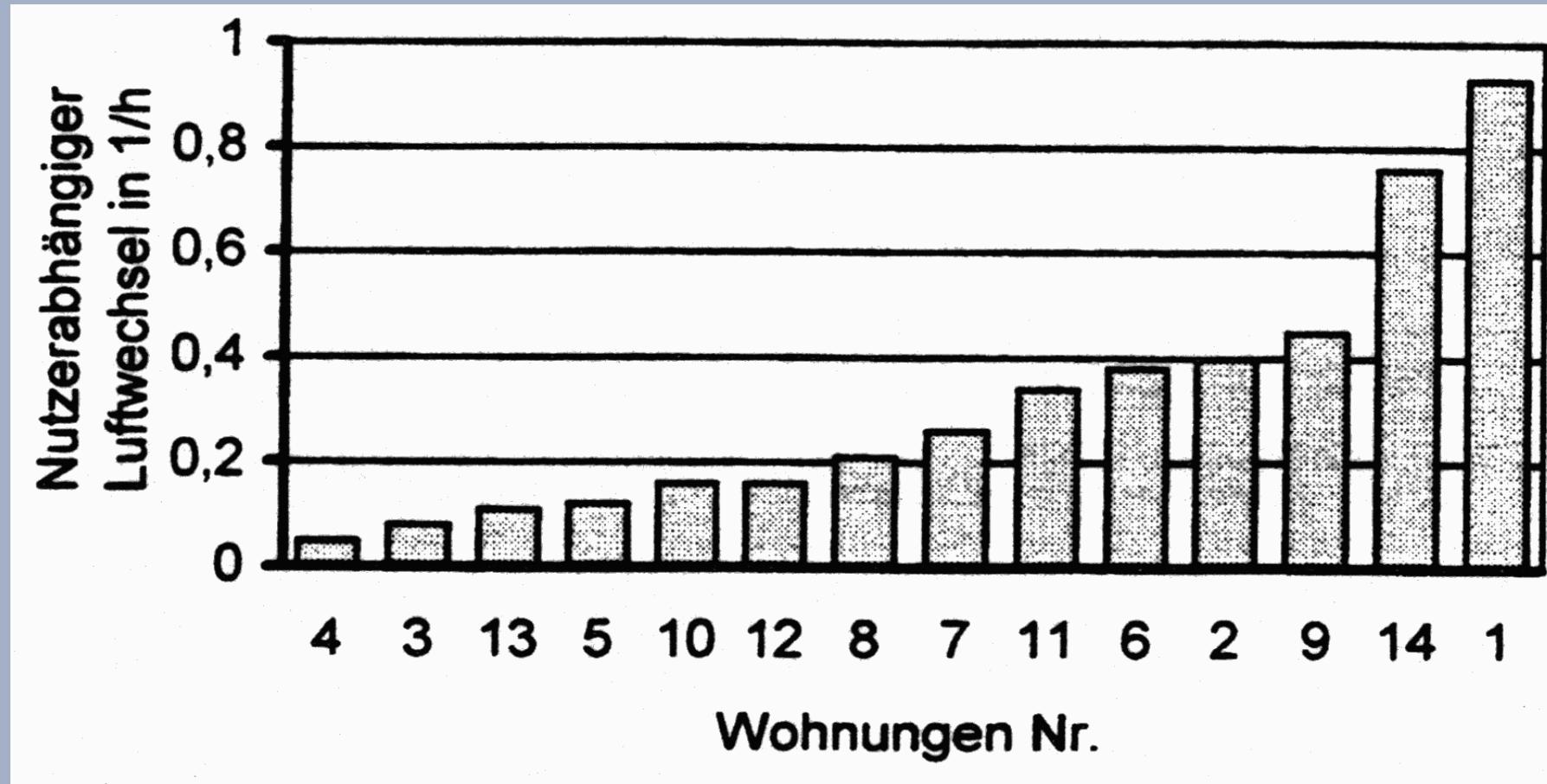


# Influence on heat energy consumption



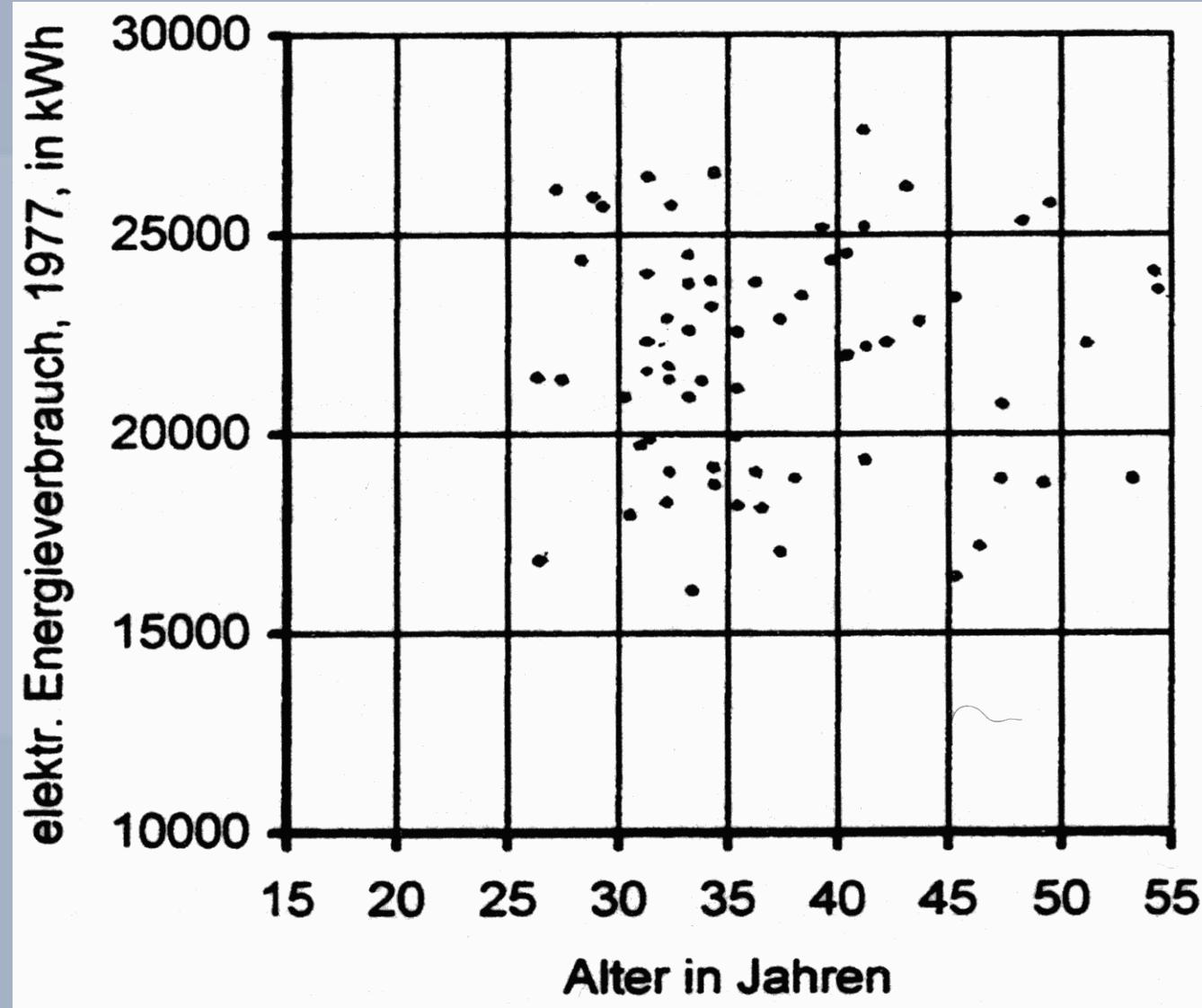
Ventilation  
rates through  
windows

Investigation  
of 14 flats



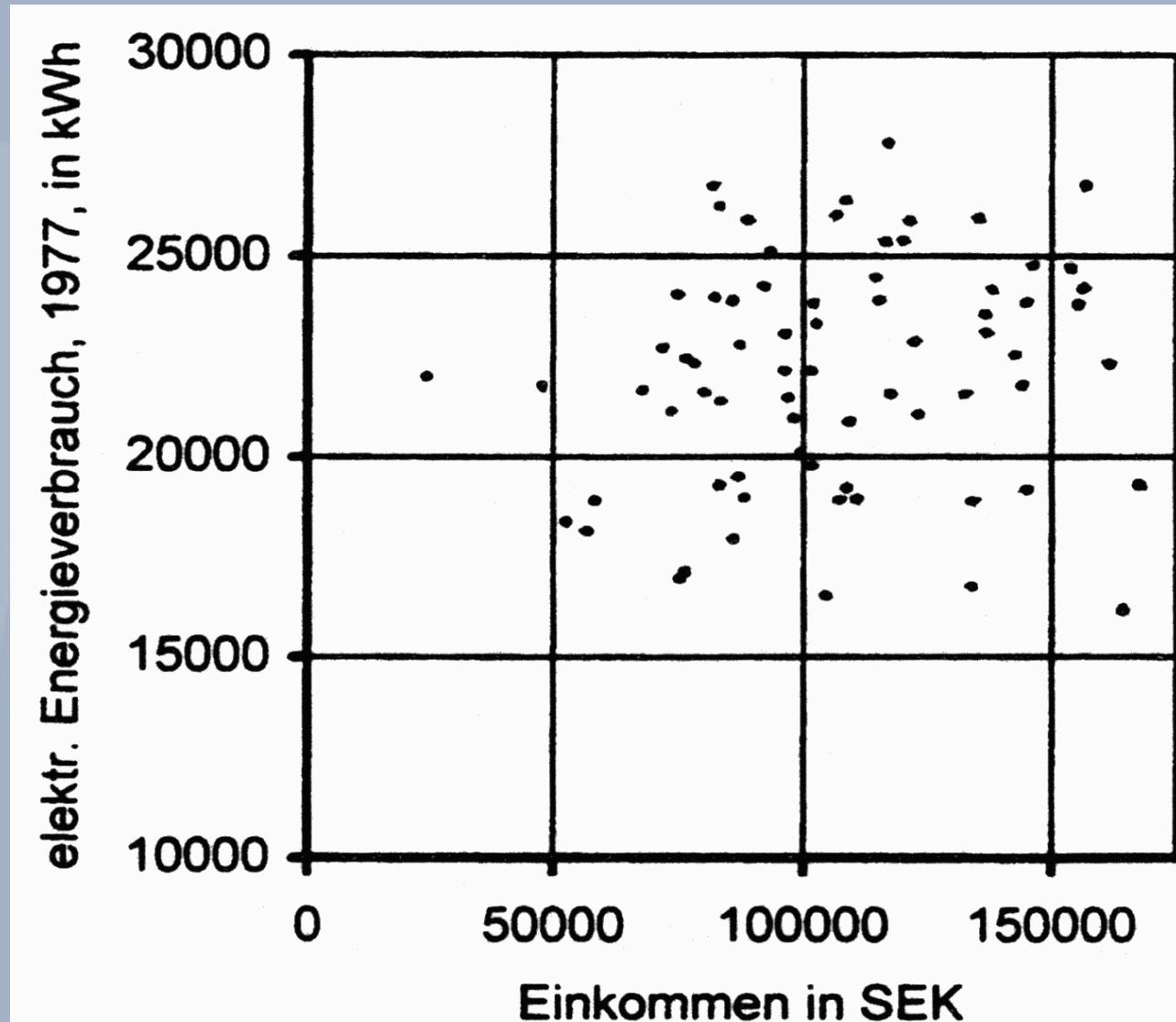
78 buildings

Do older people need more energy than younger?



78 buildings

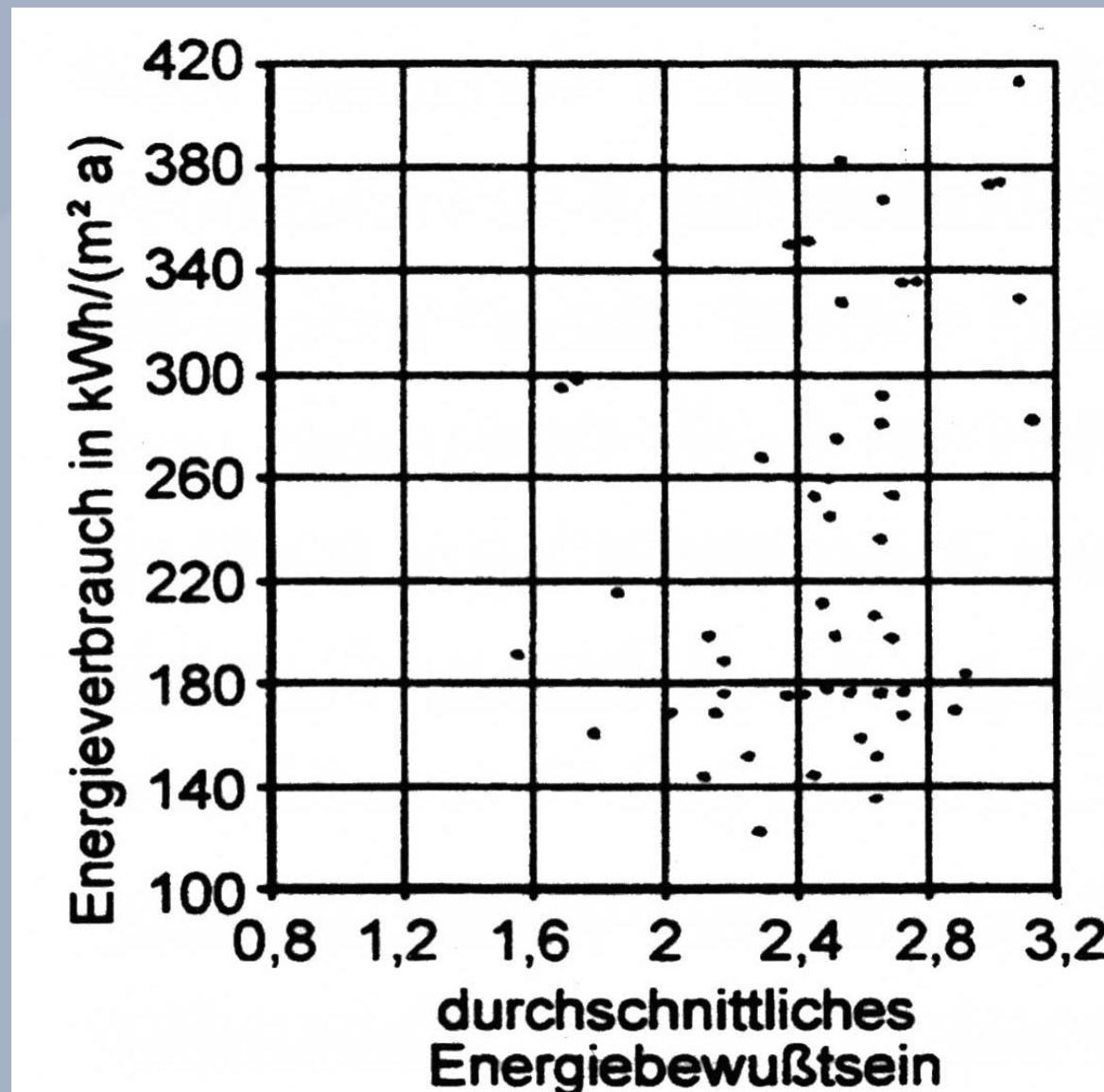
Do rich people not care about energy consumption because they can afford higher energy bills?



78 buildings

Do people who assess  
themselves as energy  
conscious use less energy?

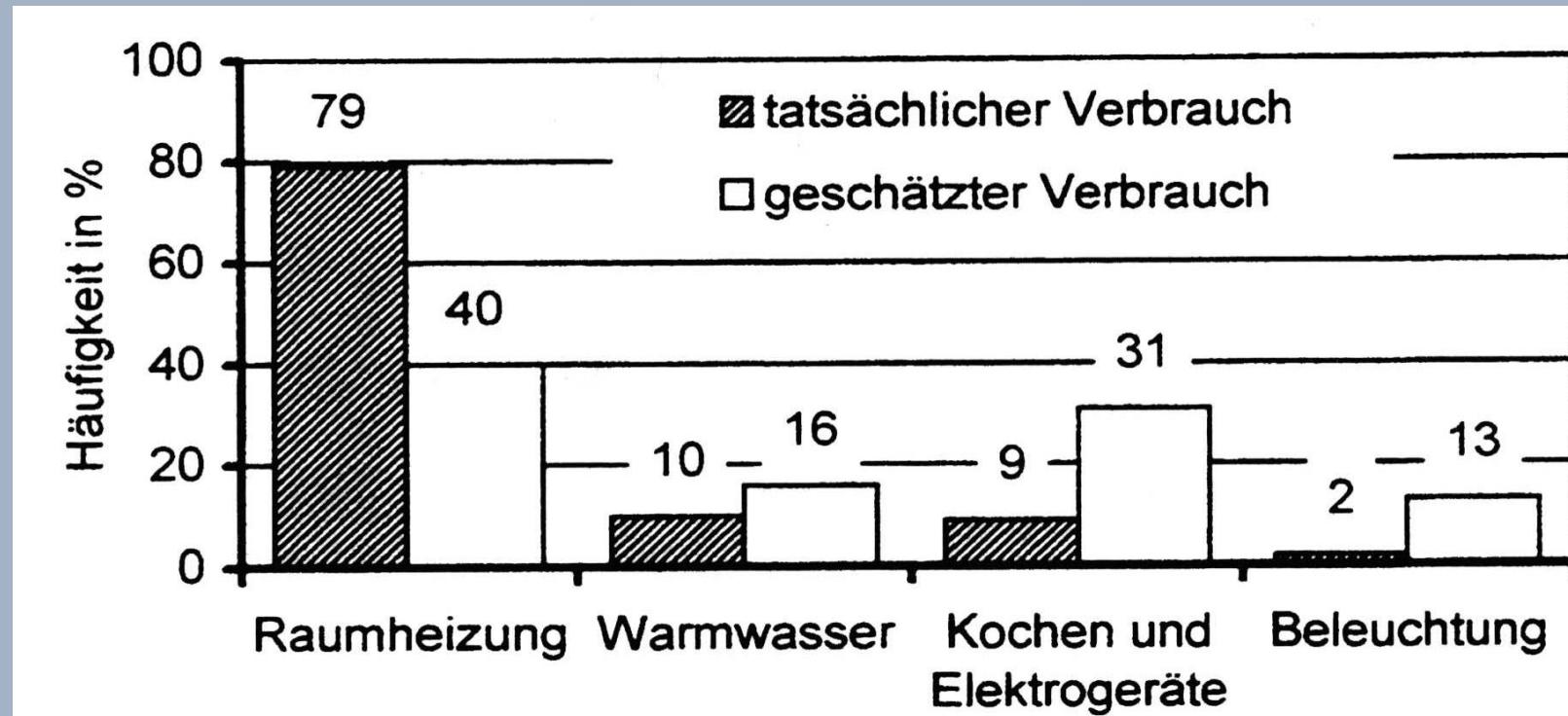
What an astonishing result!



Source: Maack, K., Strauf, H.: Extremer Heizenergieverbrauch. Eine empirische Untersuchung zum Erklärungsgehalt verbrauchsbeeinflussender Parameter im mehrgeschoßigen Mietwohnungsbestand. Forschungsbericht des BM Raumordnung, Bauwesen und Städtebau. IRB-Verlag F2088. 1988

Heat is generally underestimated

Lighting and electrical equipment is generally overestimated

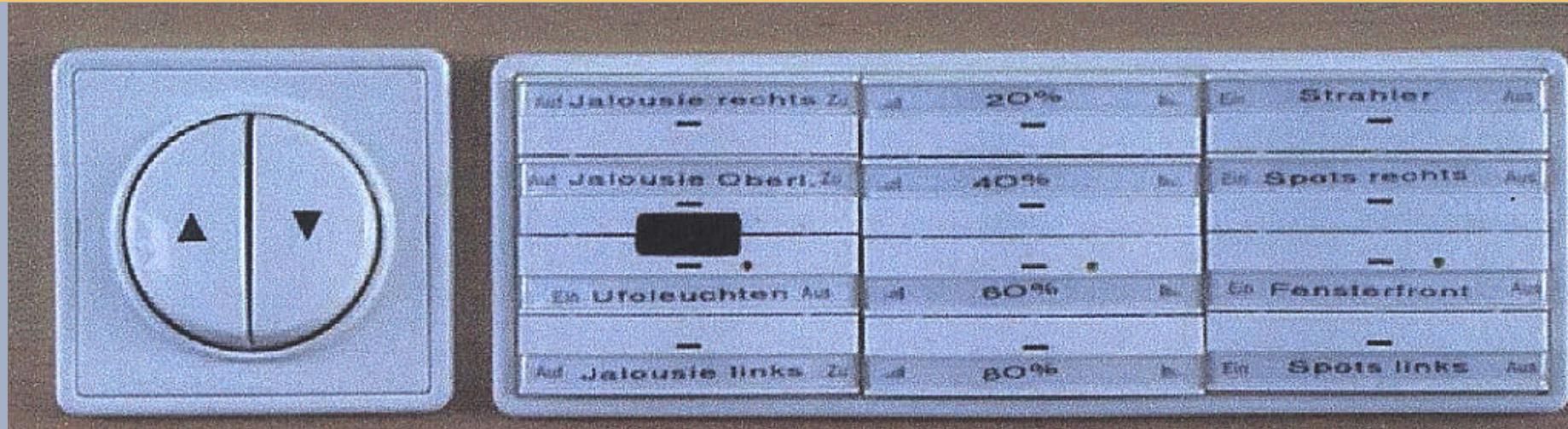


## **Conclusion:**

**We have to provide the user with a feedback**

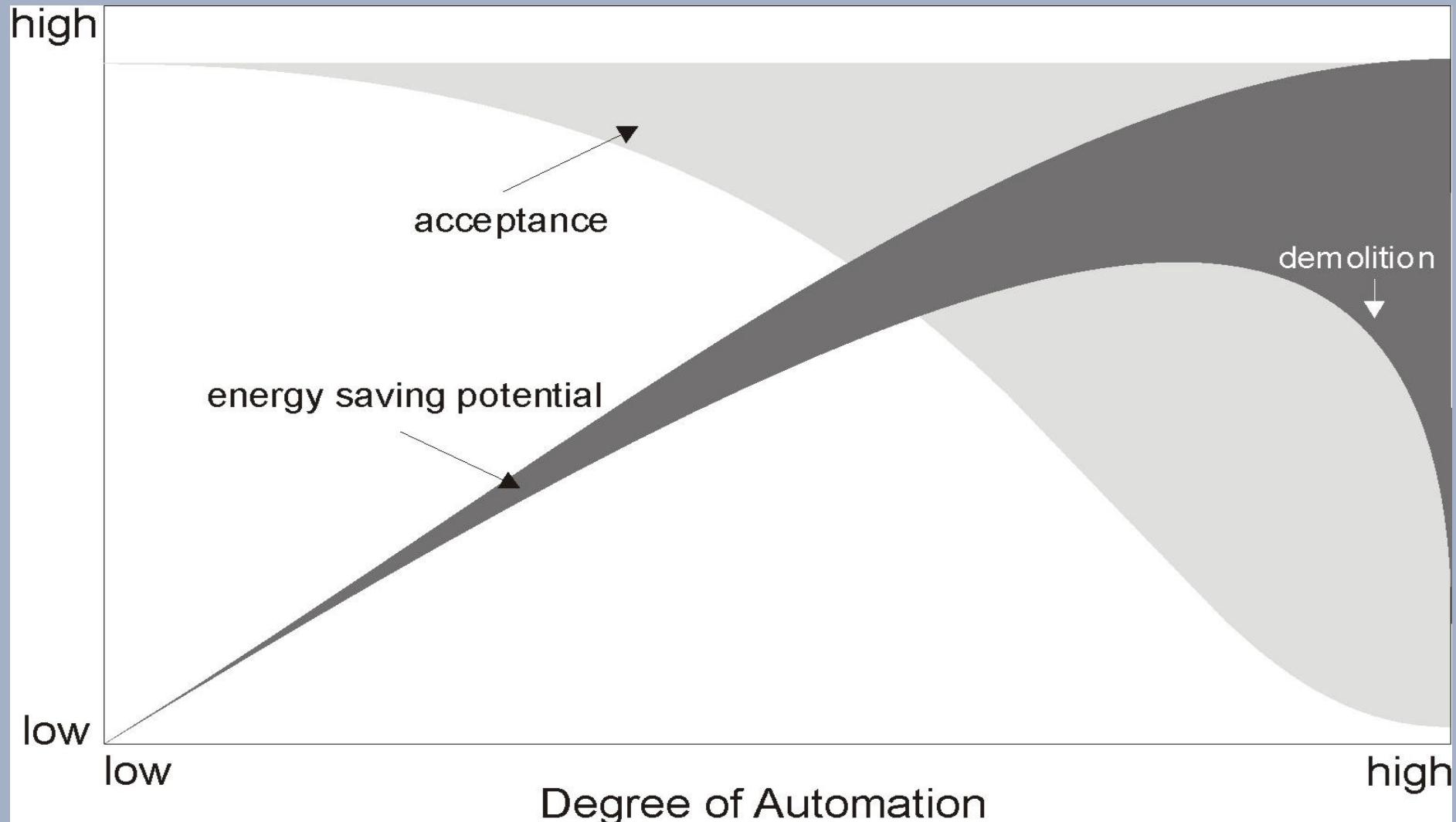
**... about his/her energy consumption**

**... about his/her user behaviour**

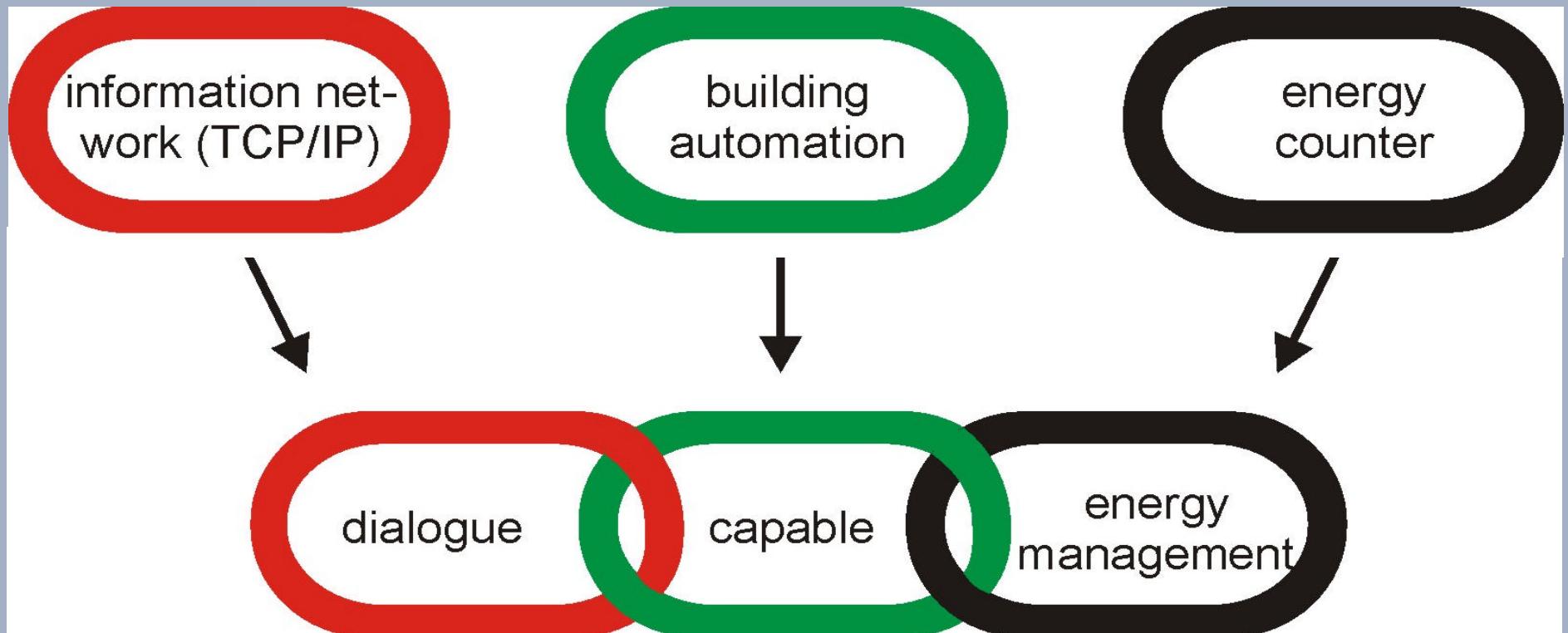


**Building automation has the means  
to restrict user influence on energy  
consumption and to provide high  
comfort levels**

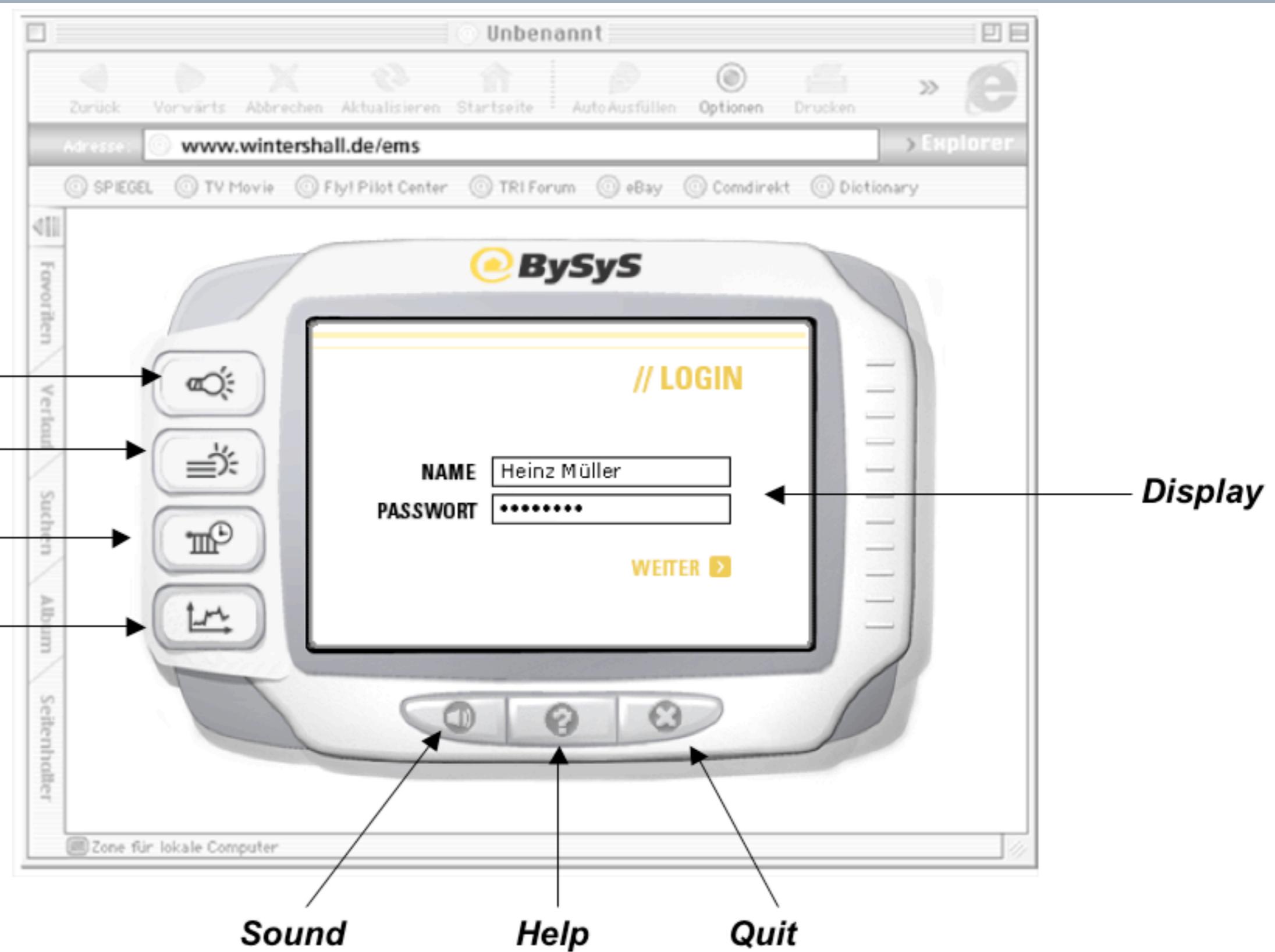




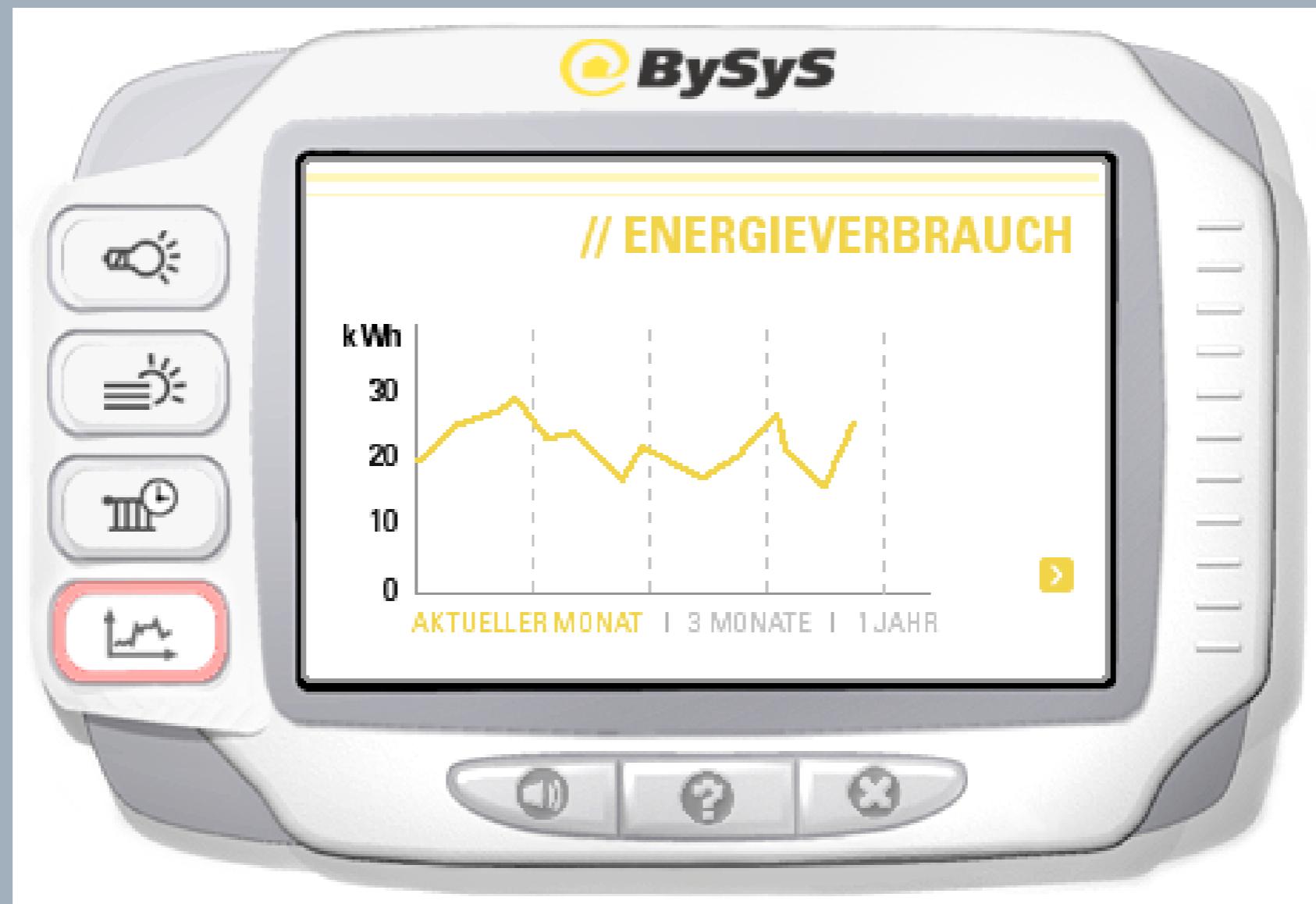
*The user does not accept loss of authority !*

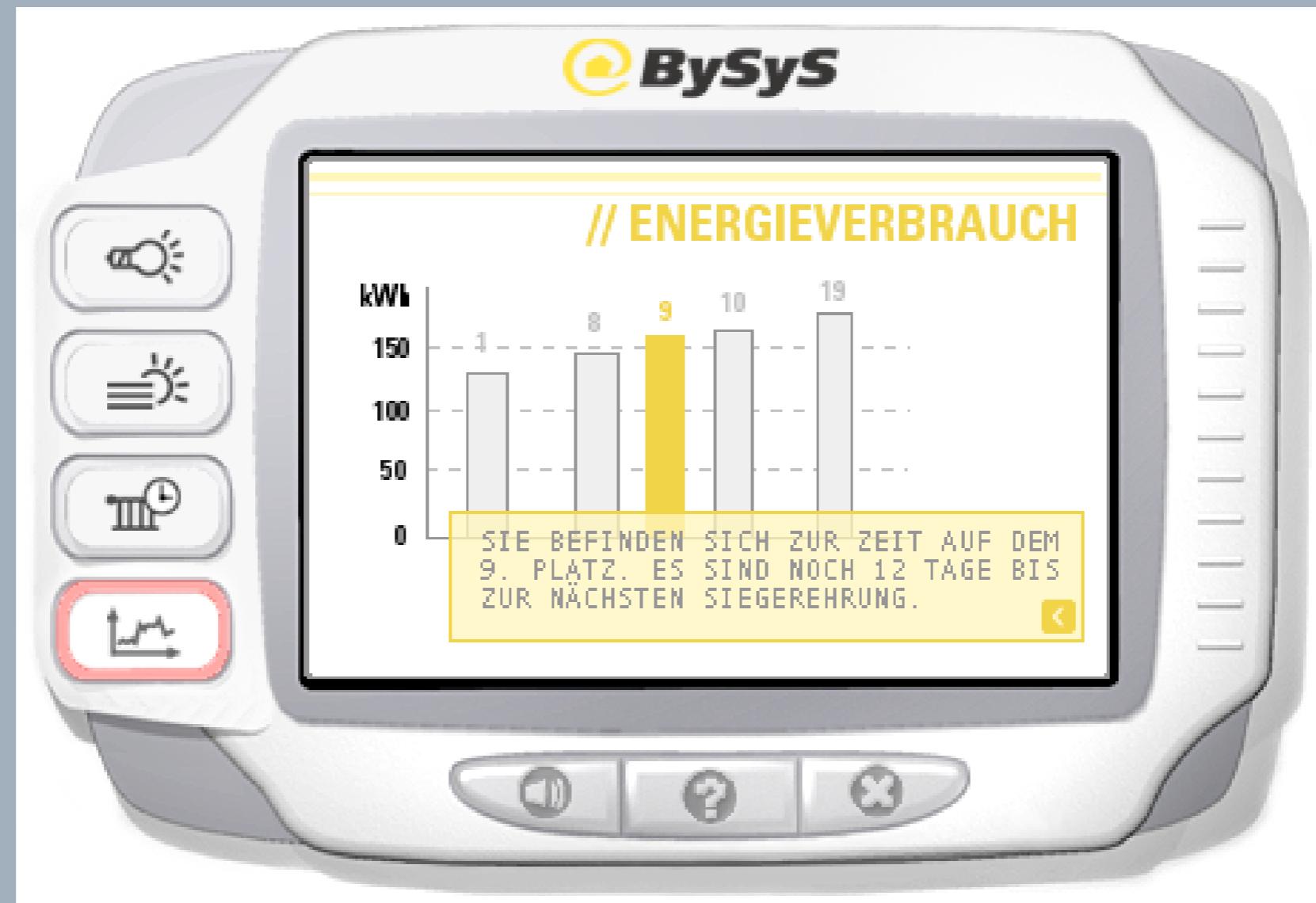


**web-based user feedback methods  
for  
single and multi-occupancy spaces**









The screenshot shows an email client interface titled "Entwürfe". The menu bar includes "Neu", "Löschen", "Antworten", "An alle", "Weiterleiten", "Postfach", "Empfangen", "Adressen", "Durchsuchen", and a search bar. A sidebar lists "Persönliche Postfächer" and "mac.com (Vom Internet)". The main window displays one email from "BySys Energie Butler" with the subject "Feedback" sent "Heute um 20:22". The message content is as follows:

Guten Tag Herr Müller,

seit über 15 Minuten benutzen Sie die künstliche Beleuchtung, obwohl das Tageslicht für eine genügende Raumhelligkeit ausreichen würde. Zur Verringerung des Energieverbrauchs wählen Sie bitte zwischen den folgenden Optionen:

**Konstantlichtregelung aktivieren**  
 **Automatisches Ausschalten aktivieren**  
 **Beleuchtung manuell ausschalten**

oder verändern Sie die gewünschte Raumhelligkeit in Ihrem BySys-Controller.

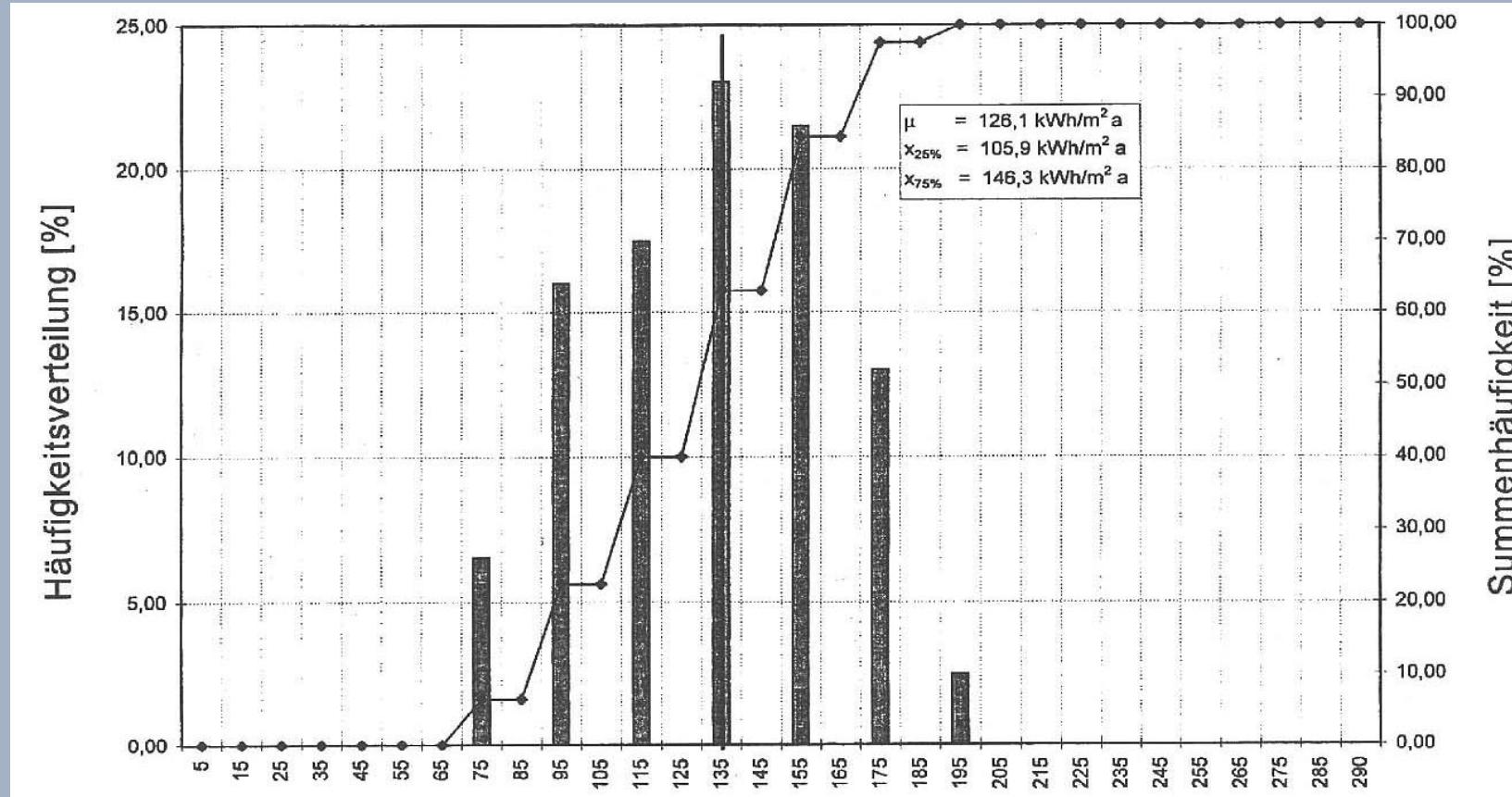
Ihr Energie Butler

# Field test of single room control with user feedback

IEE-RE

U N I K A S S E L  
V E R S I T Ä T

Frequency distribution of heat energy consumption in 29500 refurbished apartments in Berlin; without user feedback



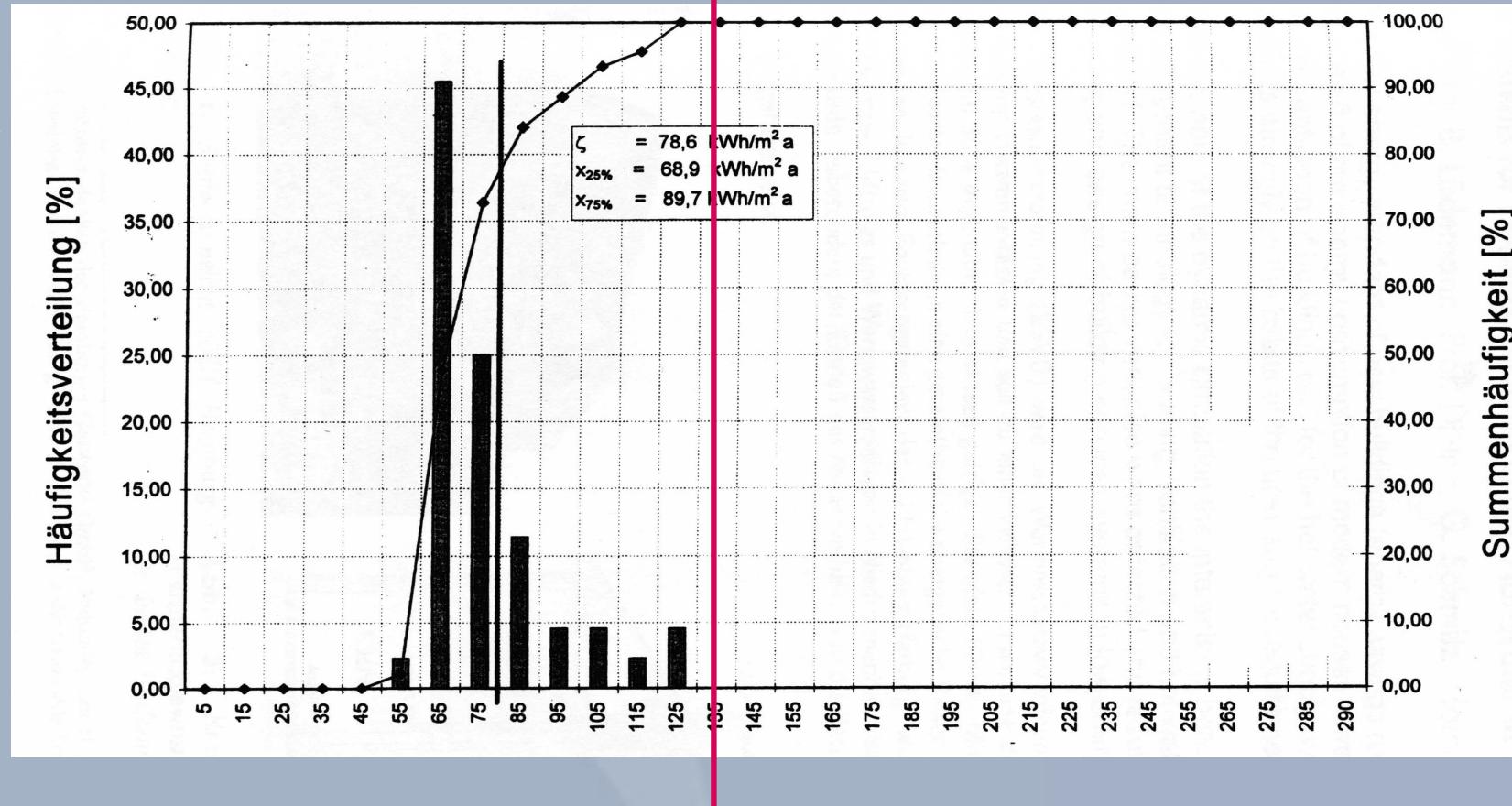
Source: Benecke, J.: Energiesparen durch technische Hilfsmittel: Auf die Regelkreise kommt es an! VDI Bericht 1531. Nierstein, 2000

# Field test of single room control with user feedback

IEE-RE

U N I K A S S E L  
V E R S I T Ä T

Frequency distribution of heat energy consumption in 2800 refurbished apartments in Berlin; wit single room control and user feedback



Source: Benecke, J.: Energiesparen durch technische Hilfsmittel: Auf die Regelkreise kommt es an! VDI Bericht1531. Nierstein. 2000

# Implementation in Visby and Gloucester

Feedback System

http://www.re.e-technik.uni-kassel.de/eubart/visby/feedback/

SPIEGEL NY Times Comdirect eBay BySyS Wetter fremdwort.de Dictionary TV Movie mySQL Mac IEE-RE Kassel FSV

Google

ALMEDALS LIBRARY USER FEEDBACK

GOTLANDS KOMMUN

Dear visitor,  
welcome to the visby library feedback system. Please fill out the following form and let us know how satisfied you are with the building or room.

**Temperature**      Too cold      OK      Too hot

**Artifical Lighting**      Too little      OK      Too much

**Air Quality**      Stuffy      OK      Fresh

**Air Movement**      Still      OK      Draughty

**Location**

I Don't know  
Floor 1 Offices  
Floor 2 Entrance  
Floor 2 Library  
Floor 2 Offices  
Floor 2 University  
Floor 3 Library  
Floor 3 Offices  
Floor 3 University  
Floor 4 Offices  
Floor 4 University

**Name (optional)**

**Comment (optional)**

Show comment in guestbook

Submit Feedback Reset Form

Guestbook

http://www.re.e-technik.uni-kassel.de/eubart/visby/feedback/guestbook/ Google

SPIEGEL NY Times Comdirect eBay BySyS Wetter fremdwort.de Dictionary TV Movie mySQL Mac IEE-RE Kassel FSV

ALMEDALS LIBRARY  
USER FEEDBACK

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 GOTLANDS  
KOMMUN

**Guestbook**

These are the guestbook entries of the Almedals Library Feedback System:

**Ingo Stadler** Every day a survey?  
2003-08-14 12:33:42

**Henrik Östensson** Testing  
2003-08-14 11:13:03

Feedback System

<http://www.re.e-technik.uni-kassel.de/eubart/visby/feedback/>

SPIEGEL NY Times Comdirect eBay BySys Wetter fremdwort.de Dictionary TV Movie mySQL Mac IEE-RE Kassel FS

ALMEDALS LIBRARY USER FEEDBACK

GOTLANDS KOMMUN

Dear Sascha (Room 1630),  
welcome to the visby library feedback system. Please fill out the following form and let us know how satisfied you are with the building or room.

**Temperature**      Too cold      OK      Too hot

**Artifical Lighting**      Too little      OK      Too much

**Air Quality**      Stuffy      OK      Fresh

**Air Movement**      Still      OK      Draughty

**Name (optional)**

**Comment (optional)**

Show comment in guestbook

**Submit Feedback** **Reset Form**

Guestbook

http://www.re.e-technik.uni-kassel.de/eubart/visby/feedback/administration/

SPIEGEL NY Times Comdirect eBay BySyS Wetter fremdwort.de Dictionary TV Movie mySQL Mac IEE-RE Kassel FSV

### ALMEDALS LIBRARY

#### USER FEEDBACK

GOTLANDSKOMMUN

**Administration**

[Statistics](#) | [Users](#) | [Guestbook](#) | [Comments](#)

✓ All show

Location	Count	Bar
Floor 1 Offices	1	[Red Bar]
Floor 2 Entrance	1	[Red Bar]
Floor 2 Library	0	[Red Bar]
Floor 2 Offices	0	[Red Bar]
Floor 2 University	0	[Red Bar]
Floor 3 Library	0	[Red Bar]
Floor 3 Offices	0	[Red Bar]
Floor 3 University	0	[Red Bar]
Floor 4 Offices	1	[Red Bar]
Floor 4 University	0	[Red Bar]
I Don't know	1	[Red Bar]
OK	1	[Red Bar]
Too Much	0	[Red Bar]

Air Quality:

Air Quality	Count	Bar
Stuffy	1	[Red Bar]
OK	0	[Red Bar]
Fresh	1	[Red Bar]

Air Movement:

Air Movement	Count	Bar
Still	1	[Red Bar]
OK	0	[Red Bar]
Draughty	1	[Red Bar]

Reset All

Guestbook

http://www.re.e-technik.uni-kassel.de/eubart/visby/feedback/administration/ Google

SPIEGEL NY Times Comdirect eBay BySys Wetter fremdwort.de Dictionary TV Movie mySQL Mac IEE-RE Kassel FSV

### ALMEDALS LIBRARY USER FEEDBACK



GOTLANDS  
KOMMUN

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**Administration**

[Statistics](#) | [Users](#) | [Guestbook](#) | [Comments](#)

**Users: NEW**

Room	Name	Email	IP adress	
1627	Stadler, Ingo	<a href="mailto:istadler@uni-kassel.de">istadler@uni-kassel.de</a>	141.51.155.186	<a href="#">EDIT</a>
1630	Beverungen, Sascha	<a href="mailto:beverungen@re.e-technik.uni-kassel.de">beverungen@re.e-technik.uni-kassel.de</a>	141.51.155.146	<a href="#">EDIT</a>

**Sender Address**

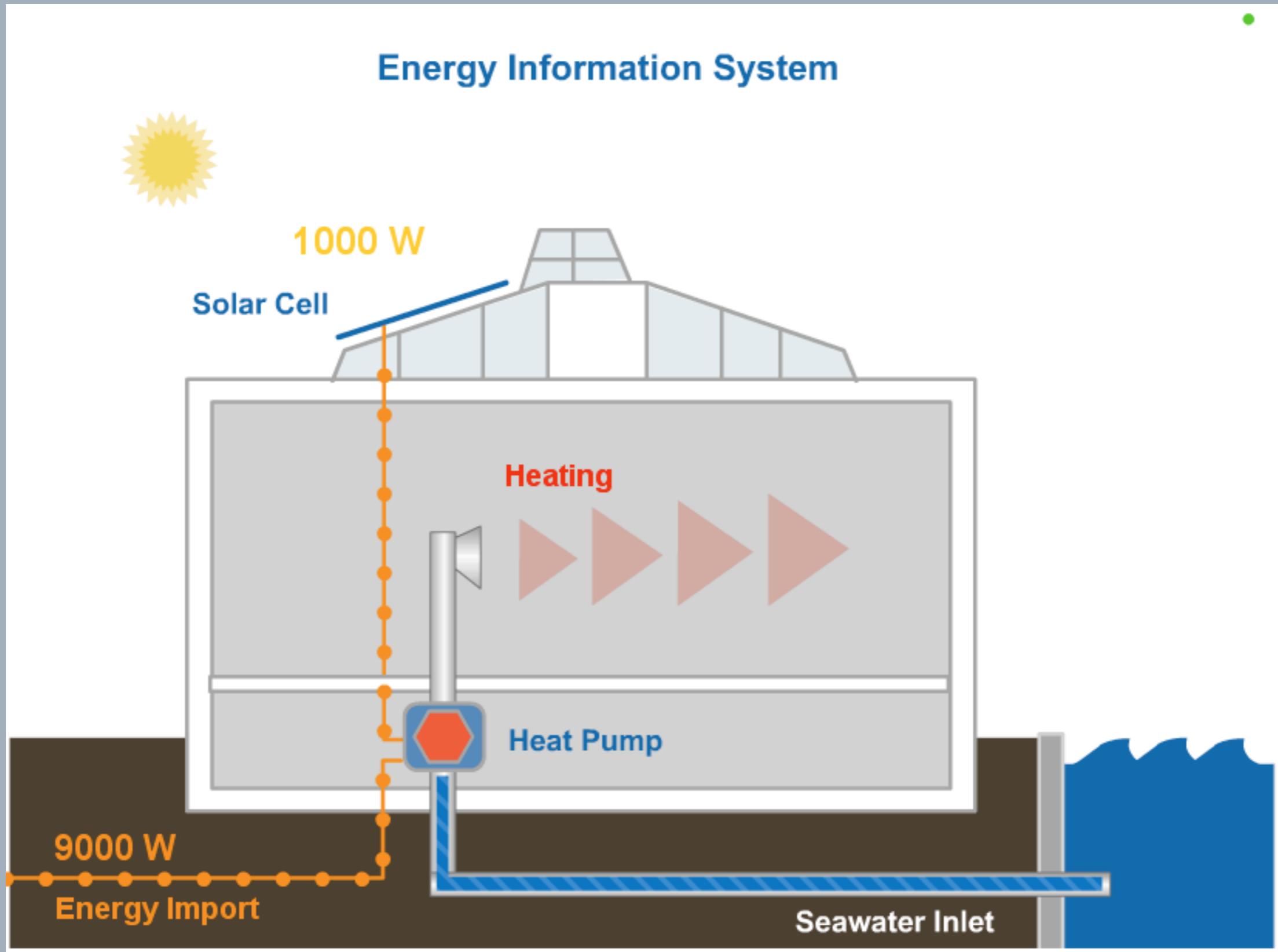
almedals@gotland.se

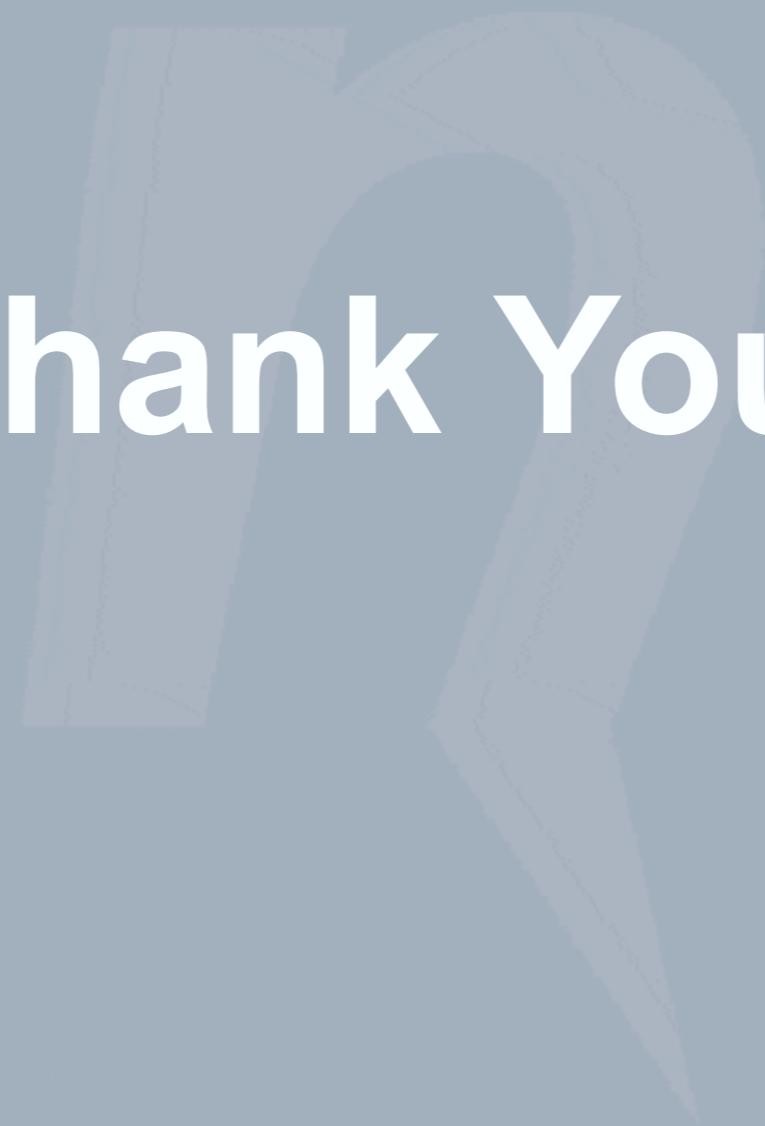
**Request Text**

Dear library occupant,  
we kindly ask you to visit the library feedback system at <http://www.uni-kassel.de/re/eubart/visby/feedback> and give us a short feedback about your personal opinion.

Thank you  
Almedals Library Energy Manager

[Ask users to vote](#)





# Thank You