University of Applied Sciences and Arts Northwestern Switzerland
School of Architecture, Civil Engineering and Geomatics

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The Energy Standard and Label MINERGIE®

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University of Applied Sciences and Arts Northwestern Switzerland

MINERGIE Building Agency

Muttenz/ Basel

ZH-5000 Prime Tower, Zurich

Contents

Part 1: Overview of MINERGIE®

Combines energy efficiency with better comfort and added value

MINERGIE®

MINERGIE-P®

MINERGIE-A®

MINERGIE-ECO®

MINERGIE®- History

1997: Registration of the brand MINERGIE®
by the Cantons Zürich and Bern

MINERGIE-Standard

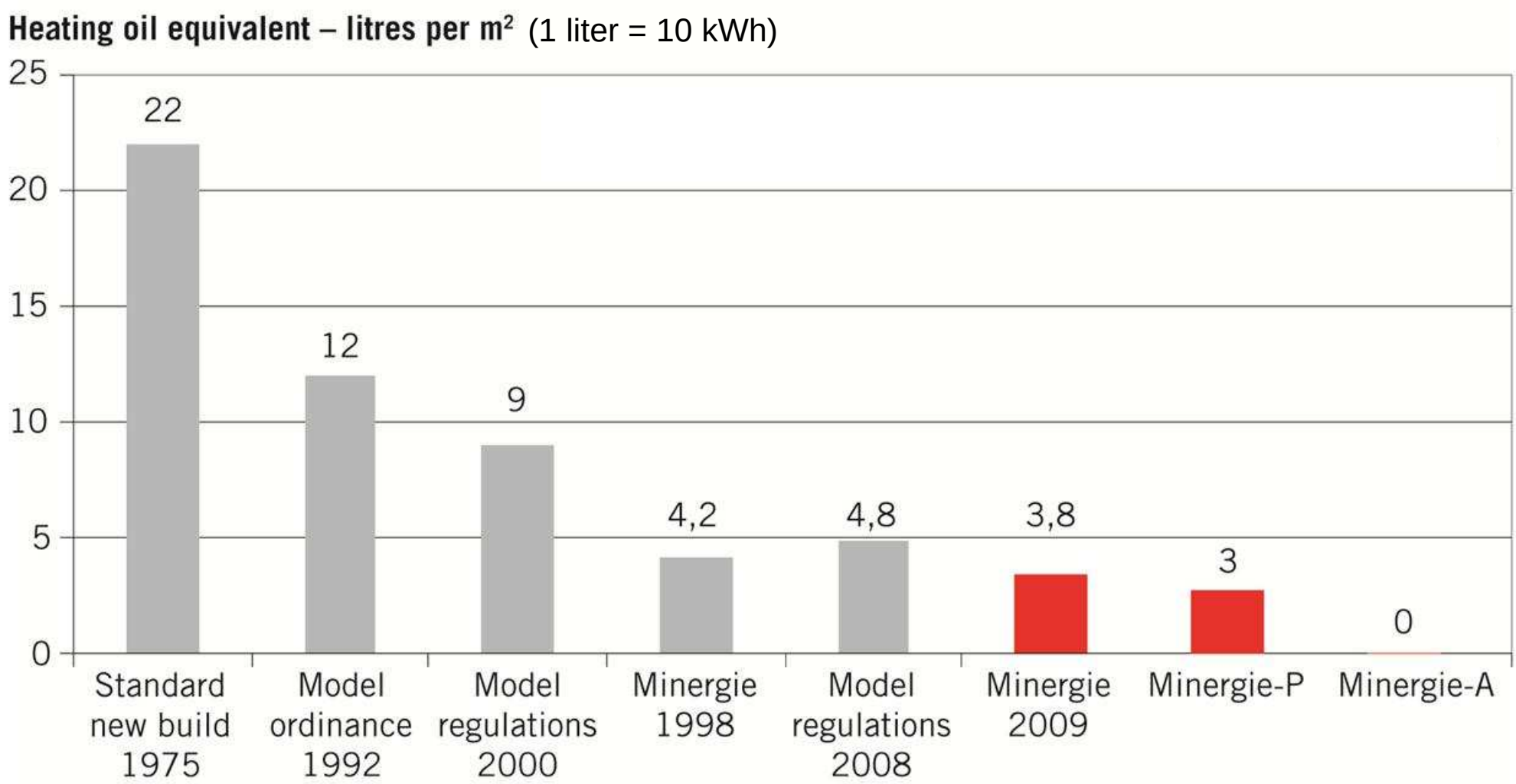
1998: Constitution of the Association MINERGIE®

2003: MINERGIE-P: the Swiss equivalent to the Passivhaus

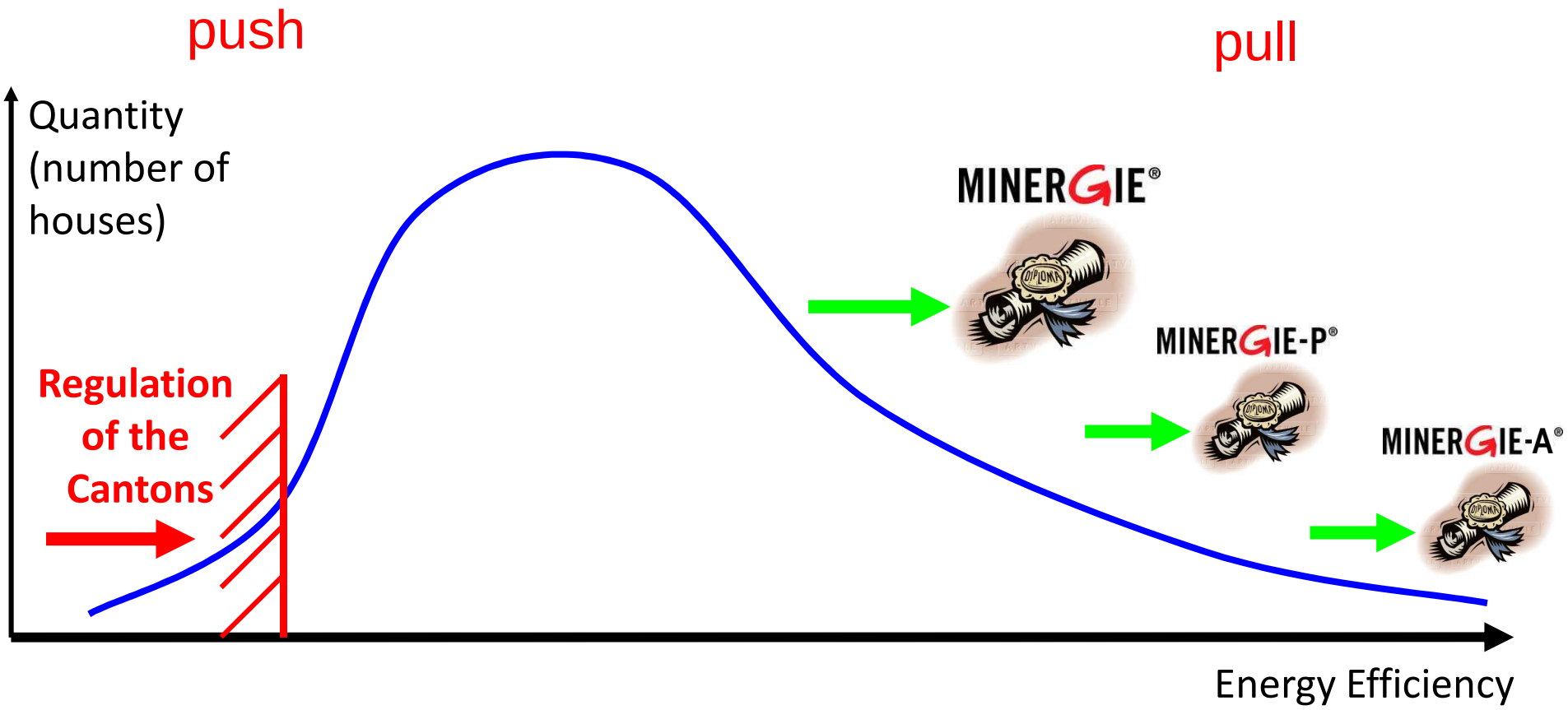
2006: MINERGIE-ECO: Aspects of healthy and ecological buildings

2011: MINERGIE-A: the Swiss standard for NZEB

Weighted energy rating of new residential buildings for heating, domestic hot water and ventilation



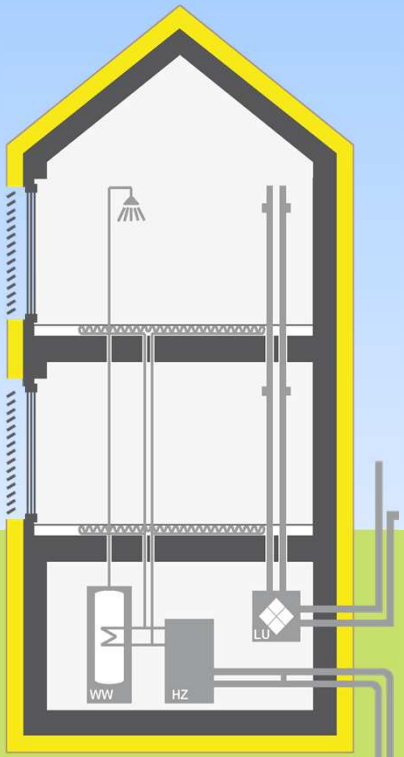
Interaction between regulation and voluntary standards



Requirements

Common Practice

	MINERGIE®	
Heating Energy Demand Swiss Standard SIA 380/1	90% SIA 380/1	Heating Energy Demand ≤ 90% of the limit of the Swiss Standard SIA 380/1 (EN 13790)
Weighted Energy Demand kWh/m²	38 kWh/m²	Weighted Energy Demand for heating, domestic hot water and ventilation ≤ 38 kWh/m²
Embodied Energy		
Air Tightness		
Solar Protection		Solar protection and thermal mass
Ventilation		Ventilation System for good Indoor Air Quality
Auxiliary Energy		
Lighting		
Household Appliances		
Combination with ECO	ECO	
Renewable Energy		Usually Renewable Energy
Thermal Insulation	20 cm	Thickness of insulation usually ≥ 20 cm
Windows/Glassing		Usually triple glassing, U-value ≤ 1.0 W/m²K
Heat Distr. / Low Temp.	<35°	Usually floor heating, supply temp. ≤ 35°C
Building Categories New Buildings / Refurbishing	Dwelling New	



MINERGIE® Building Standards

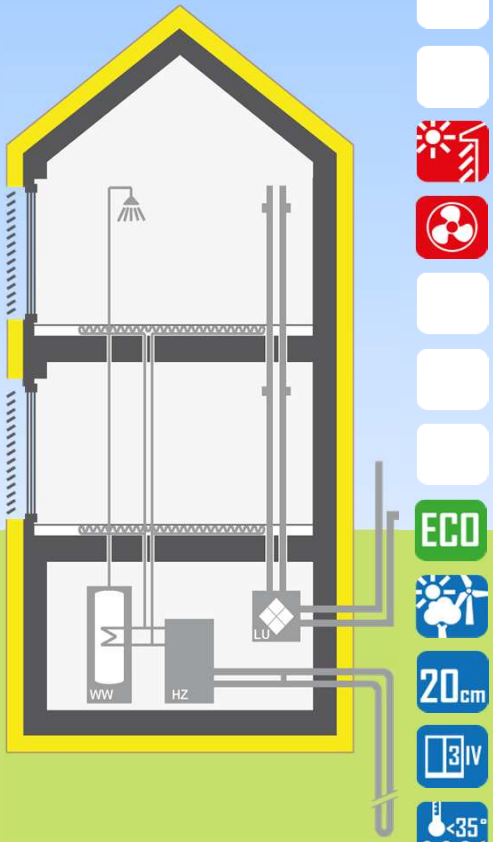
Comparision for new Single and Multifamily Houses / Refurbishing and other Building Categories are possible.

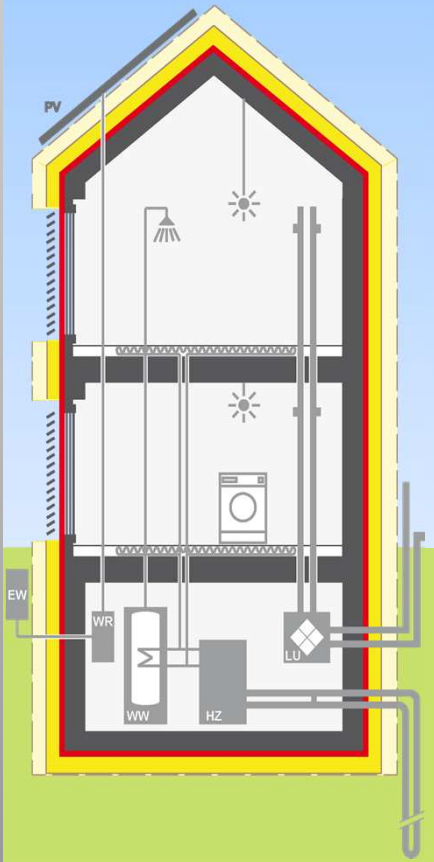
Stand: August 2011

Requirements

Common Practice

	MINERGIE®	MINERGIE-P®	MINERGIE-A®
Heating Energy Demand Swiss Standard SIA 380/1	90% SIA 380/1	60% SIA 380/1	90% SIA 380/1
Weighted Energy Demand kWh/m²	38 kWh/m²	30 kWh/m²	0/15 kWh/m²
Embodied Energy			
Air Tightness			
Solar Protection			
Ventilation			
Auxiliary Energy			
Lighting			
Household Appliances			
Combination with ECO	ECO	ECO	ECO
Renewable Energy			
Thermal Insulation	20cm	30cm	30cm
Windows/Glassing	3 IV	3 IV	3 IV
Heat Distr. / Low Temp.	<35°	<35°	<35°
Building Categories New Buildings / Refurbishing	Dwelling New	Dwelling New	Dwelling New





MINERGIE® Building Standards

Comparision for new Single and Multifamily Houses / Refurbishing and other Building Categories are possible.

Stand: August 2011

Grafik: MINERGIE®

Under one Roof: Moor Quality of Life, Eco-Friendliness of Buildings

MINERGIE-ECO®

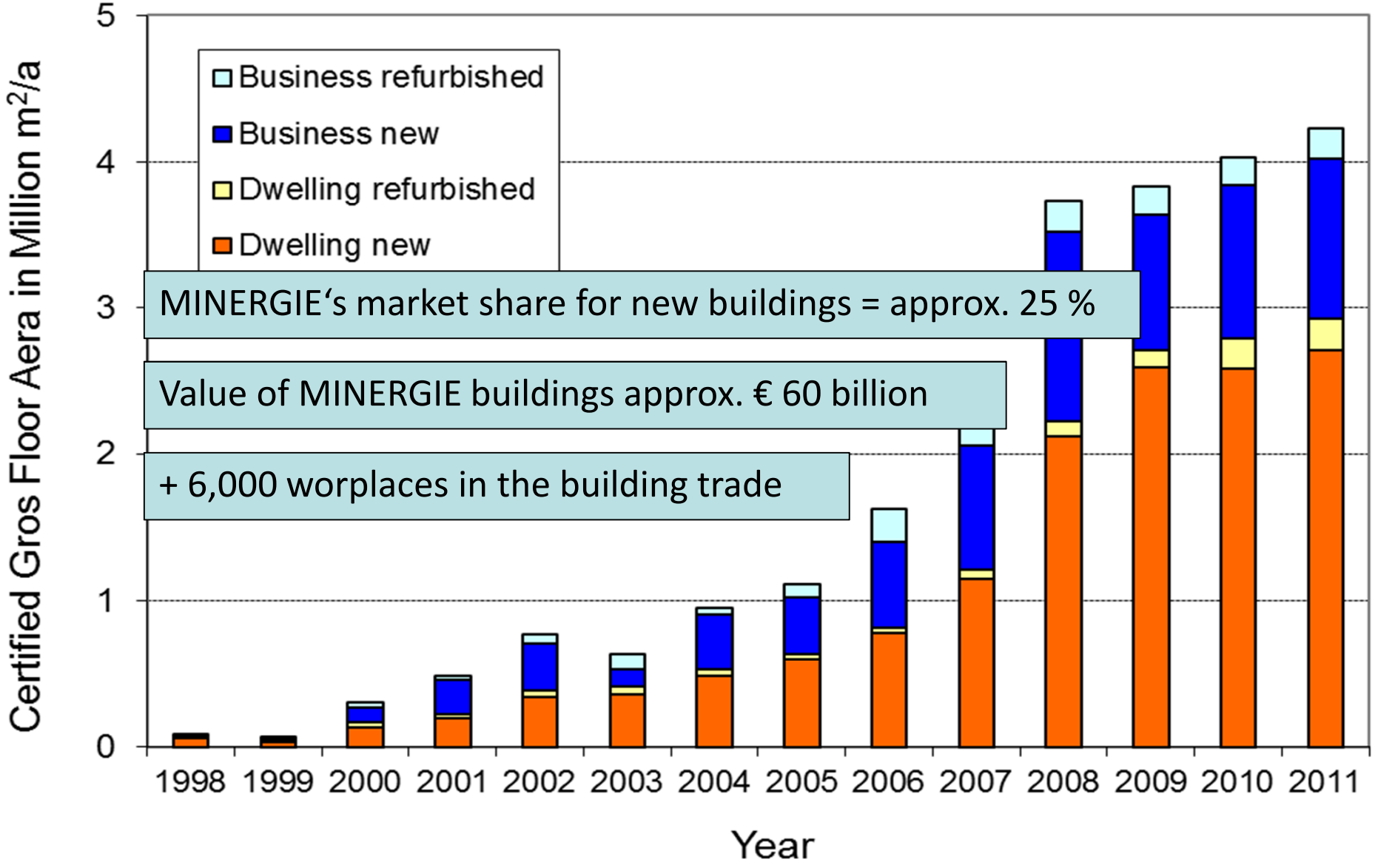
	MINERGIE	ECO	
Quality of Life	**Comfort** •High thermal comfort •Summer heat protection •Systematic air change	**Health** •Best daylighting conditions •Good noise protection •Low indoor air pollution	Light Noise Indoor Air
Environmental Pollution	**Energy efficiency** •Low energy consumption •Best practice	**Building ecology** •No scarce resources •Low ecological pollution in materials and production •Simple ways of deconstruction and high grade of recycling	Resources Production Dismantling

MINERGIE® - Facts and Figures

state Feb 2012

MEMBER MINERGIE®	ca **400** Members: Cantons, Federation, Associations, Companies, Universities
MINERGIE® FACHPARTNER	ca **1500** Professional Partners: Firms in planning and implementation
	ca **100** Courses for further education ca **2000** participants
MINERGIE® MODUL FFF SZFF Fenster Fenêtre	**9** Categories (fabric and technical device) ca **1100** Certified products
MINERGIE® MINERGIE-ECO®	**23‘000 + 230** Buildings
MINERGIE-P® MINERGIE-P-ECO®	**1’250 + 320** Buildings
MINERGIE-A® MINERGIE-A-ECO®	**7 + 9** Buildings
Area over all	certified gross floor area **25 Mio m²**

Development of MINERGIE-Buildings (certified gross floor area in m^2/a)



Economic Impact of MINERGIE: Studies from the Cantonal Bank of Zurich

The sale prices of MINERGIE buildings are higher than from conventional new buildings:

- Single family houses 7 %
- Multiy family houses 3.5 %

The additional construction costs for are in the range of:

	MINERGIE	MINERGIE-P
- Single family houses	3 … 7 %	6 … 12 %
- Multiy family houses	1 … 3 %	3 … 7 %

ZH-036-P,

There is a great variety of MINERGIE-P houses.
Single familiy houses…

VD-011-P,

Multi family houses…

BL-035-P

AG-037-P

Office and School Buildings

ZH-036-P

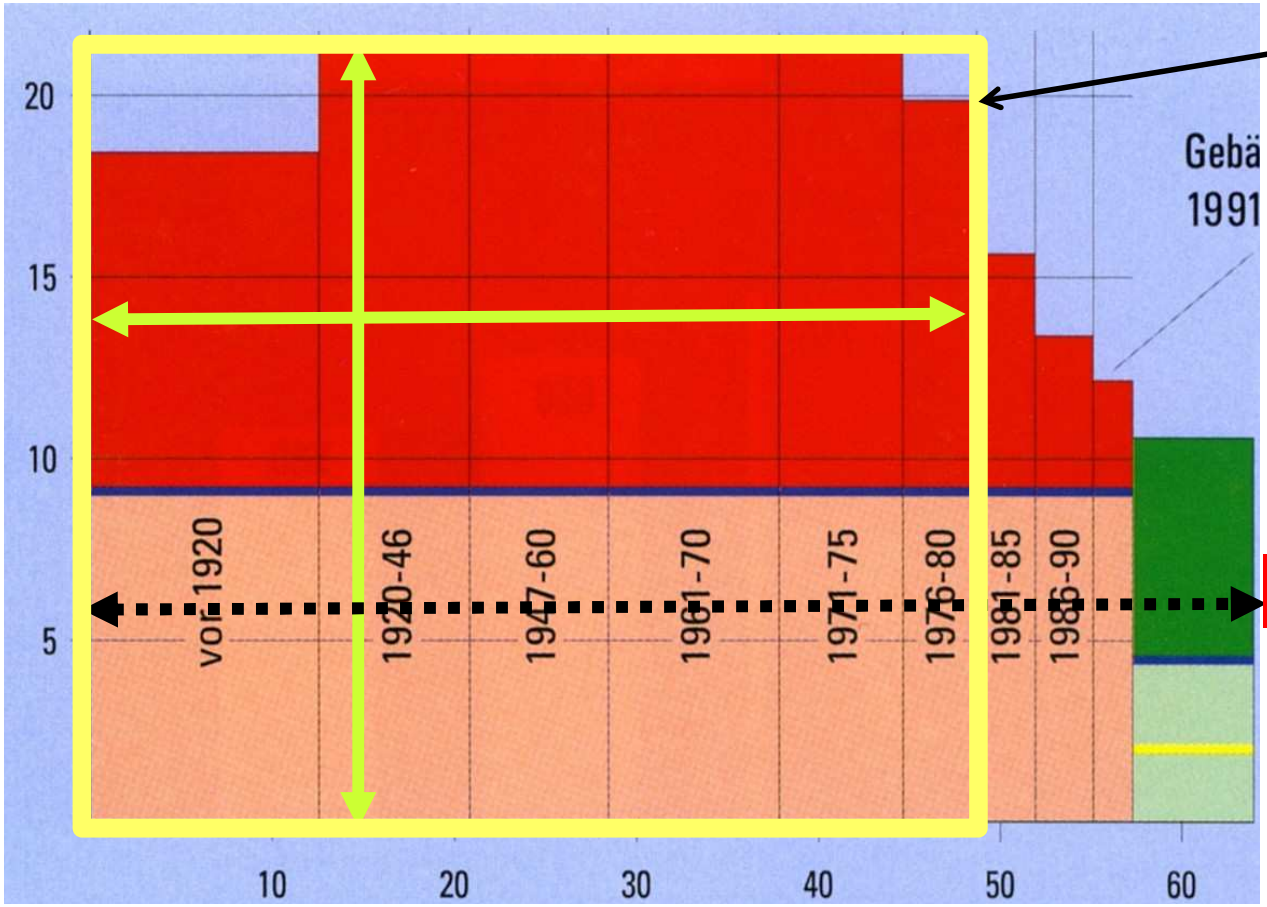
ZG-003-P

Leisure- and Shopping-Center WESTside Bern-Brünnen
Architect Daniel Libeskind

BE-700

…up to the alpine guest house pilot project

Existing buildings are the problem



80% of heating energy is consumed by buildings older than 30 years.

MINERGIE refurbishment 60 kWh pm²/a

Gross Flour Area of residential buildings in the Canton of Zurich in million m²


BE-026
Allianz
Suisse
MINERGIE
MINERGIE

Renovation on MINERGIE-P-Level

NW-001-P, Multifamily buildg, Stansstaad

MINERGIE Renovation in Cities

ZH-736

BE-819

BS-009

SG-270

All 25’000 certified buildings are shown on the list of buildings.

ZH-261

Beteiligte

Architekt
Architekturbüro Rolf Läuppi
Ottostr. 7
8005 Zürich

Bauherrschaft
Credit Suisse 1a Immo PK
ein Immobilienfonds der Credit Suisse,
8070 Zürich

Planer
Getec Zürich AG
Weck
Hofwiesenstrasse 370
8050 Zürich

Bilder Download

Name	Geschäftshaus Leonardo
Standort	Thurgauerstr. 80 8050 Zürich Karte
Zertifizierung	Label Minergie, 07.07.2002
Heizung	100% Gasfeuerung
Warmwasser	70% Wärmepumpe nicht zuweisbar 30% Gasfeuerung
Neubau	Verwaltung (47738m²)
Energiebezugsfläche	Neubau: 47738m² Total: 47738m²

www.minergie.ch

To most important part for success: Communication

Events with building owners

MINERGIE Exhibition Lucerne 2011

Education for professional partners

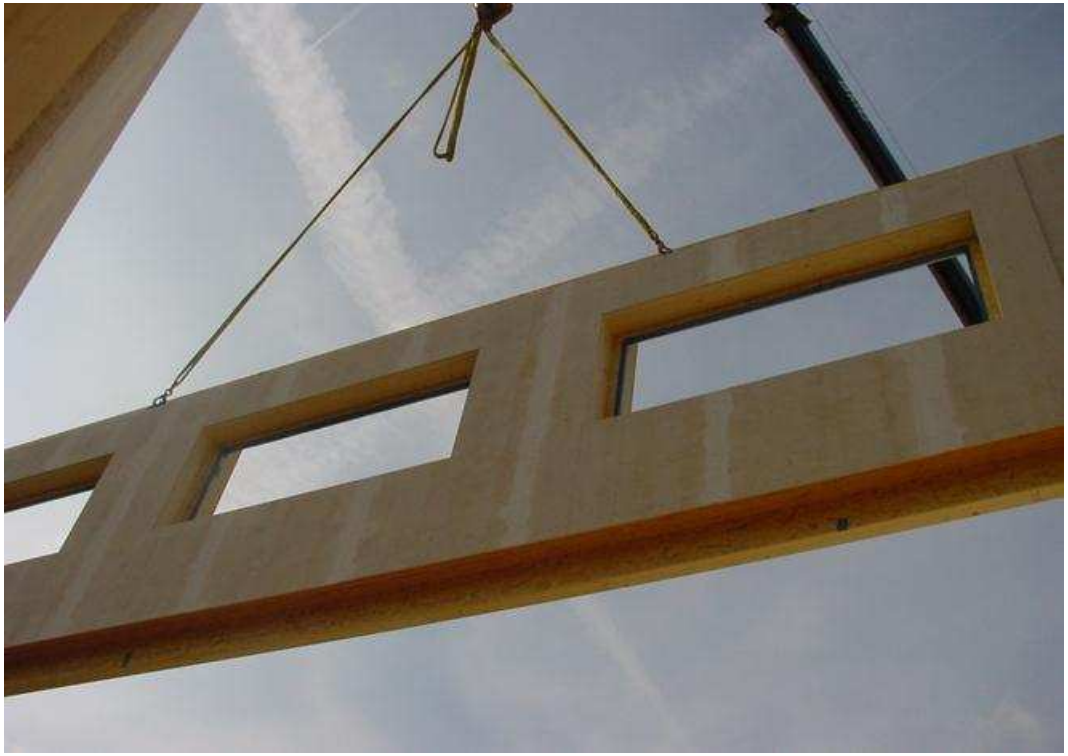
MINERGIE Congress Lucerne 2011

Open days: Show your skills

Part 2: Technics and MINERGIE-A®

Building Technology

MINERGIE-A: The first label for Nearly Zero Energy Buildings



Heating and domestic hot water

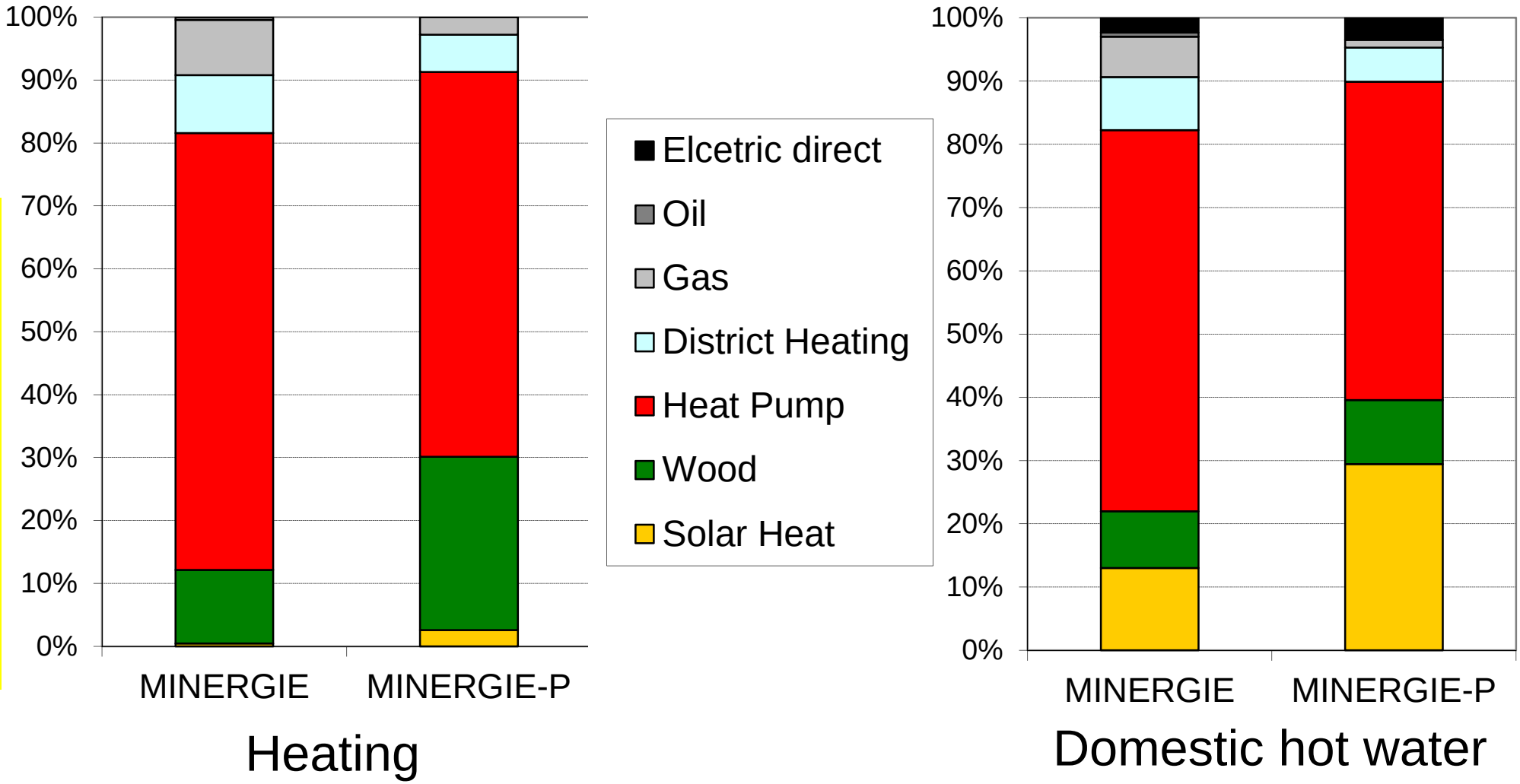
MINERGIE allows all heating systems, except electric heating, but …



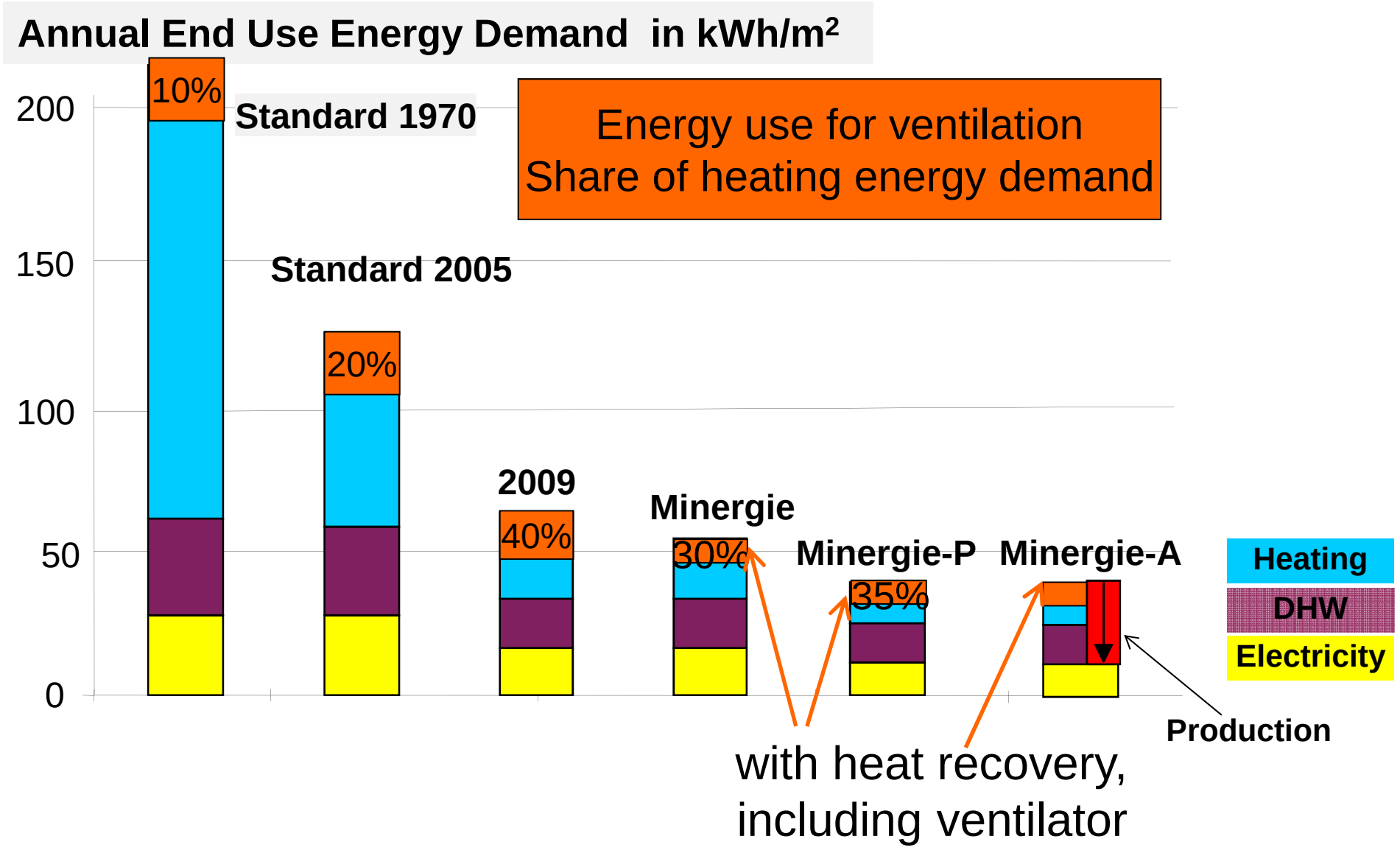



Heating and domestic hot water

Heat production for new residential buildings in 2010



Ventilation



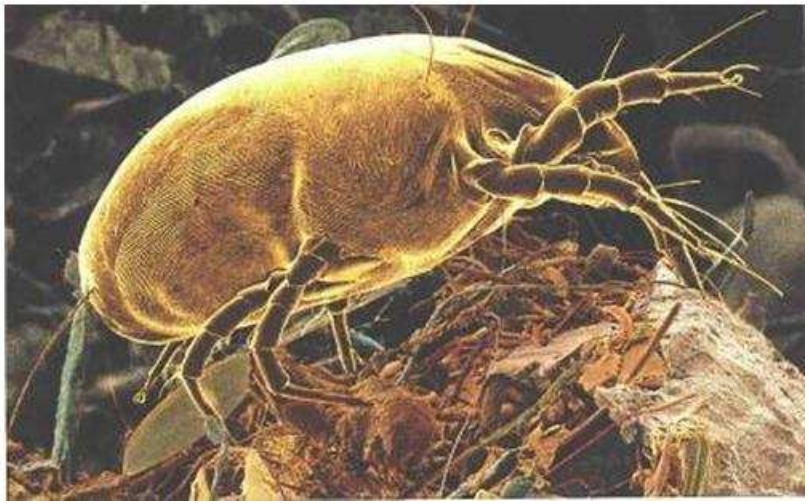
Additional reasons for mechanical ventilation:

Allergies in Switzerland

- 15% to pollen
- 5% to house dust mites

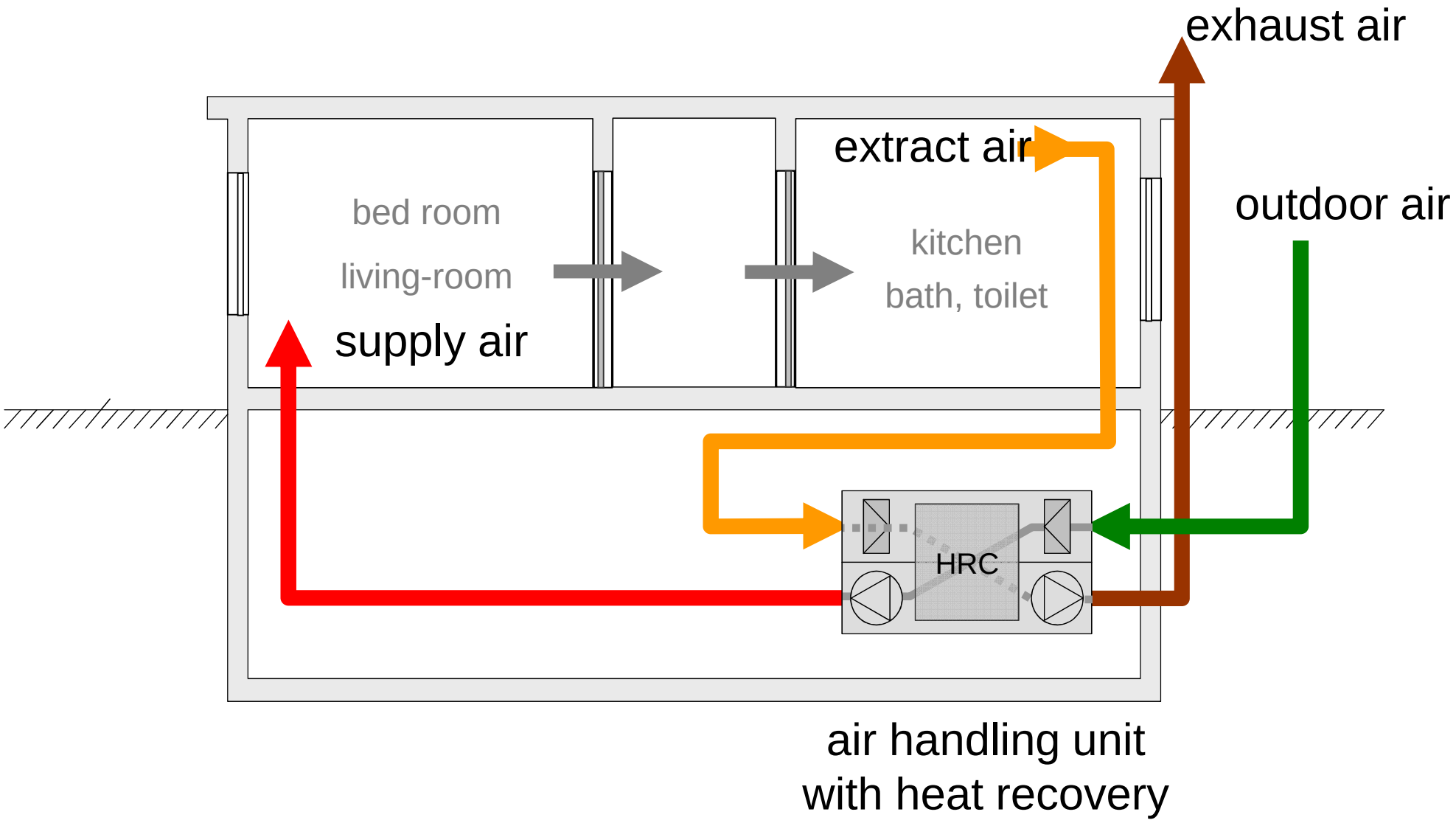
A mechanical ventilation systems filters the outdoor air and controls the humidity.

Allergy sufferers relax better and need less remedies.



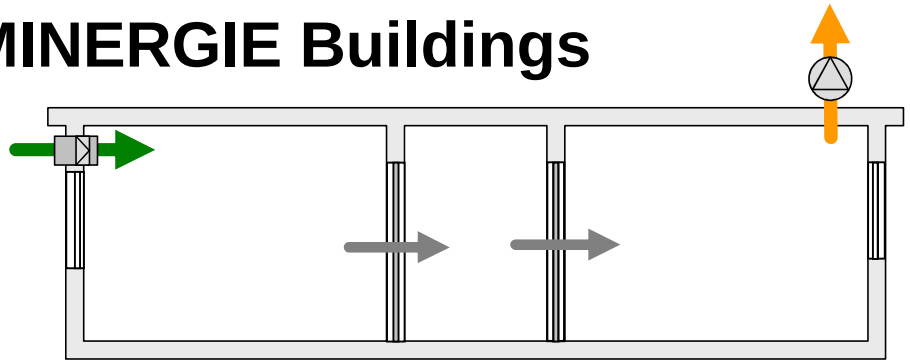
60 % of the Swiss population lives in areas with disturbing or unhealthy outdoor noise

Favoured System: ‚Comfort Ventilation‘

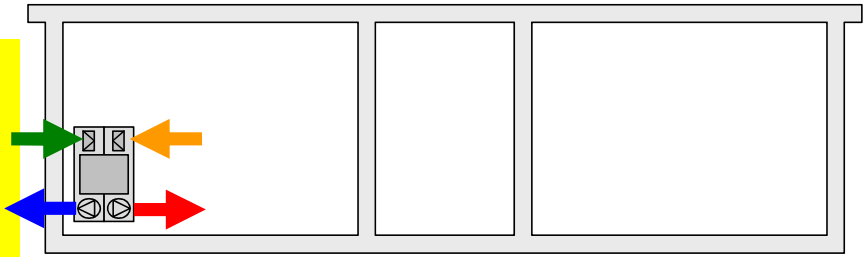


Ventilation Systems for MINERGIE Buildings

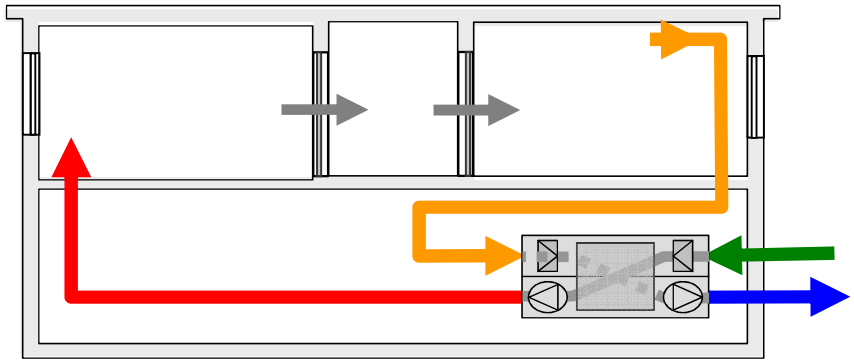
automatic window ventilation **0.01%**



(only) extract air **3%**



single room ventilation units **0.02%**

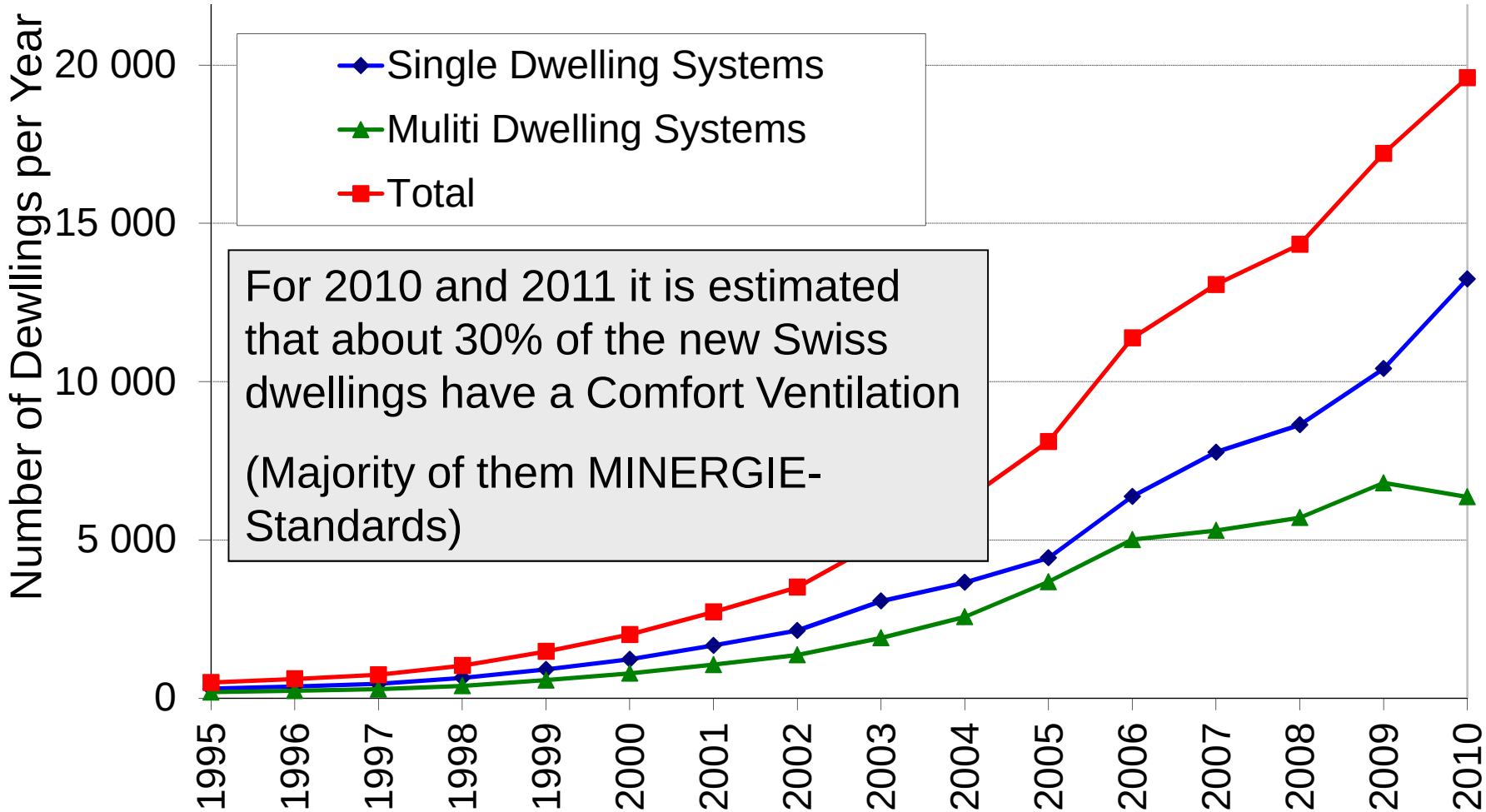


Comfort Ventilation **97%**

The Comfort Ventilation system provides the most advantages

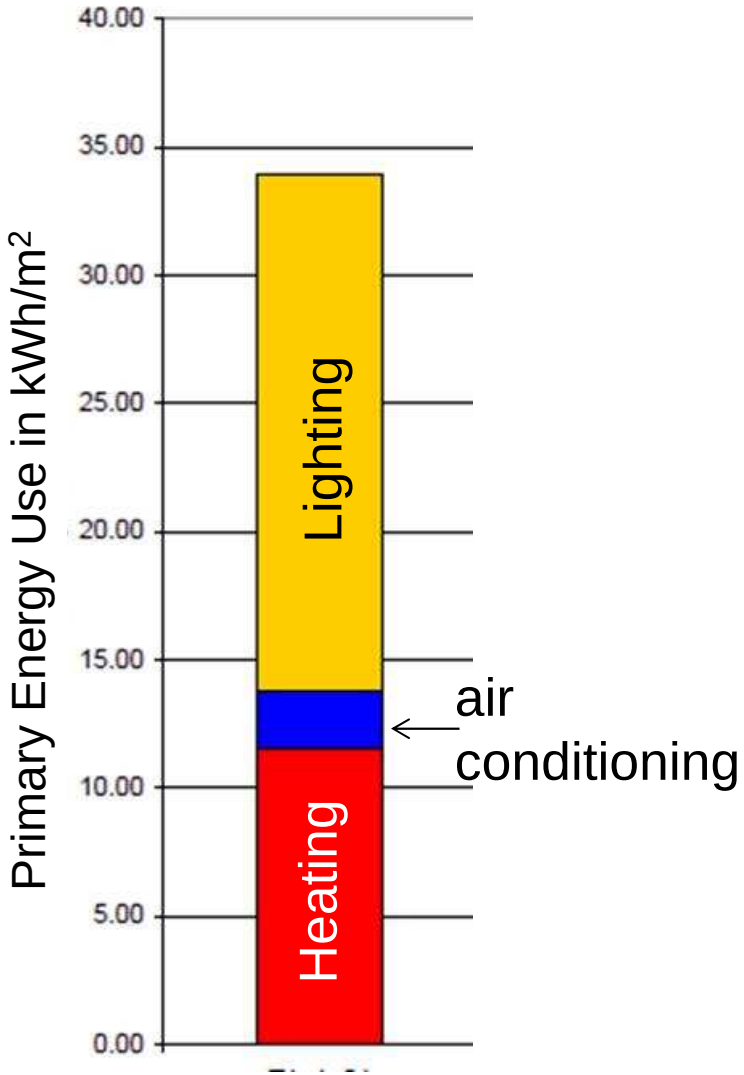
- best thermal comfort and best Indoor Air Quality
- best energy efficiency
- best noise protection (e.g. traffic noise)
- satisfaction for customers and residents

Installed Comfort Ventilations per Year in Switzerland (number of dwellings)



Lighting

MINERGIE
Office building
Helvetia Insurance
Architects:
Herzog & De Meuron



In new office buildings lighting uses more primary energy than heating and air conditioning.

Energy Policy of the Swiss Cantons

www.endk.ch

Declaration of the Energy Ministers:
«As from 2020 new buildings shall provide themselves with energy …»

-> Same targets as EU with EPBD

Energy Efficient Building? Zero Energy Building? What is included?

- Heating
- Domestic Hot Water
- Ventilation, Air Conditioning
- Auxiliary Energy
- Appliances
- Lighting
- Embodied Energy
- On-site Production

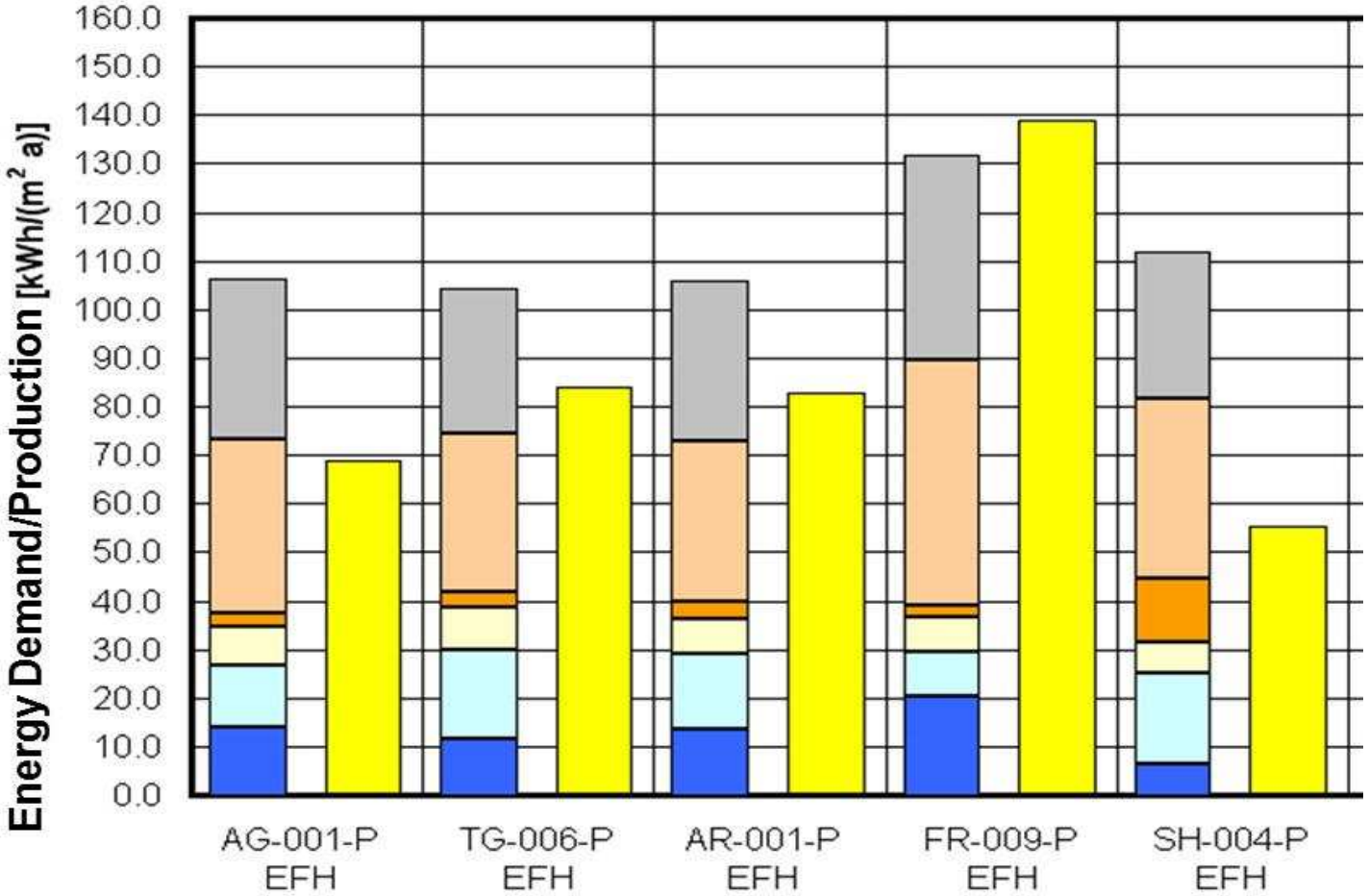
MINERGIE® 1997

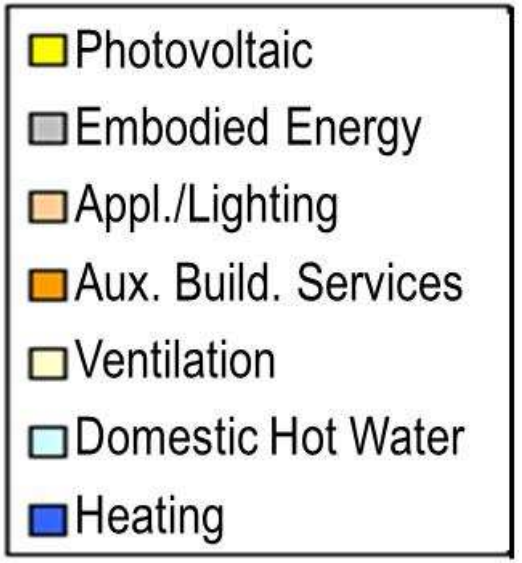
MINERGIE-P® 2003

MINERGIE-A® 2011




Weighted Energy Demand versus PV-Electricity Generation





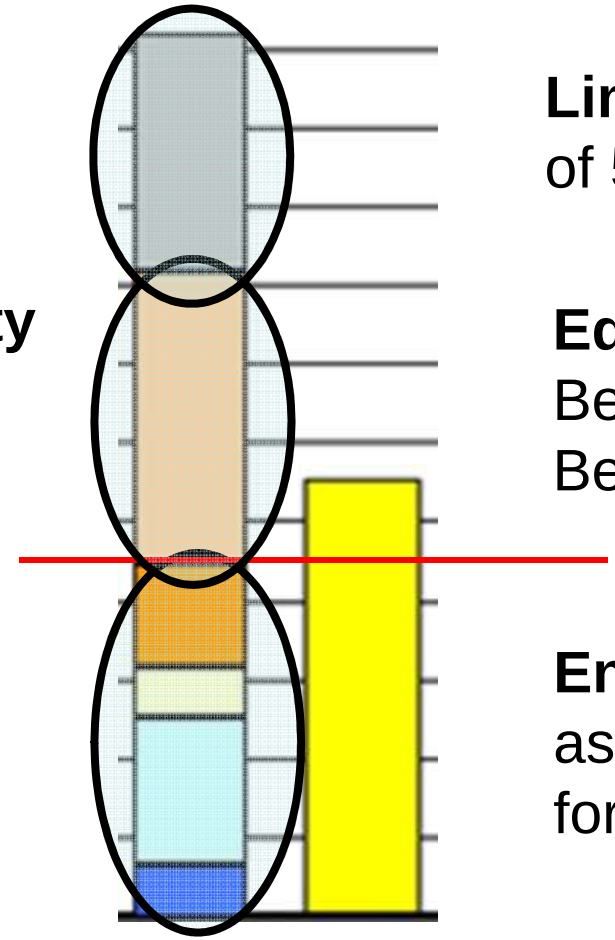
Concept of MINERGIE-A

3 similar parts of energy demand:

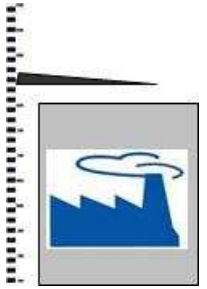
Emodied Energy

Household Electricity
- Appliances
- Lighting

HVAC:
- Auxiliary Energy
- Ventilation
- Domestic hot water
- Heating



Requirements:

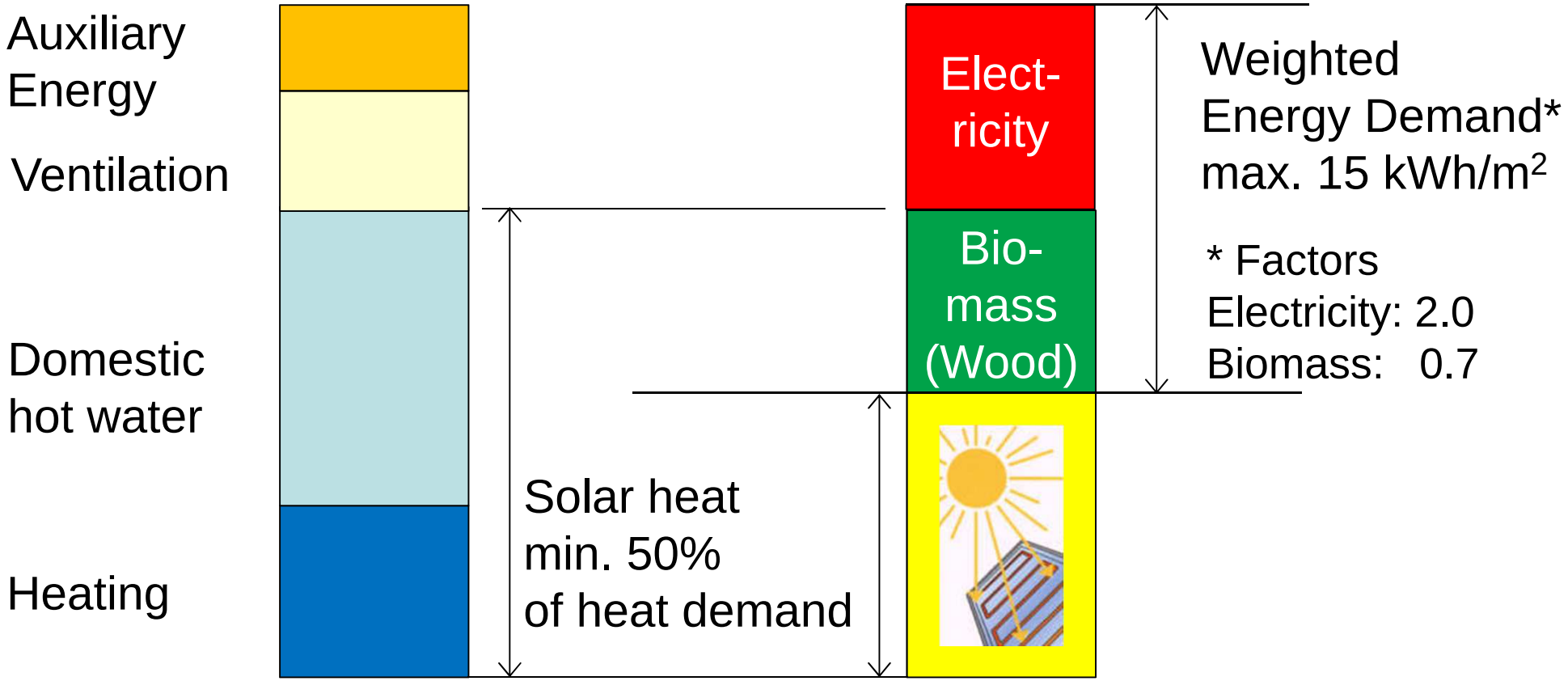


Limit Value
of 50 kWh/m^2

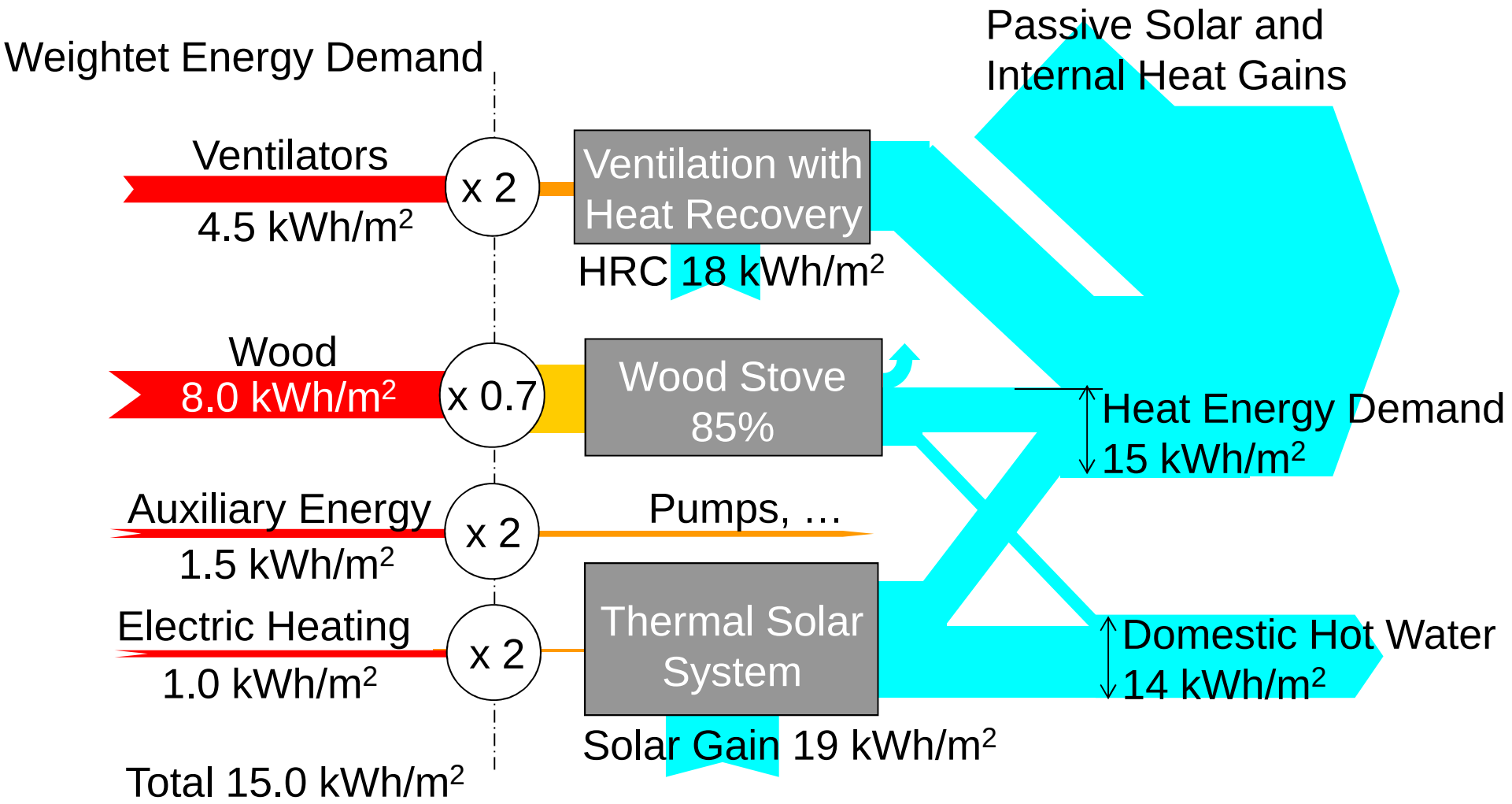
Equipment
Best Energy Labels
Best Practice

Energy Production (PV)
as high as demand for HVAC

Concept of MINERGIE-A:
Variant with Biomass and thermal Solar Energy



Exemple of a MINERIGE-A Single Family House with Wood Stove and Thermal Solar Energy

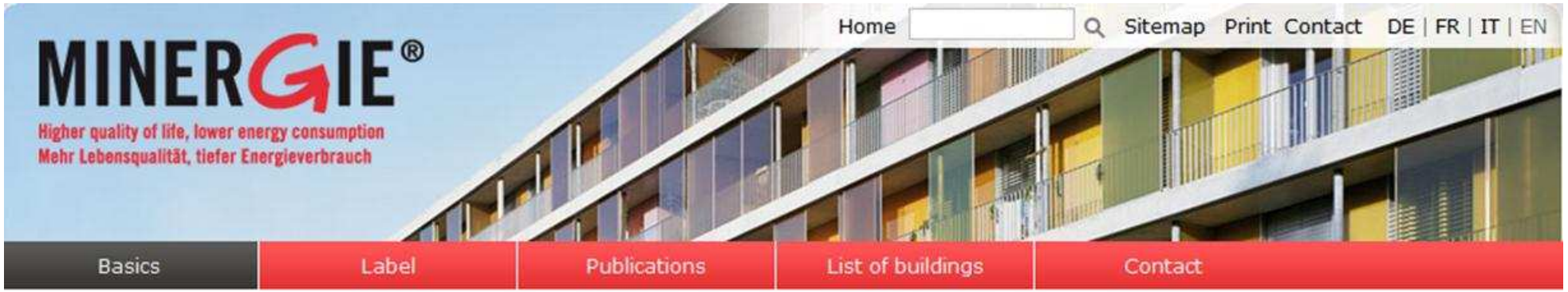


MINERGIE-A - the Swiss way for Nearly Zero Energy Buildings

- Launched 10 March 2011
- First certificate 3 June 2011
- Certificates end of 2011:
  MINERGIE-A 7 buildings
  MINERGIE-A-ECO 8 buildings
- February 2012: More than 100 applications in progress

Impressions of MINERGIE-A Buildings (source: www.minergie.ch)

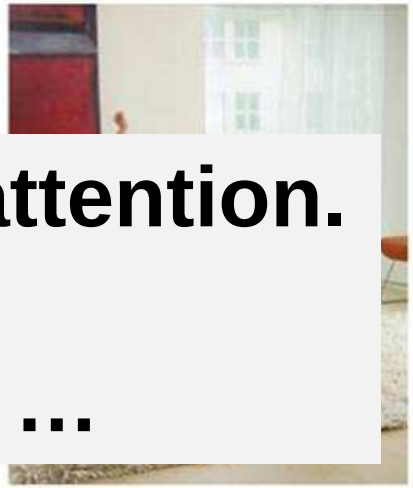
For more Information: www.minergie.ch



Basics

MINERGIE® in a nutshell

MINERGIE® is a sustainability brand for new and refurbished buildings. It is mutually supported by the Swiss Confederation, the Swiss Cantons along with Trade and Industry and is registered in Switzerland



Thank you for your interest and attention.

Questions and discussion ...