



Bundesamt
für Bauwesen und
Raumordnung

Energy Law and Regulations in Germany

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Contents

- Development of Legislation on Energy Saving in Germany
 - Energy Saving Act
 - Thermal Insulation Ordinance
 - Heating Appliances Ordinance
 - Energy Saving Ordinance
- Concept of the Regulations
 - Calculation Systems
 - Targets
- New Developments
 - Energy Performance Directive of Buildings
 - Energy Saving Ordinance



Development of Legislation on Energy-Saving in Germany

- As a result of the 2 oil-crises:
- 1976 Energy Saving Act (Energieeinsparungsgesetz)
followed by several ordinances under it`s scope:
- 1977 Thermal Insulation Ordinance (Wärmeschutzverordnung)
 - with 2 Amendments in 1982 and 1995
- 1978 Heating Appliances Ordinance (Heizungsanlagen-Verordnung)
 - with 4 Amendments in 1982, 1989, 1994 and 1998
- 1978 Heating Plant Operation Ordinance (Heizungsbetriebsverordnung)
 - out of force since 1989
- 1981 Heating Costs Ordinance (Heizkostenverordnung)
 - with 2 Amendments in 1984 and 1989



Development of Legislation on Energy-Saving in Germany

- 2002 Energy Saving Ordinance

replaces

- the Heating Appliances Ordinance and
- the Thermal Insulation Ordinance

- Methodology – new buildings (excluding lighting & air conditioning)
⇒ shall stay in force for residential buildings only
- Energy certificates – new buildings
- Requirements in case of major renovations
- inspection of boilers

– 1st Amendment 2004

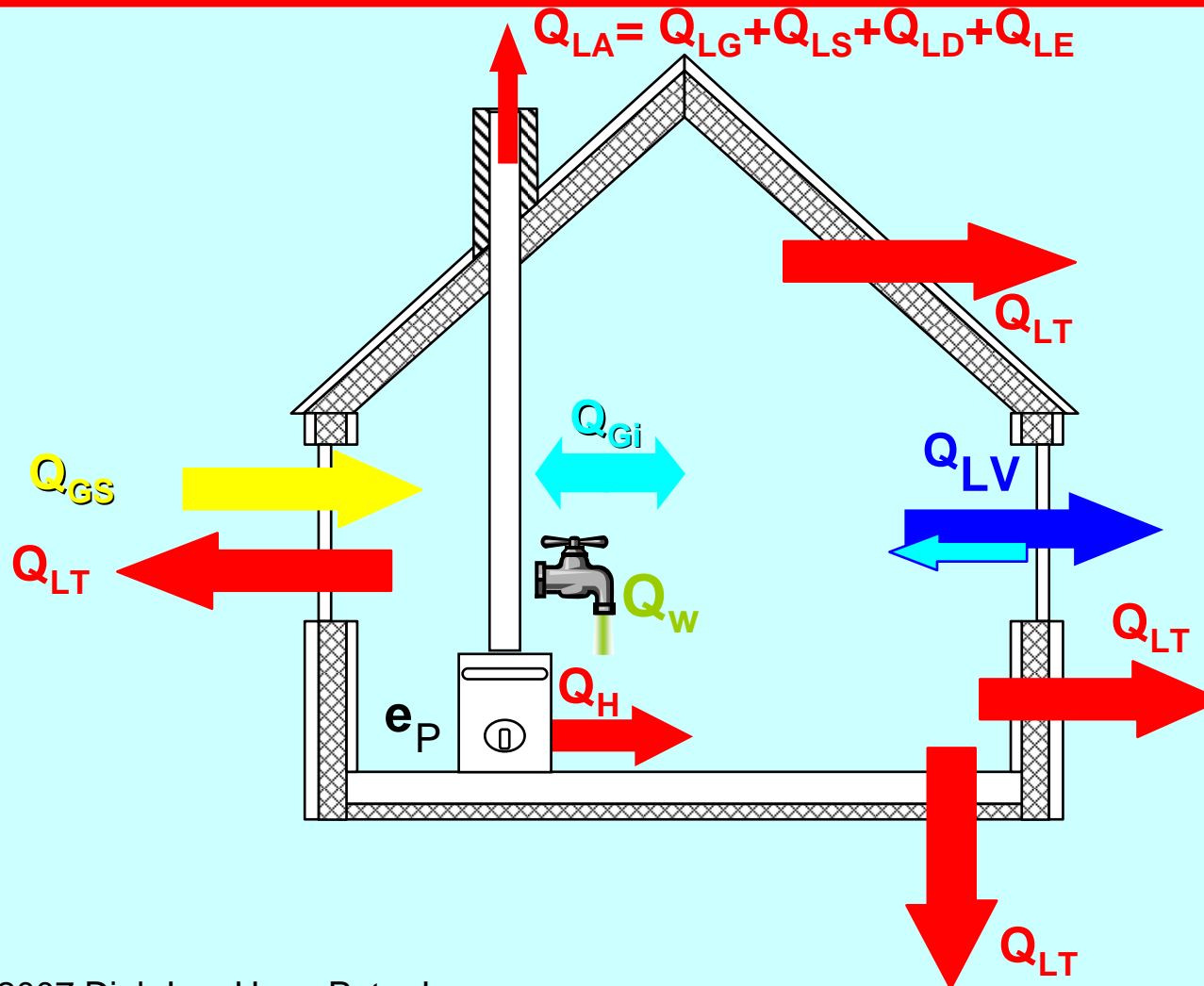


Development of Legislation on Energy-Saving in Germany

- Energy Saving Law Amendment (2005)
 - enforces the government for additional implementation (especially energy certification of building stock, lighting, air conditioning)
- Energy Saving Ordinance (2006) (in Progress)
 - Complete amendment of the existing ordinance: all additional requirements except one-off inspection of heating appliances.



Concept of the Regulations

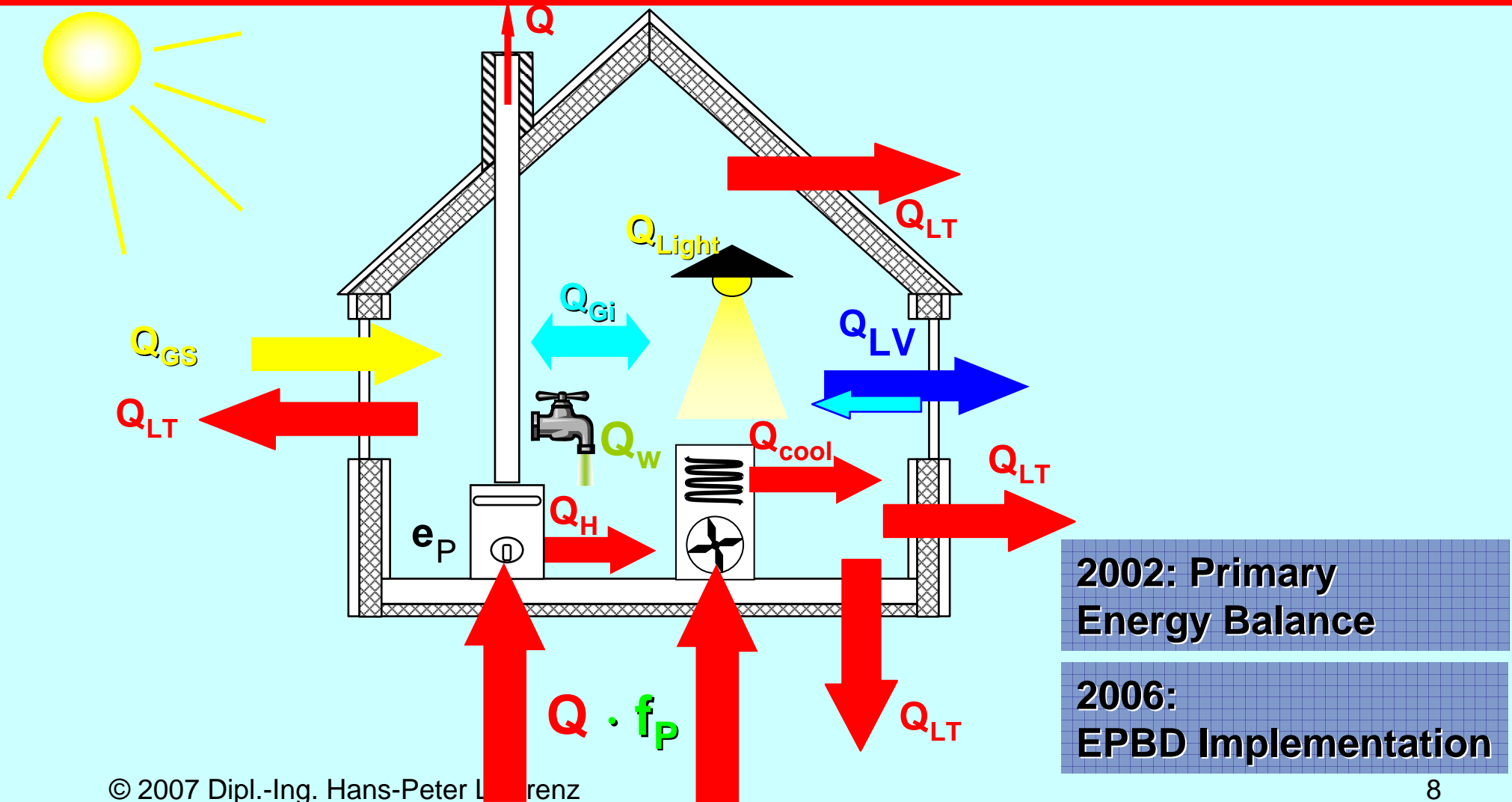


1995:
Heat balance

2002: Primary
Energy Balance

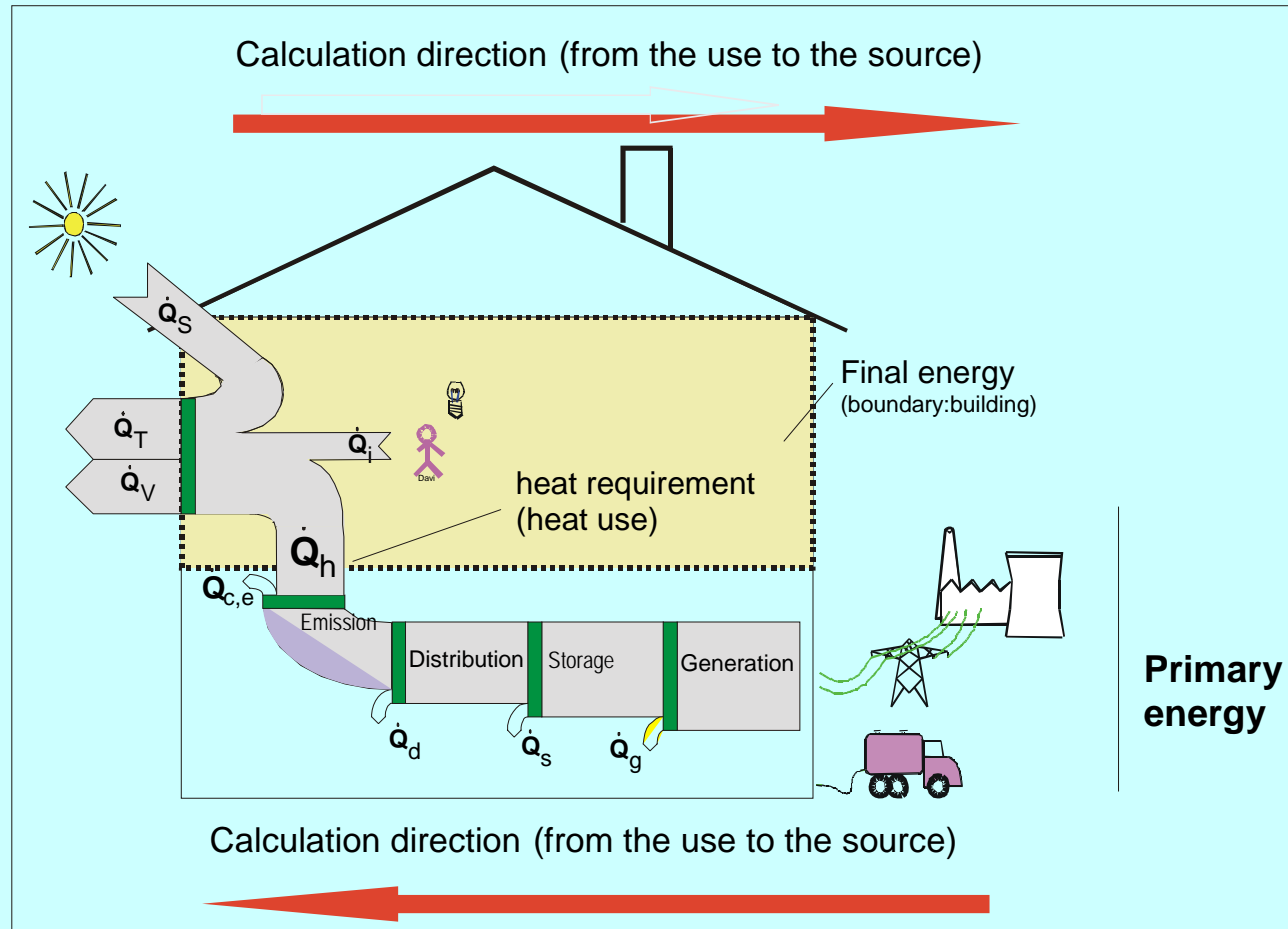


Concept of the Regulations



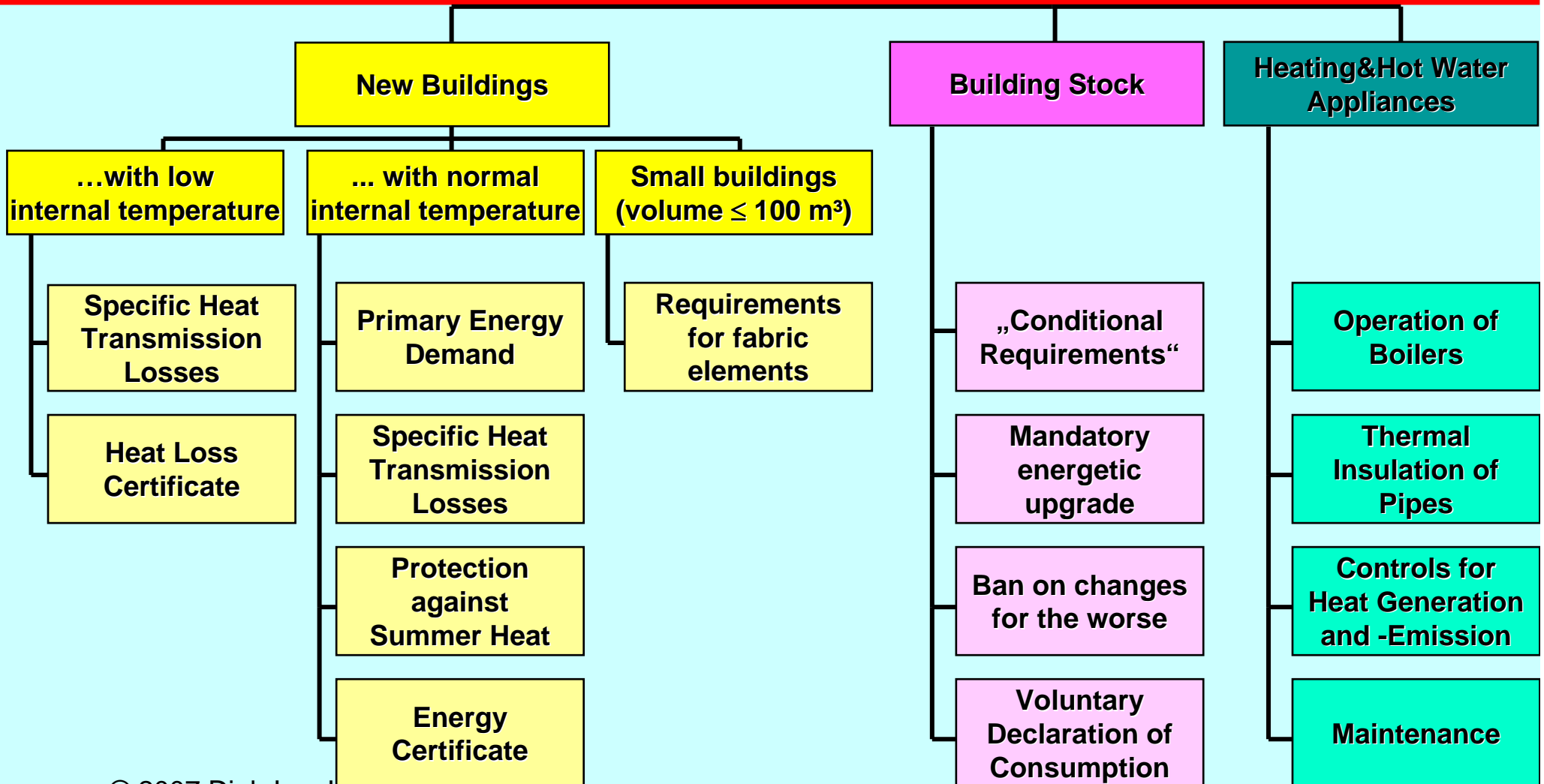


Calculation Scheme of DIN V 4701-10 ~ Calculation Scheme of EN 14335





Total Scope of the current Energy Saving Ordinance





Present requirement-scheme in Germany

- The requirements are given as **formula** depending on
 - the **ratio surface/volume**,
 - the **intended use** (non residential, residential with electric domestic hot water, residential with other kinds of domestic hot water) and
 - the **size of building**.
- **Not generally considered** are
 - different **conditions of use** (indoor temperature, air exchange rate, internal gains),
 - the shape of the building and
 - **local climate**
- Because of the additional aspects “build-in lighting” and “air-conditioning” the **requirement scheme has to be reconsidered**.



The requirement-scheme has to be reconsidered

- Non-residential Buildings are very different in terms of use, size, shape and typical construction.
- Strong impact on the energy-demand for lighting, for ventilation, for cooling by
 - the intended use of the building and its parts,
 - the shape of the building (often even determined by the shape of the building site),
 - the size of the building.
- Even the heating energy-demand may be different because of different internal temperatures and different intended periods of use.
- The future requirement-scheme has to take that into account, otherwise
 - it would not lead to an optimal design (in terms of energy-saving)
 - the energy-certificate for a new building would be misleading, if
 - as usual – it uses the same conditions of use as set up for the requirements.

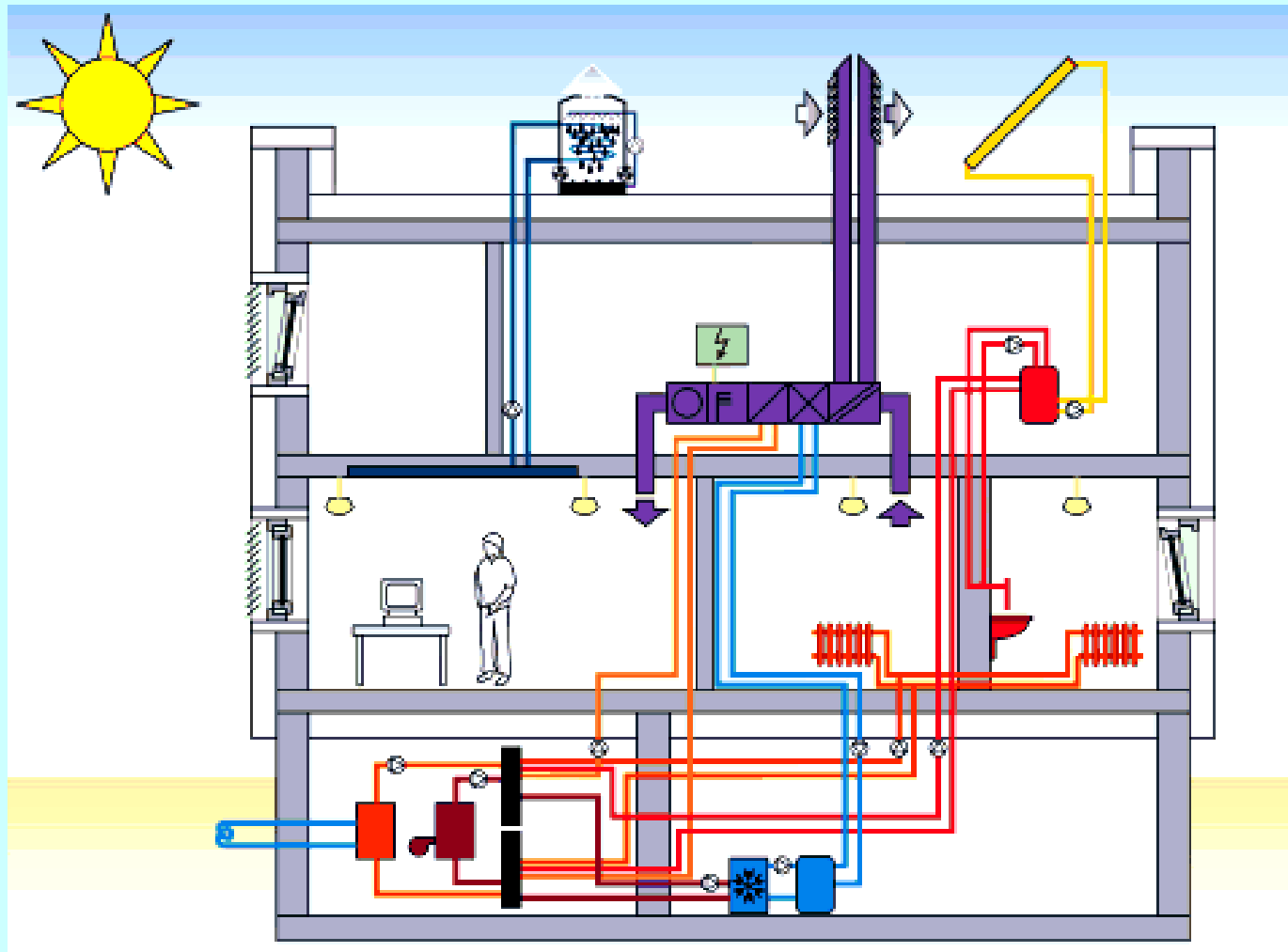


Different approaches for residential and non-residential buildings

- The present calculation- and requirement-scheme is **sufficient for residential buildings**.
- The scheme is in force since 2002; people are just getting accustomed with it.
- The **new aspects** “lighting” and “air-conditioning” have **no impact on the design of residential buildings**:
 - the minimal window-size per m² is subject of building codes; there should be **natural lighting** and **natural ventilation** in every room of a residential building
 - the need of cooling is avoided by requirements on the **maximum solar energy input** (⇒solar shading of windows)
- Germany **keeps the present scheme for residential buildings** and establish a **new scheme for non-residential buildings** only.



Scope of DIN V 18599





The European Directive 2002/91/EG on the Energy Performance of Buildings

Main issues of the Directive

The directive sets up several mandates for the member states.

Member states shall...

- ...adopt a methodology for calculation of the overall energy performance of buildings that may also include a CO₂-emission indicator.
- ...ensure that minimum energy performance requirements are based on this methodology and
- ...review these requirements at intervals not longer than 5 years.
- ...ensure that new buildings meet these requirements.
- ...take necessary measures, that for buildings > 1000 m² the economic feasibility of renewable energies, co-generation, district heating and cooling and heat pumps is considered and taken into account.



The European Directive 2002/91/EG on the Energy Performance of Buildings

Member states shall...

- ...ensure that in cases of **major renovations of buildings > 1000 m²** their energy performance is upgraded to meet **requirements** derived on the basis of the overall energy performance
 - either for the building as a whole
 - or for the components subject to renovation
- ...ensure that whenever buildings are **constructed, sold or rented out**, an **energy performance certificate** not older than 10 years is made available to the owner or by the owner to the prospective buyer or tenant,
- ...lay down the necessary measures to establish
 - **regular inspections of certain boilers** and
 - **one-off inspections of whole heating installations** older than 15 years and > 20 kW
- ... lay down the necessary measures to establish a **regular inspection of air-conditioning systems > 12 kW**



Energy- and Climate-Strategy in Germany

- Energy-Strategy of the German Government
 - Reduction of energyconsumption by energysaving
 - Cover the remaining energyconsumption by renewable Energy
 - Employment of conventionell energy sources with more energyefficiency (Energy transformation)
 - Enhance the efficiency of energy conversion
- Climate-Strategy of the German Government
 - Fullfill the Kyoto obligations
 - Restriction of the CO₂-discharge for the sections transport, private household, trade and business.
 - Putting the Energy performance of bulidings directive into action



Bundesausschuss
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Energycertificate for the Puijiang Office Building, Puijiang Intelligence Valley, Shanghai (09-21-2006)



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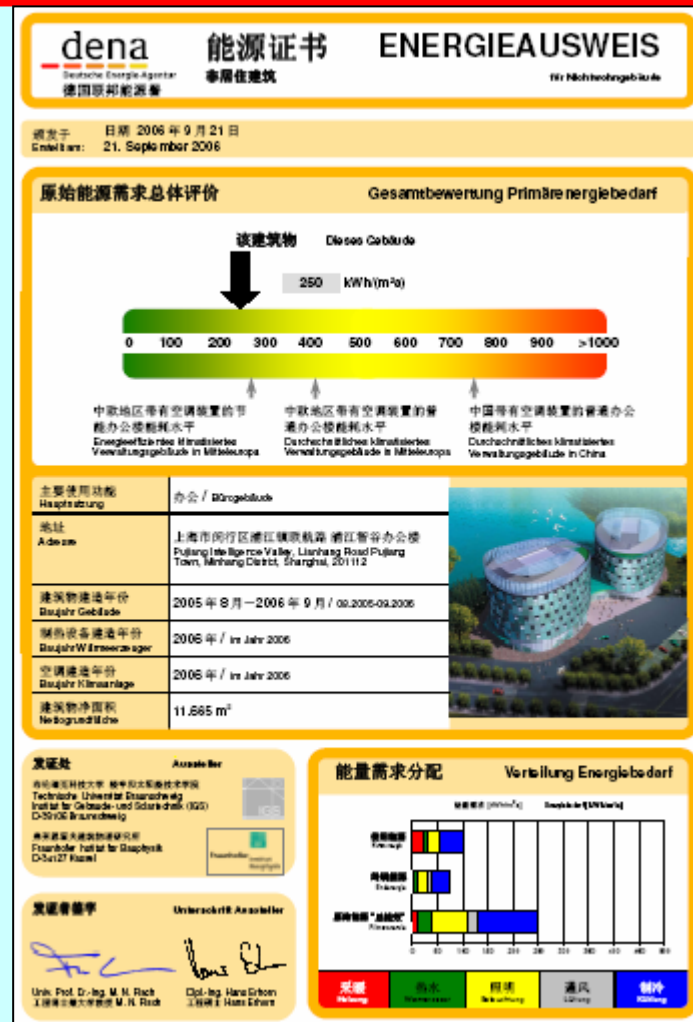
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Energy Certification for the Puijang Office Building





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Energy Certification for the Puijang Office Building





How do I get further Information?

- Information on the energy performance regulations in the different EU-member states:
<http://www.enper.org>
- Information on the present German regulations in detail:
<http://www.bbr.bund.de>