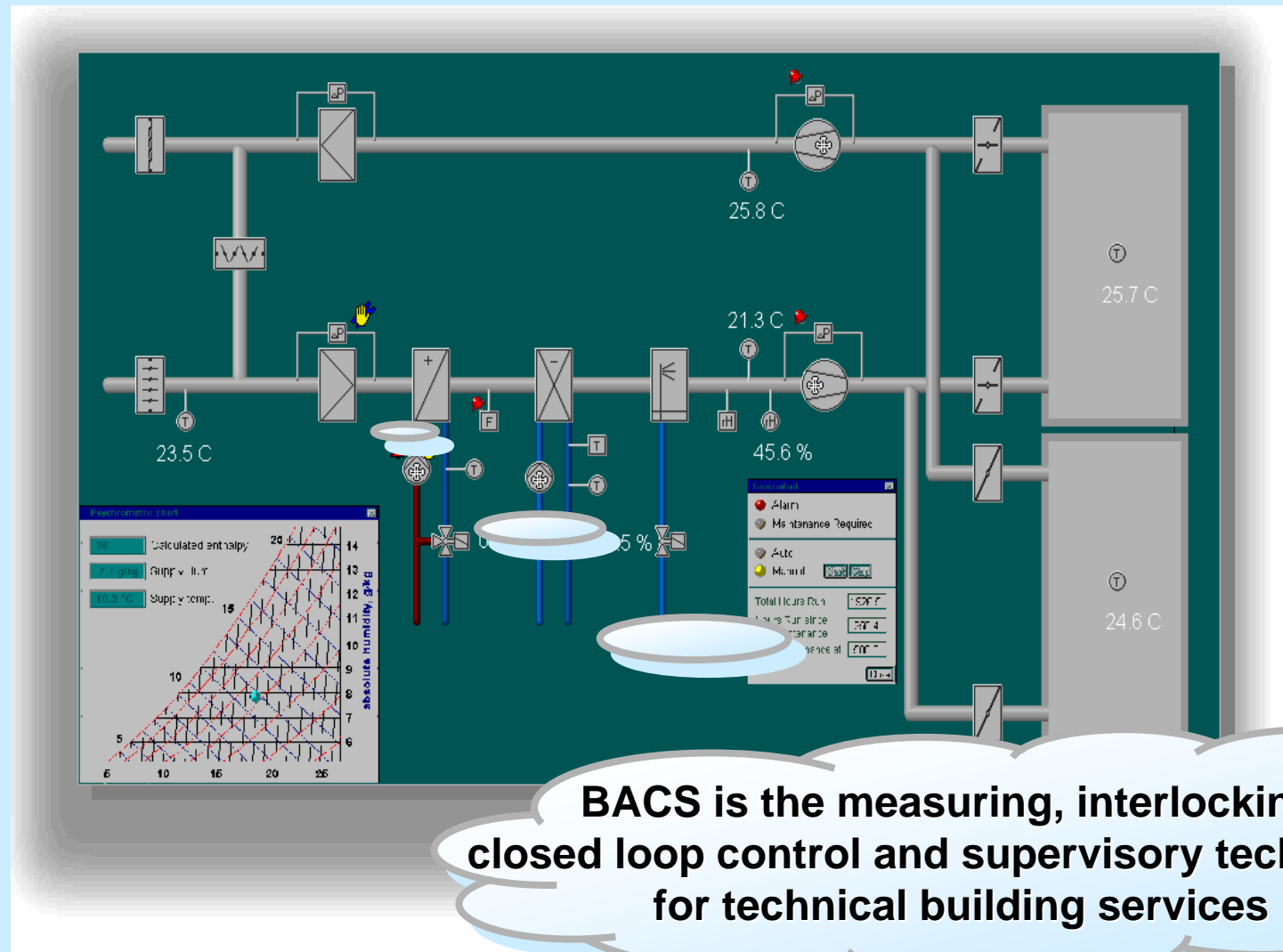


EUROPEAN COMMITTEE FOR STANDARDISATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG



Relation between  
Energy Performance in Buildings  
to  
Building Automation, Controls (BACS)  
and  
Building Management (BM)  
standardised by CEN/TC247

# Definition of Building Automation and Control System (BACS)



## Relation between BACS and energy performance of buildings



The use of buildings has changed enormously, due to greater flexibility of use, employment, and so on. This development demands buildings, which can adapt quickly to these changes.

**Standard use  
of the building**

**BACS** adapt  
the use of the building  
depending on  
the real user needs,  
real outdoor climatic  
etc.

**Actual use  
of the building**

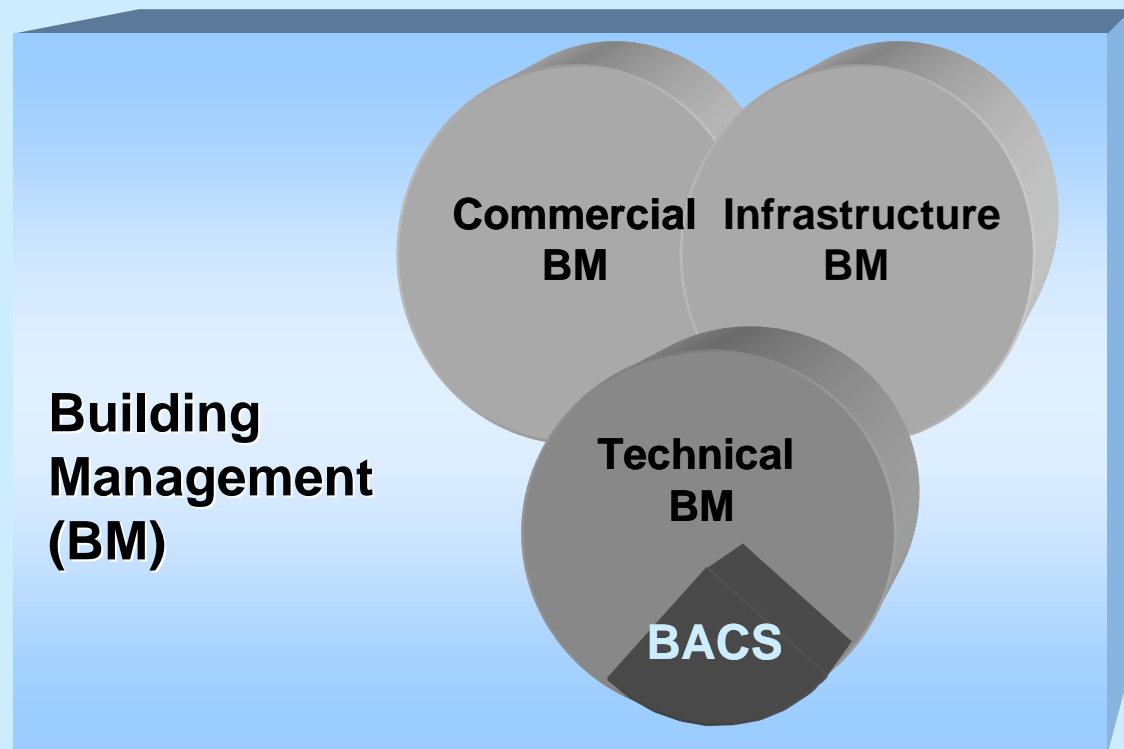
### **Adaptability**

**A key factor for energy performance of buildings  
through elimination of unnecessary demands / consumption**

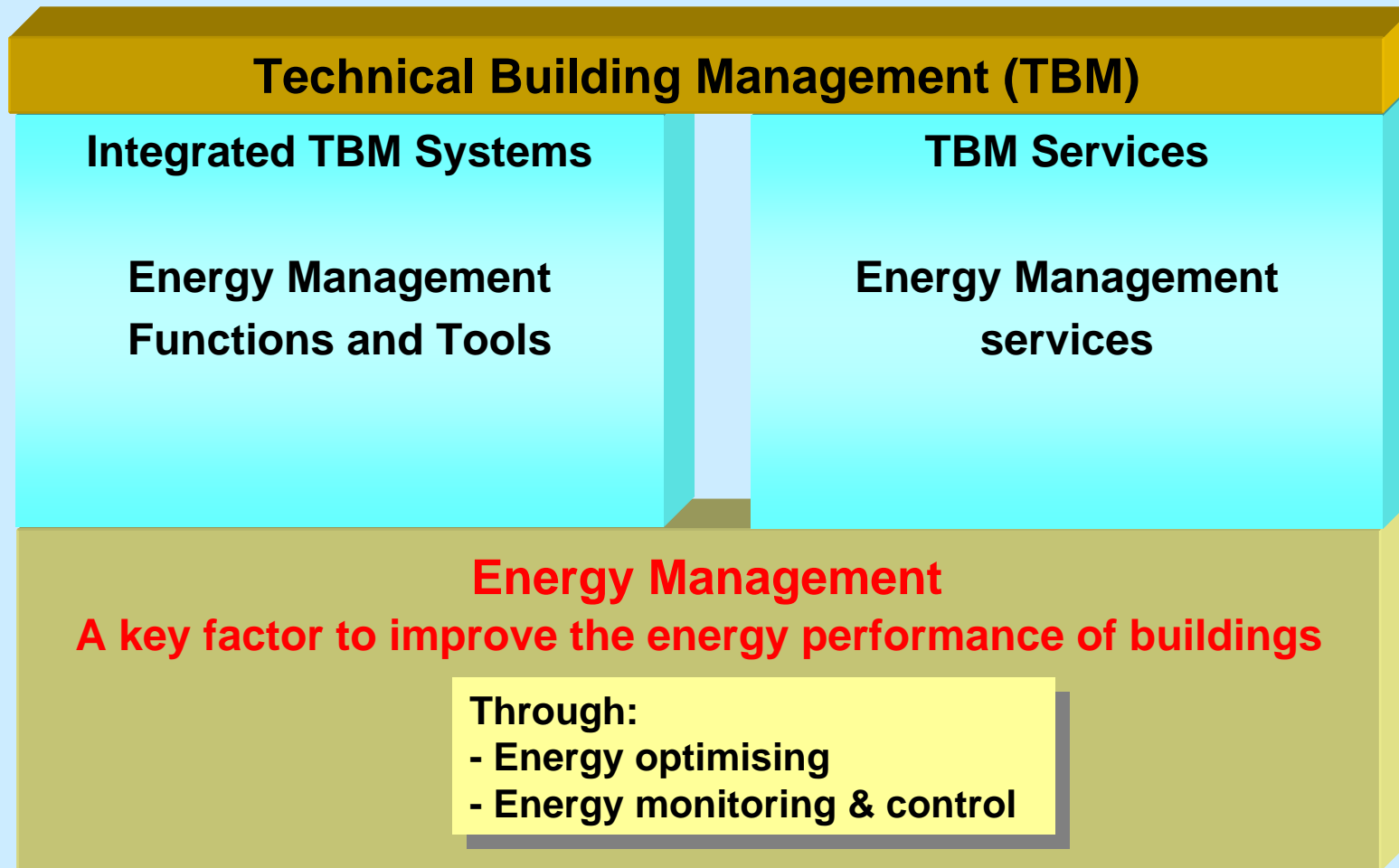
## Definition of Building Management (BM)

### **Building Management (BM)**

All services relate to the operation and management of buildings.



# Relation between Building Management and energy performance of buildings



## Relation between EPD and BACS + BM



### DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the energy performance of buildings

Art. 5  
Secure energy performance in new buildings

Art. 6  
Secure energy performance in existing buildings

Art. 7  
Issuing certificates

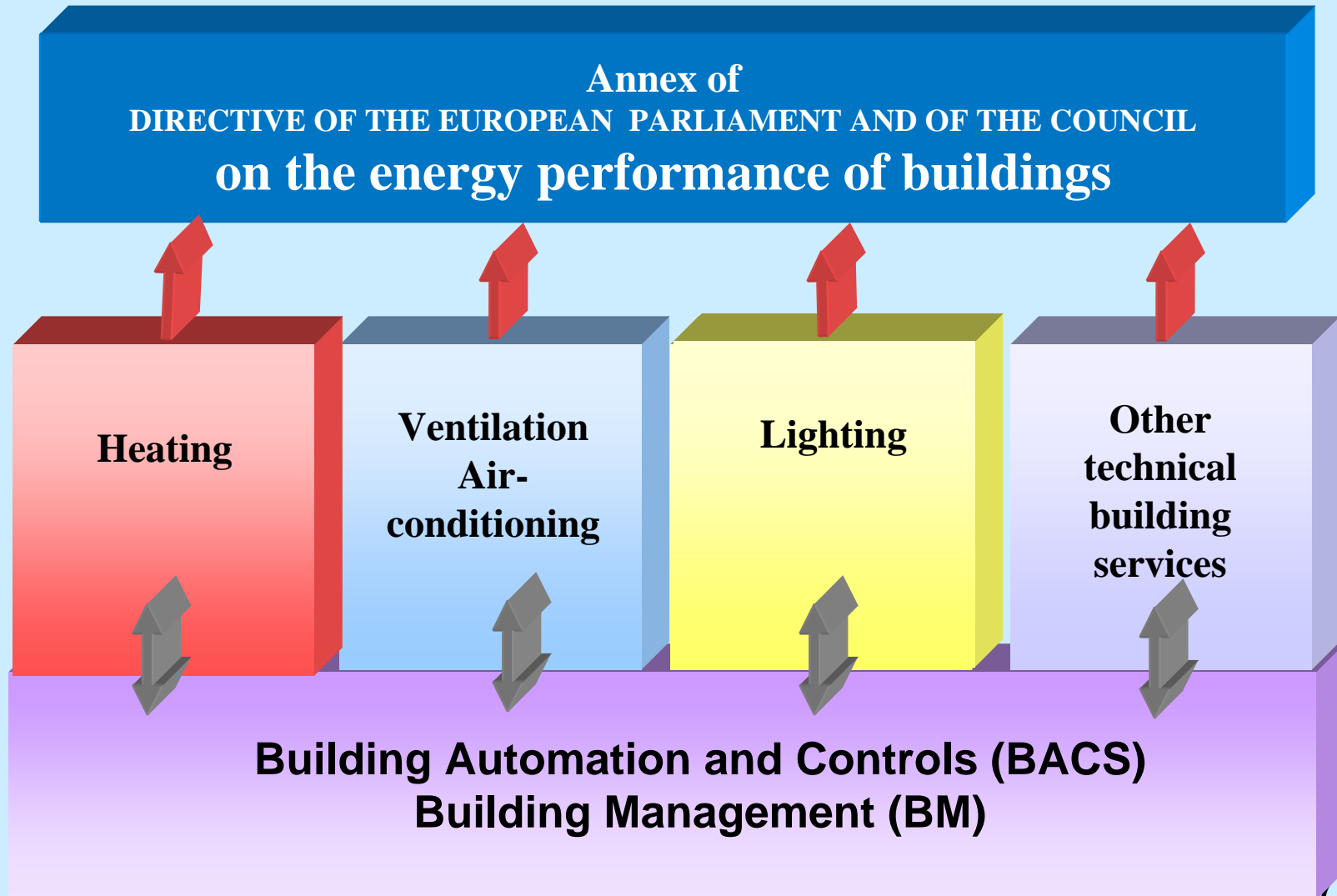
Art. 8  
Inspection of boilers

Art. 9  
Inspection of air conditioning

Building  
Automation  
and Controls  
(BACS)

Technical  
Building  
Management  
(TBM)

**Relation between disciplines mentioned in the annex of the EPD and BACS + BM**



## Technical Committee CEN/TC247

Since 1990 CEN/TC247 is in charge of developing European standards for **Building Automation, Controls and Building Management** in accordance with its scope



## Scope of CEN/TC247

**Standardisation of building automation, controls and building management for residential and non-residential buildings.**

**These standards** include the definitions, requirements, functionality and test methods of building automation products and systems for automatic control of building services installations and the **primary integration measures** including application interfaces, systems and services to **ensure efficient technical building management** in co-operation with commercial and infrastructure building management. Excluded from this scope are areas of building automation that are under the responsibility of other CEN/CENELEC TCs.

A red arrow originates from the text 'ensure efficient technical building management' and points towards the 'Energy management' box.

Energy management

**Standard series  
exists or under preparation by CEN/TC247**

**Controls for Heating Systems**

**Individual Zone/Room Control**

**Building Automation and Control Systems**

**Open Data Transmission (BACnet – Konnex – LON)**

**Building Management Integrated Systems  
Building Management Services**

**Energy management**

# How are control functions considered in regulations



## ◆ Two steps:

- 1st step : minimum level of control is requested:
  - E.g: intermittent heating control is mandatory
- 2nd step : different level of control are considered and their impact on energy performance is calculated
  - E.g: difference between use of fixed time intermittent heating (EN 12098-1) and use of optimiser (EN 12098-2)

# Control functions considered by at least one national regulation



- Heating
  - Generation control
  - Distribution control: temperature + pumps
  - Emission control
  - Intermittent heating control
- Ventilation
  - Time scheduling
  - Demand control ventilation flow
- Lighting
  - Time scheduling
  - Presence control
  - Light level dimming
- Cooling
  - Automatic control of solar protection

# Control functions considered by CEN TC 247



## ◆ Heating

- Generation control
- Distribution control : EN 12098-1 EN 12098-3
- Emission control: 3 draft standards + test method
- Intermittent heating control: EN 12098-1-2-3-4-5

## ◆ Ventilation, Lighting, Cooling

- Description of different control function in prEN ISO 16 484
- No testing method included

# Control functions considered by other TC's developing energy consumption standards



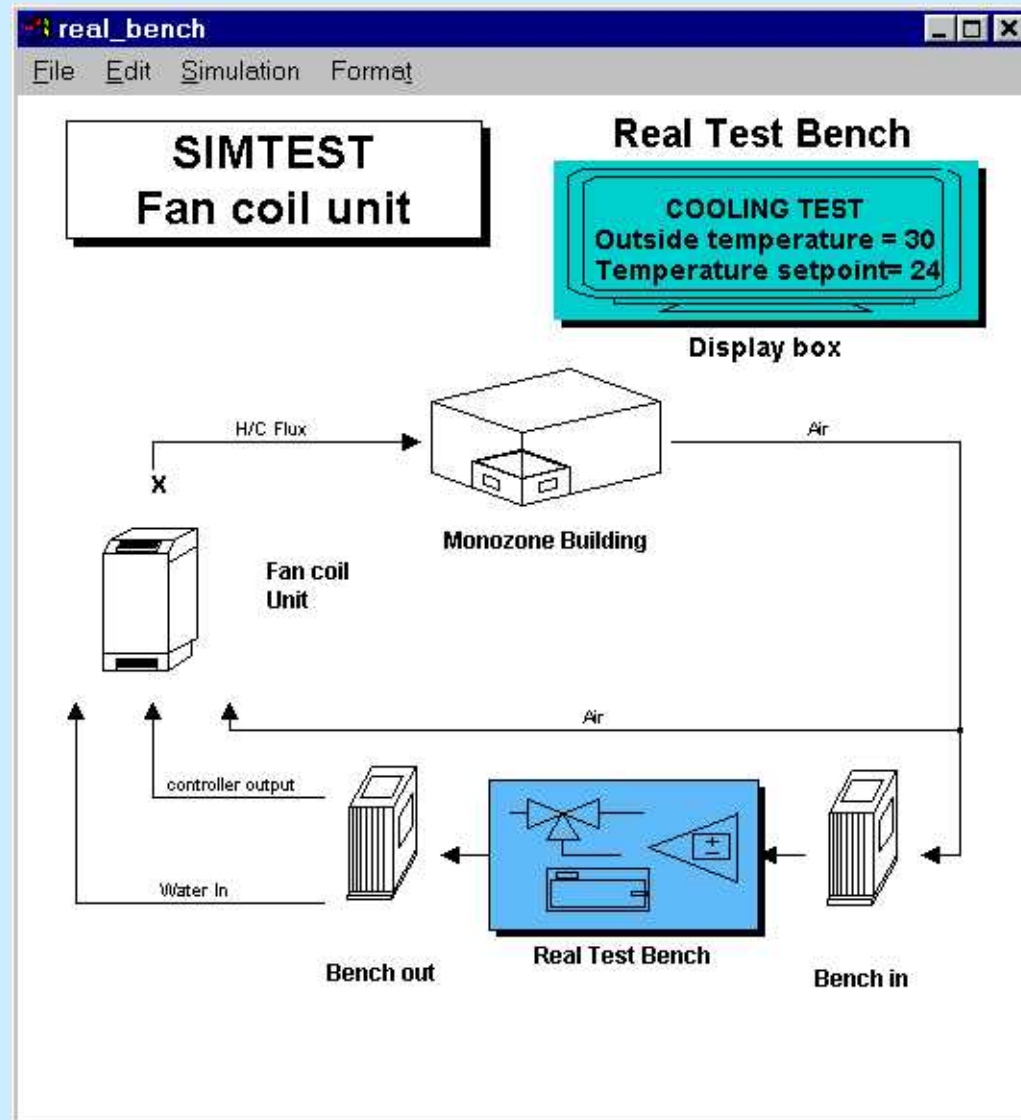
- ◆ Heating (docs from TC 89 and TC 228)
  - Generation control :
    - reference to generation control in TC 228 WG4 N 267
  - Emission control :
    - reference to room control in TC 228 WG4 N251
    - reference to TC247 standards as an option
  - Intermittent heating control :
    - reference to intermittent heating control in EN832 + pr EN-ISO 13790,
    - no reference to CEN TC 247 standards
- ◆ Cooling, Ventilation, Lighting
  - No energy performance calculation standards available

# Cen TC247 test method



- ◆ In order to get an efficient test procedure CEN TC247 has developed a new testing methodology within the co normative research project SIMTEST
- ◆ Advantages of the procedure
  - Easy to apply
  - Well representative of real application and of control/hvac/building interactions
- ◆ Principle of the procedure
  - Use of a “virtual building” which is controlled by the product being tested

# Sintest Software





# Prospective to apply Energy Performance Directive



- ◆ For TC 89, 156, 228 ?
  - Develop standards including the energy flows not already covered: lighting, ventilation, cooling...
- ◆ For TC 247
  - Develop standards to assess the performance of the control of lighting, ventilation, cooling...
- ◆ For TC89, 156, 228... in coordination with TC 247
  - Define how to make coordination between these two groups of standards