

Welcome to Tende e Tecnica 2009



International Workshop



Energy Savings & Comfort

Sun shading and blinds: European activities **Input parameters for simulation calculations**

October 9, 2009

Rimini Fair Grounds

Dick Dolmans – secretary general



Energy Savings & Comfort

A short history of ES-SO

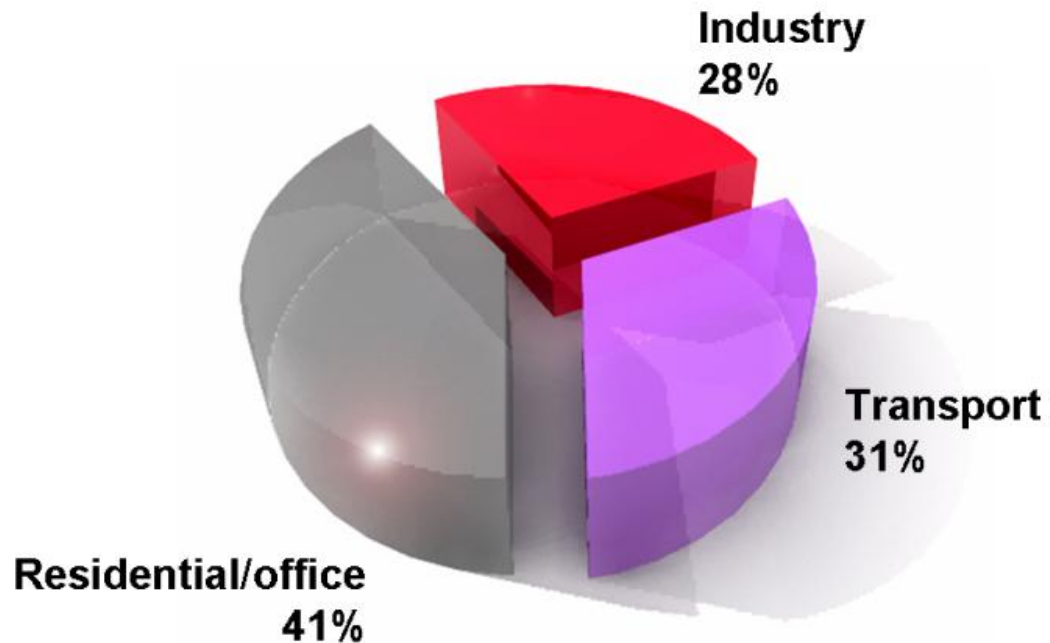
- Started Dec 2004, officially incorporated March 2005
- Started with 7 member countries, now 15 countries
- Interest from several other countries
- Main objective: get solar shading recognized as a building technology in new EU legislation
- Main activities:
 - Lobby the EU authorities
 - Write articles about the business
 - Get acquainted with other building technologies
 - Participate in EU seminars & events
 - Be active in EU projects

How to get solar shading recognized

- Energy savings are an essential element of the search for sustainability – as is renewable energy
- Buildings are major source of potential savings
- ‘Holistic building’ is the new approach
- Therefore, our industry needs to co-operate with other building sectors for greater efficiency
- But the crucial issue is: can we demonstrate energy savings with numbers and reliable calculations?

European built environment: 41%

Global energy consumption





Our basic message to the EU

1. Solar shading **reduces cooling load** and therefore helps reducing peak load
2. Solar shading, if properly automated, can **reduce heating load** in winter, hence saves energy
3. Solar shading, if smartly selected, can promote the use of free natural daylight and **reduce the use of electricity for lighting** – saving precious power
4. Solar shading saves energy while enhancing **comfort**
5. Using these arguments to increase our market can only succeed by **acting on national level**
6. Our industry provides **local work, local jobs**

But the question is: how much energy savings?

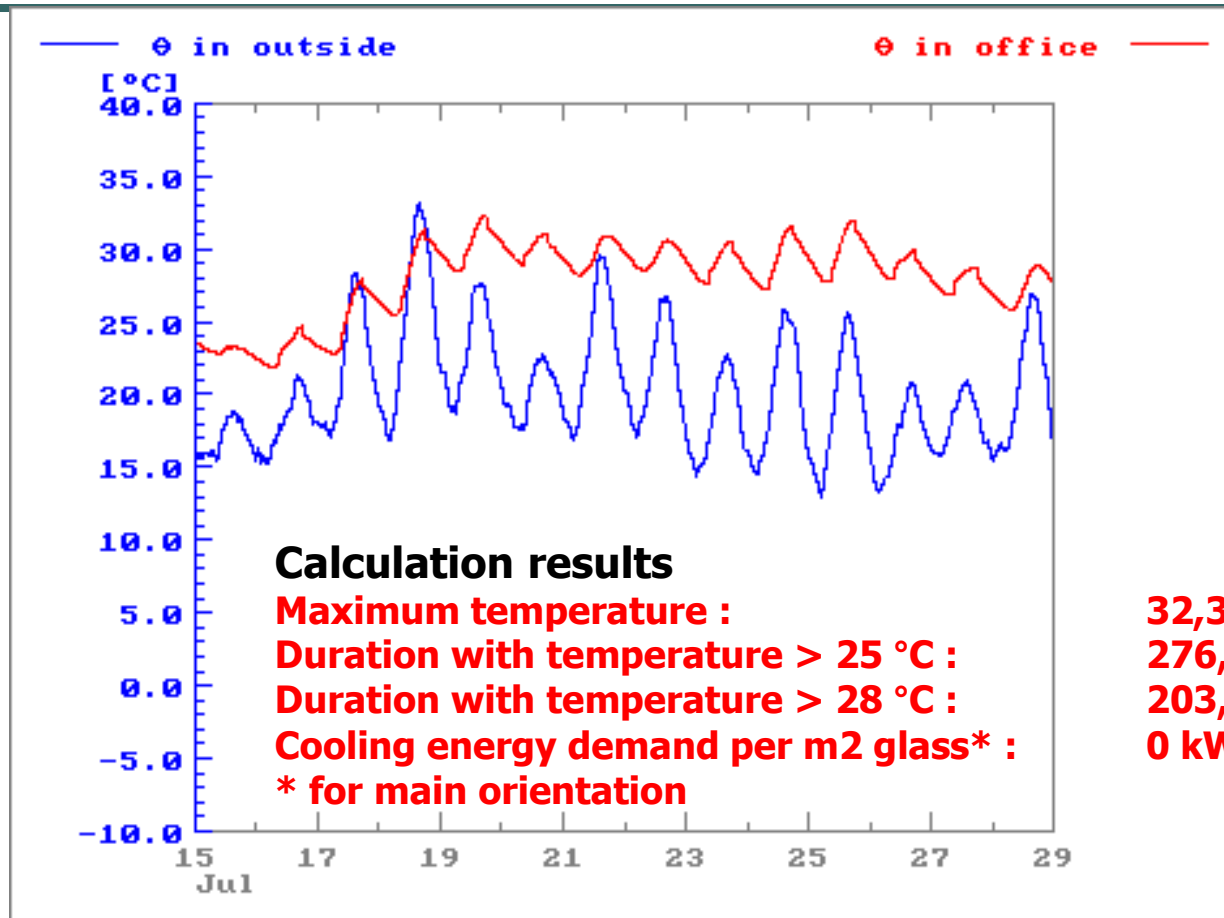
1. It is possible to calculate the influence of solar shading to the energy needs of a building
2. Detailed calculations are the work of building physics engineers
3. Programs used are called *building performance simulation programs* or also BIM
4. To use these, all input parameters of a building must be known and recorded
5. This is necessary for every complete study in absolute figures



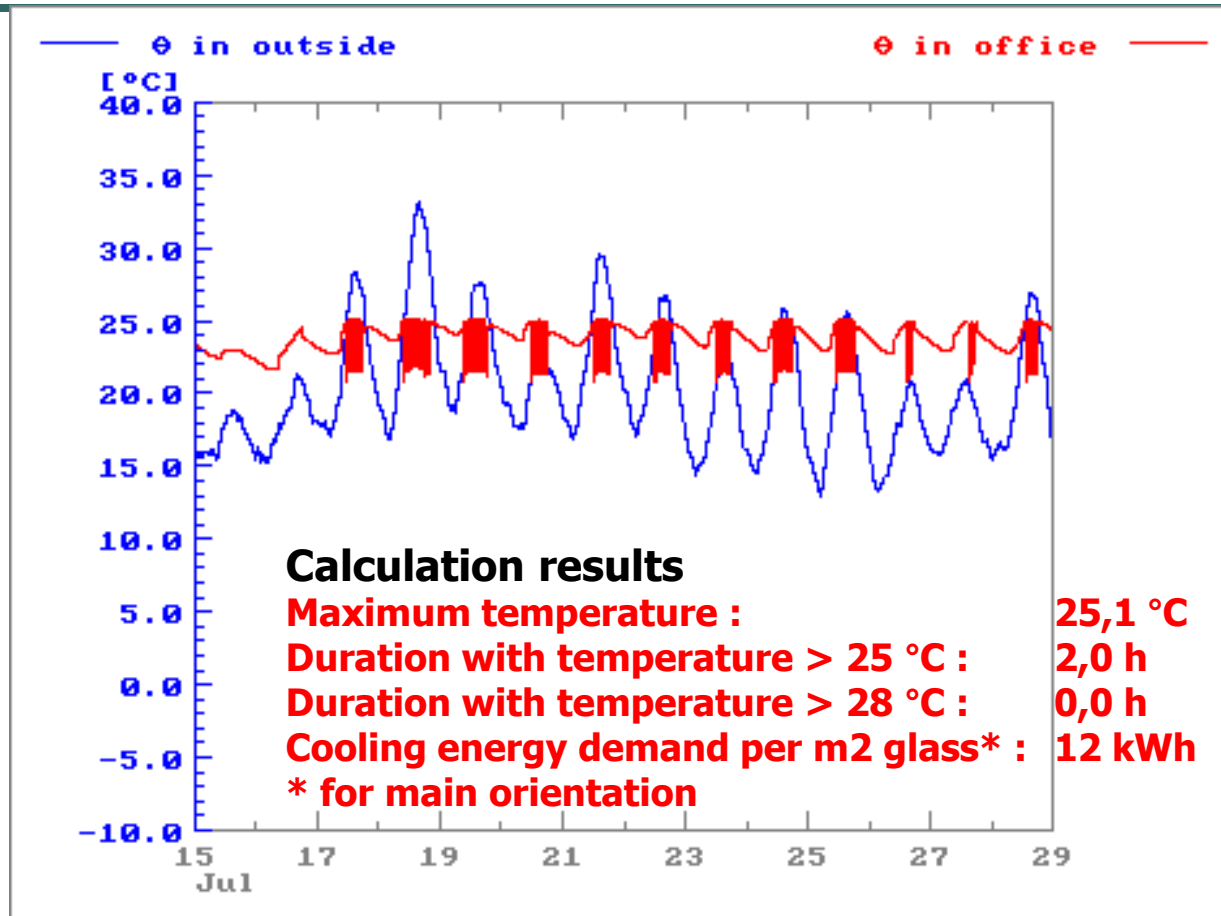
What does the solar shading industry want to achieve?

1. Not a full engineering study, but a comparative, simplified, yet reliable and indicative calculation
2. 'Comparative' meaning that we want to know the difference between energy needs **without** versus **with** solar shading – not absolute figures
3. 'Simplified' meaning: accessible to trained professionals who provide results free of charge
4. 'Reliable and indicative' meaning that the programs used must be recognized and according to standards, but the result is an indication only, given the assumptions made, it is not a full engineers' study

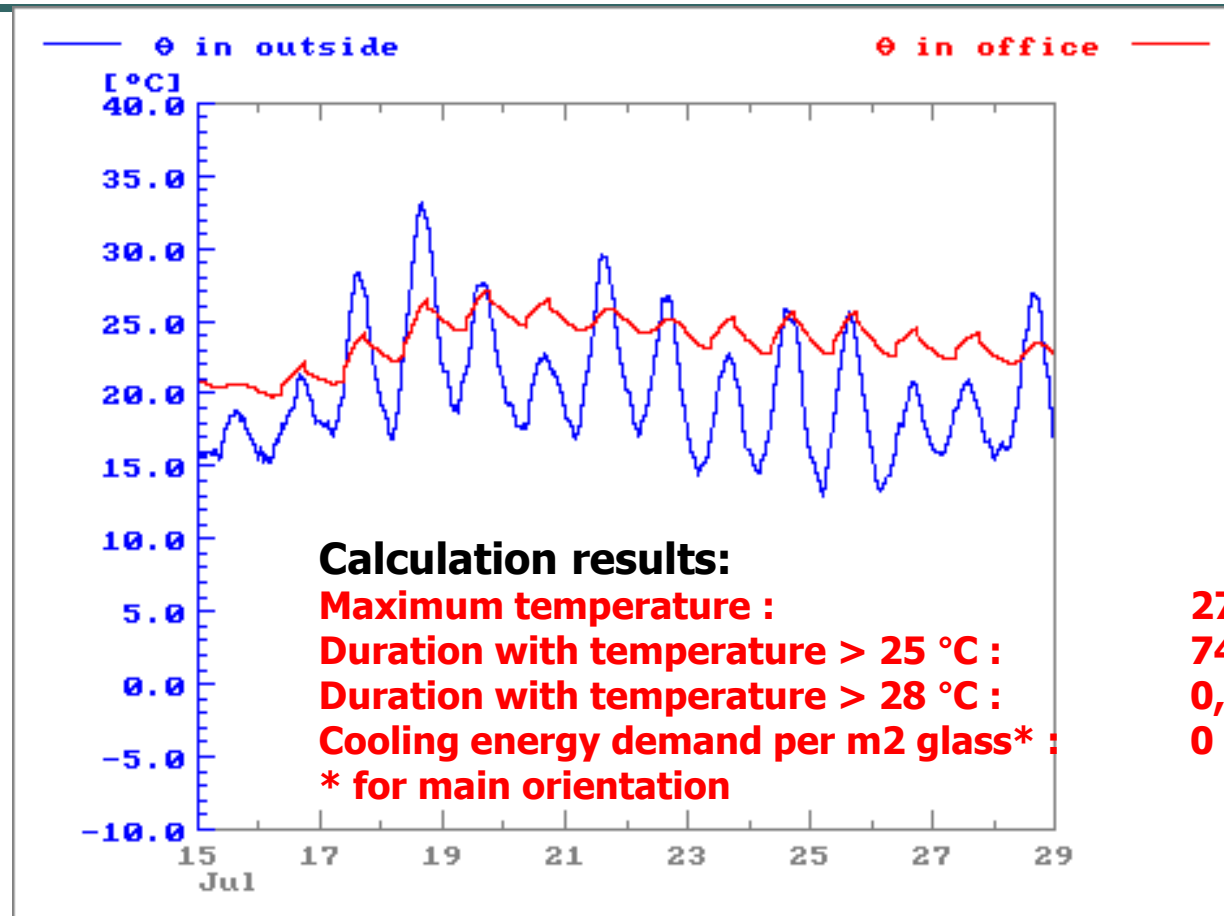
Example: Vienna, July 15-30: outdoor & indoor temperature, neither shading nor air conditioning



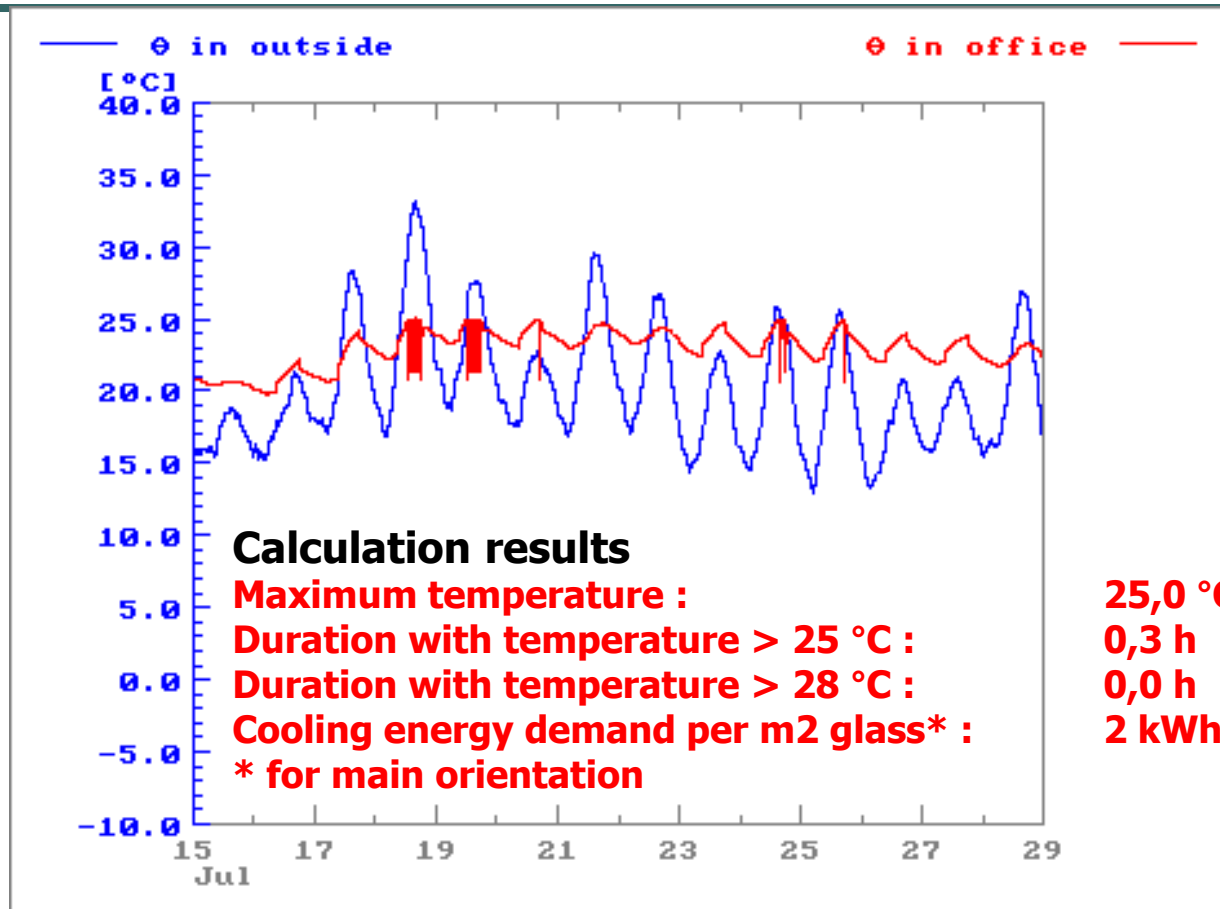
Outdoor & indoor temperature, no shading, only air conditioning at $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$

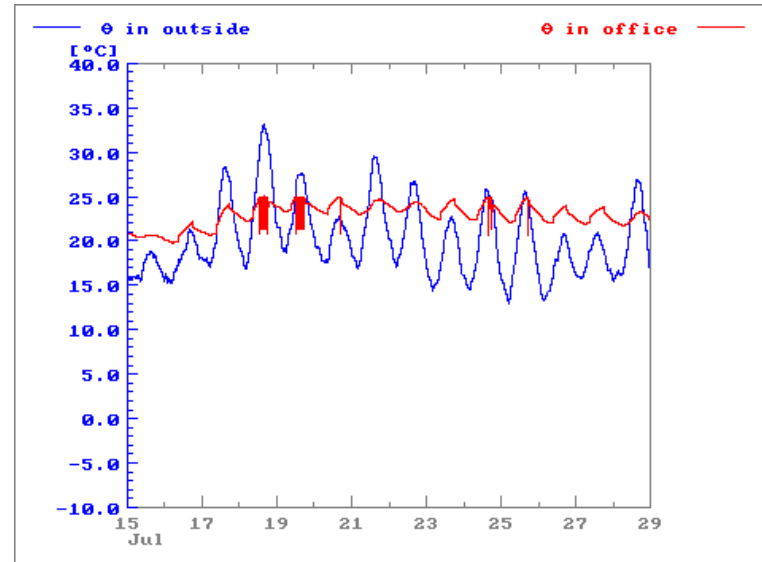
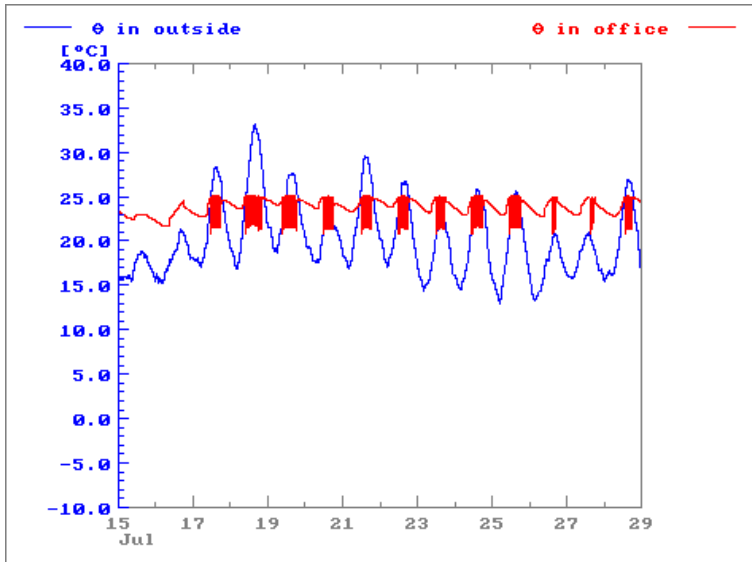
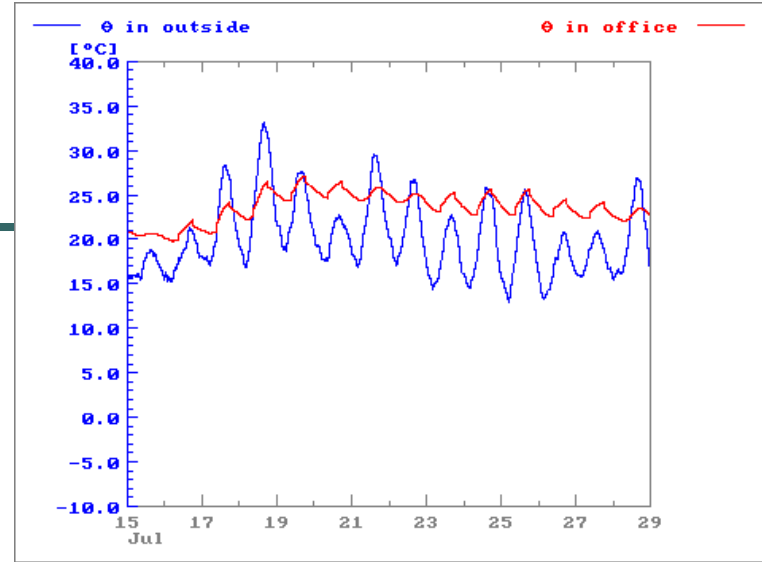
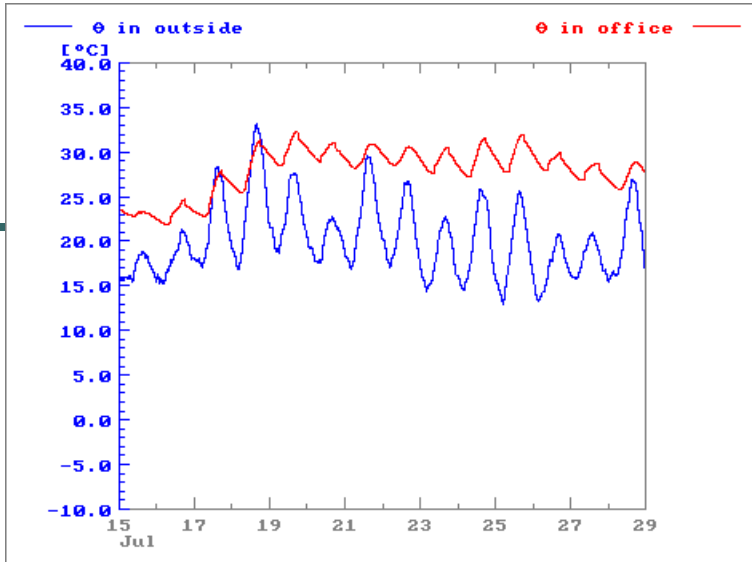


Outdoor & indoor temperature, external solar shading, no air conditioning



Outdoor & indoor temperature, both external solar shading and air conditioning





Simplifying means setting credible *fixed* parameters

1. Building skin materials (bricks, roofs, walls, floors . . .) to be according to standard local building practices
2. Room size, just an example
3. Automated operation based on an agreed threshold values for solar energy levels and minimum indoor temperature
4. User expected comfort conditions over course of day and night
5. Internal heat gains (from people & equipment)
6. Ventilation rate

Reliable means keeping a number of parameters *variable*

1. Geographic location and climate data
2. Orientation of building
3. Quality and quantity of glazing
4. Does the building have solar shading?
5. If so, type and position of solar shading device (internal, external, in between?)
6. The operation of the shading device: up or down?
7. Material properties of shading device
8. Does the building have an air conditioning installation?

Simplifying means setting credible *fixed* parameters

1. Building skin materials (bricks, roofs, walls, floors . .) to be according to standard building practices
2. Room size **consensus on 5m x 5m x 3m**
3. Automated operation based on an agreed threshold for solar energy levels **150 W/m²** and minimum indoor temperature **20°C & 26°C**
4. User expected comfort conditions over course of day and night
5. Internal heat gains (from people & equipment) **25 W/m² in offices**
6. Ventilation rate **national legislation or 1 vol/h**

What's next?

1. ES-SO does not intend to become a building physics engineering company
2. ES-SO encourages its members to become familiar with the subject and to use calculation procedures
3. Because the need for quantified data is clear and urgent
4. So industry must provide product data based on EN-standardized measurements in certified labs
5. Several shading simulation programs are already freely available (Parasol, WIS . . .)
6. Other full-fledged programs are engineering tools (TRNSYS, EnergyPlus, Capsol, Enerk) for specialized companies
7. Several ES-SO members are working on simplified programs

For the credibility of our business, it is essential that international calculation or measurement programs or campaigns have consistent results

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grazie