WP4 – Determination of standard system applications and most promising markets detailed work programme

SolarCombi+ Project meeting

Bergamo 3-4.3.2009

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EURAC

Identification of most promising markets and promotion of standardised system configurations for the market entry of small scale combined solar heating & cooling applications
EIE/07/158/SI2.466793 09/2007 – 02/2010

Objective

- Evaluation of the results of the virtual case studies
- Determination of most promising applications and areas

→ **Task1: Standard system configurations** to be communicated and promoted towards a wide audience

→ **Task 2: Package solutions**, to be marketed by the single chiller producers

→ **Task 3: Most promising applications and markets**

→ **Task 4: Online tool**, which helps assessing the best configuration in the users specific case

→ **Task 5: Key data** and "**libraries**" for calculation codes and **short info** for feasibility toolboxes (EPBD)

Role & contribution of the partners

	Task 1	Task 2	Task 3	Task 4	Task 5	∑ hours
EURAC	contribution	with CW	X	X	X	860
CRES	contribution			X		110
ISE	contribution	with SorTech		X		220
AEE INTEC	contribution	with SOLution				200
UNIBG	coordination					200
TECSOL	product indepen-dent solutions	with EURAC				220
IKERLAN	contribution	with ROTARTICA				150
ROTARTICA		with IKERLAN				160
CW		with EURAC				160
SorTech		with ISE				160
SOLution		with AEE INTEC				50
SK		with TECSOL				50
estimated ∑hrs.	470	1200	320	470	80	2540

Task 3 – Most promising applications

The analysis of the virtual case studies will reveal the **most promising markets** for early market access

These are in particular **climatic regions** and **applications**, where Solar Combi+ systems have particular high economical efficiency, due to

- High workload and efficiency of each component, leading to low specific costs
- Favourable economic circumstances (high fuel/electricity cost, subsidy schemes, etc.)

Task 3 – Most promising applications

Virtual study cases are analysed, combining

→ performance information
→ economic circumstances
→ solar thermal market information
→ Traditional chillers' market information

Methods to be applied: statistics, matrix analysis, GIS

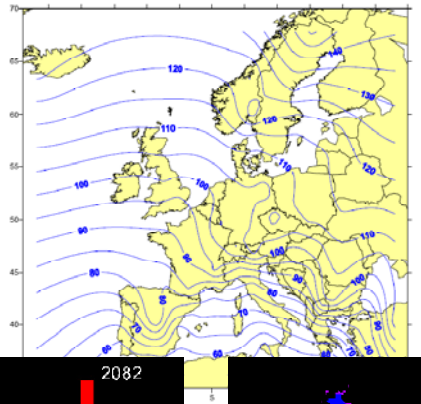
Elaboration of visual representations as e.g. maps.

Task 3 – Most promising applications

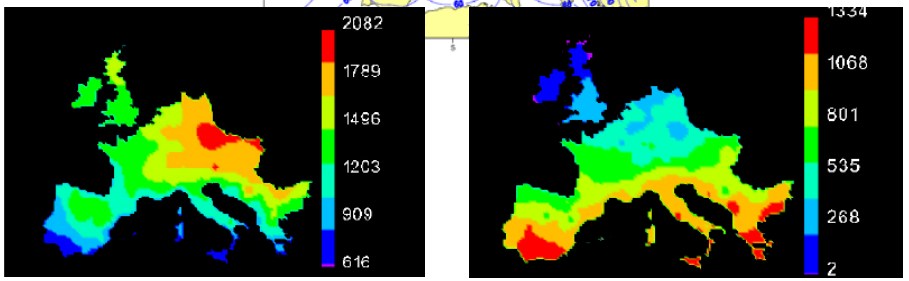
GIS – Geographical Information System

- Climatic information (EHI/ECI)
- Cold and heat demand
- Electricity and fuel cost
- Solar thermal market sharing
- Traditional chillers' market figures
- ...

EHI



HDD/CDD



Task 4 – Online tool

Tasks 1 and 2 determine standard system configurations and "Package solutions" to be employed by the industrial partners.

Nevertheless, **customers, planners and architects need advice about specific installations**: which solution suites best for given working condition?

An inquiry tool, based on the Oracle DB, will make the results of selected virtual case studies available online.

Task 4 – Online tool "case summary"

- Input values

Simulations' parameters:

- Climate
- Application
- Cold distribution sys
- Solar collector type

Selected by user

Dimensioning:

- Yearly cooling demand
- Cooling pick load

Optional

Cost related parameters:

- Installation costs - subsidies
- Planning costs
- Maintenance costs ?
- Operational costs ?

- Output values

Energy related outputs

- solar fractions
- (solar) cooling time
- (solar) heating time
- COPs (thermal, electrical)

Environment related outputs

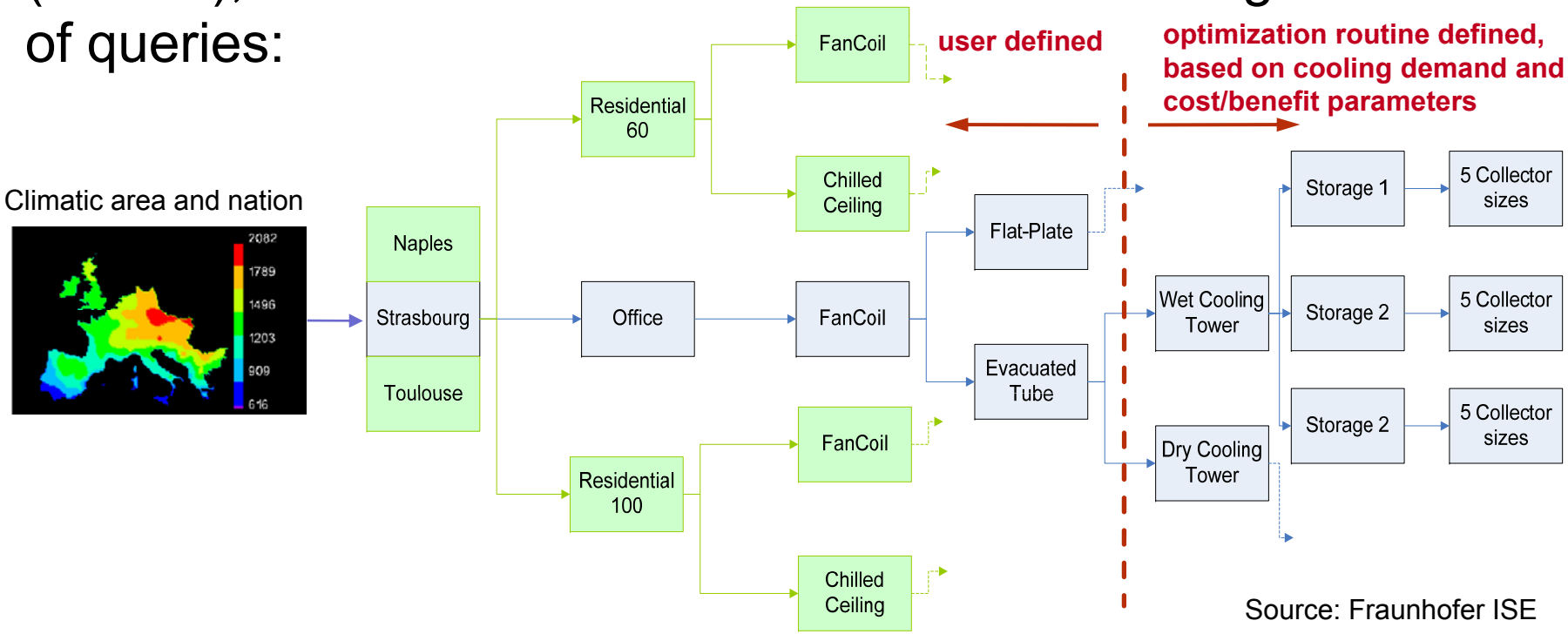
- PE saving
- COP_{PE}
- CO_2 saving

Cost related outputs

- Collectors area/Storage size
- Investment cost ?
- Pay back time ?
- Operating costs ?

Task 4 – Online tool

Once the standard system configurations will be available (Task 1), the online tool will address the DB through a number of queries:



Source: Fraunhofer ISE

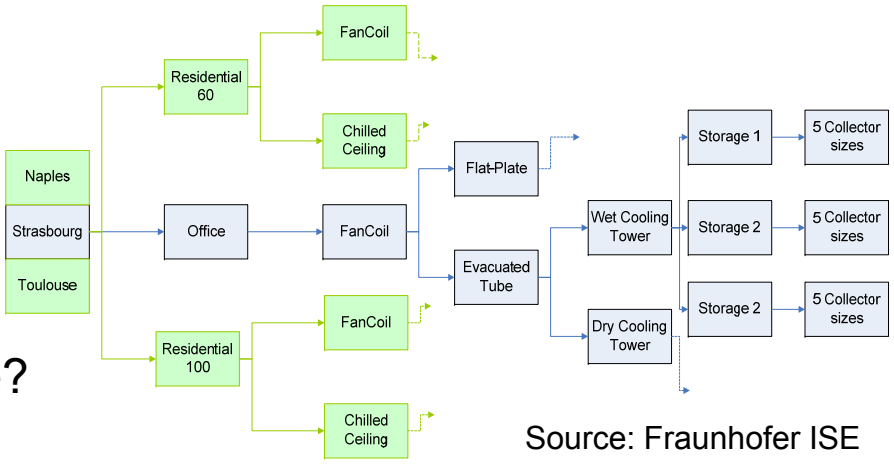
Task 4 – Online tool

The “choice” flow is guided through possible schemes:

- if the “Strasboug like” area is chosen, only the office application is available
- if Spain is chosen, only dry air cooler is available
- if office is chosen only fan coil as distribution system is available
- …

At each choice, a pop-up window guides the user:

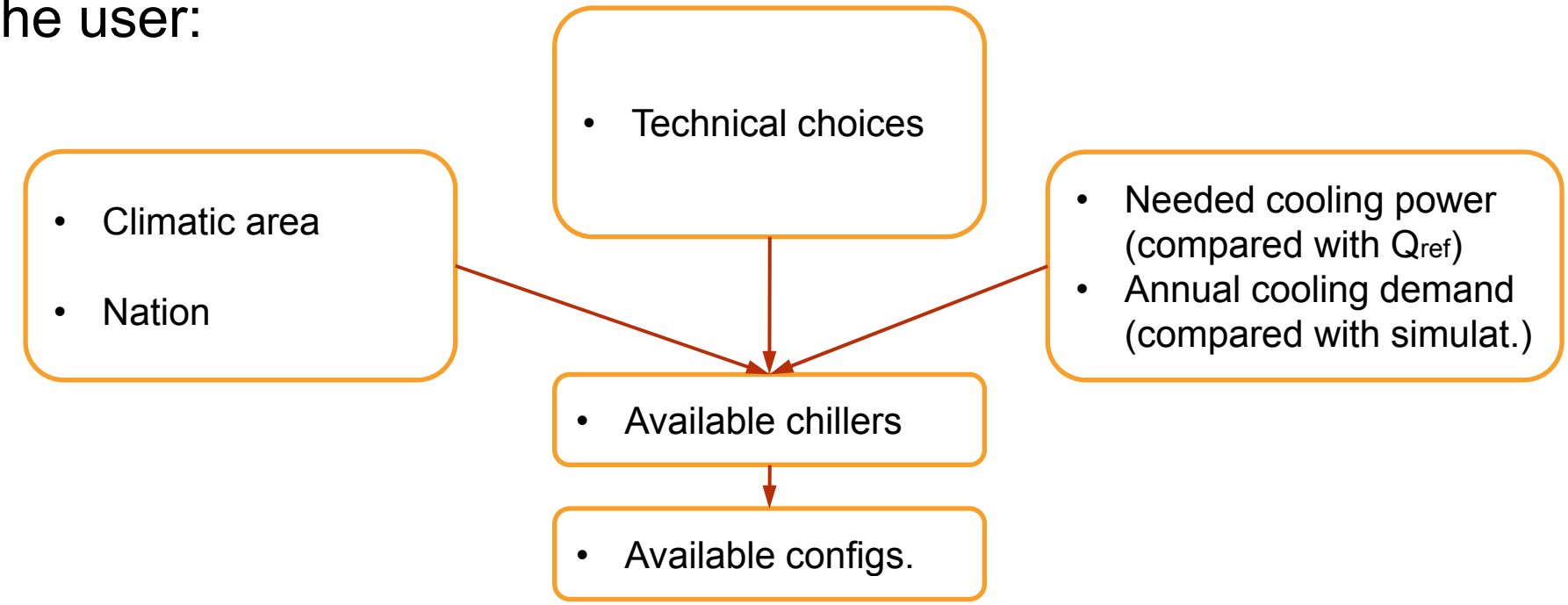
- what R60 and R100 stay for?
- why flat plate instead of evacuated tube?
- …



Source: Fraunhofer ISE

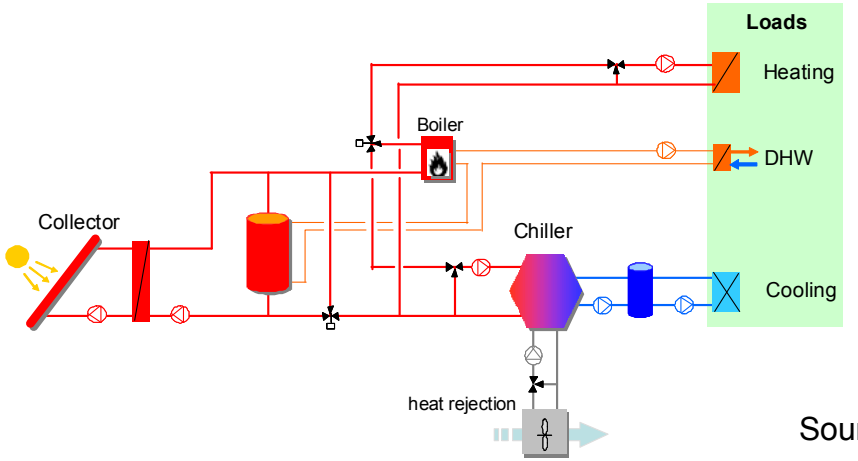
Task 4 – Online tool

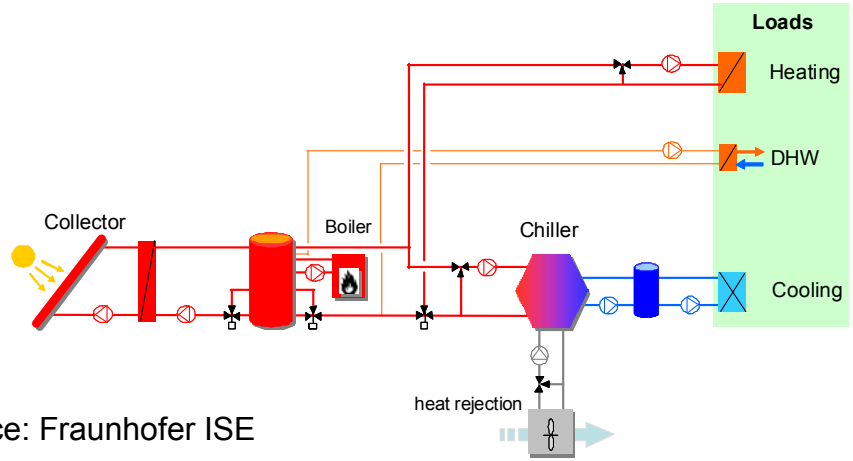
On the basis of the cooling demand directly introduced or computed, a range of available solutions will be suggested to the user:



Task 4 – Online tool

For given chiller, location and technical choice a standard plant configuration is suggested:





Source: Fraunhofer ISE

- ClimateWell
- Rotartica
- Sonnenklima

- Solution
- Sortech

Task 4 – Online tool

With the user-defined parameters (fuel/electricity costs, etc)

- the achievable result in terms of PE ratio, cost/benefit ratio, etc. might change
- the optimum dimensioning in sense of A_{coll} and $V_{storage}$ might change.

A single final solution cannot be assessed. A range of available solutions can only be indicated.

Task 5 – Key data, libraries & short info

Main objective: tools helping in the implementation of the EPBD:

a)Regarding § 3:

Provide key data and "libraries" to **calculation tools** (§ 3 of EPBD). Contact to the IEE projects EPA ED and EPA NR has been established: the results from "Solar Combi+" could be implemented into their method, specifically in the software tool for calculating of energy performance of the building(s) and quantification of the **effect of energy saving measures**.

→key data and "libraries" for calculation codes (EPBD)

b)Regarding § 5:

Provide easy to use information to evaluate the technical, environmental and economical feasibility of solar heating and cooling systems (obligatory for new buildings with useful floor area of 1000 m² - which are at the upper limit of the considered small scale applications). EURAC is responsible for the contact with IEE project SENTRO and integration in their toolbox

→integration in the IEE project SENTRO's EPBD feasibility study toolbox

Task 5 – Key data, libraries & short info

- The DB based online tool might be directly used for data retrieval and building performance calculation since the software is based on a standard inquiry language (SQL).

- The software could be therefore easily included in external software packages.

solarcombi+

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