

IEA Task 48

MeGaPICS - PISTACHE



IEA Task 48 Meeting n° 4
April 9th, 2013 in Newcastle (Australia)
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General presentation



- Developed by: **TECSOL** & **CEA INES** (MeGaPICS R&D project)
- Simplified **pre-design tool** for designer and planner
- **First objectives:**
 - Simulate a heating/cooling/DHW system
 - Compare monitored results of a real working installation with theoretical results
- **Long term objectives**
 - Promote the technology
 - Be compatible with future French regulations (RT2012)
 - Guarantee Solar cooling installations performances

General presentation



- Progress: “alpha” version 
“beta” version should be available in **May 2013**
- Previous version of the tool: VB (Microsoft Excel 2003)
- New version: VB.NET = stand alone version
- Calculation step: **hourly**
- Input parameters: manual OR semi-auto
- Results:
 - Hourly, monthly and annual **balance and ratios**
 - **Indicators** calculation and comparison to threshold values
 - Automatic **result analysis**

Tool name

- PISTACHE
 - PreSizing Tool for solar Cooling and Heating systems

– Icon



– Logo



Tools already available: PISTACHE

4 main tabs

General information (project & localization)

Input file path

Type of installation

The screenshot displays the PISTACHE software interface with four main tabs highlighted by colored boxes:

- Informations générales et données d'entrée** (Green box):
 - Nom du projet: SOLACLIM
 - Date de l'étude: vendredi 5 avril 2013
 - Maître d'ouvrage: CNRS-PROMES
 - Etude réalisée par: TECSOL
 - Nom de la ville: perpignan
 - Latitude [°]: 42,7
 - Longitude [°]: 2,89
 - Décalage [h]: 1
- Définition de la configuration d'installation** (Blue box):
 - Sélectionner le fichier (*.mpg): S:\PROJET EN COURS\2010-005 CS Projet MEGAPICS\Tâche 4 - validation\
 - Créer un fichier (*.mpg):
- Prédimensionnement des composants** (Purple box):
 - Typologie d'installation: Collective, Packagée
 - Tarifs moyens des énergies et de l'eau:
 - Réseau chaleur [€/kWh]: 0,050
 - Fioul [€/kWh]: 0,000
 - Gaz [€/kWh]: 0,070
 - Electricité [€/kWh]: 0,120
 - Bois [€/kWh]: 0,050
 - Eau [€/m3]: 1,500
- Résultats** (Red box):
 - Google Maps showing the location of Perpignan, France, with coordinates 42.7, 2.9.

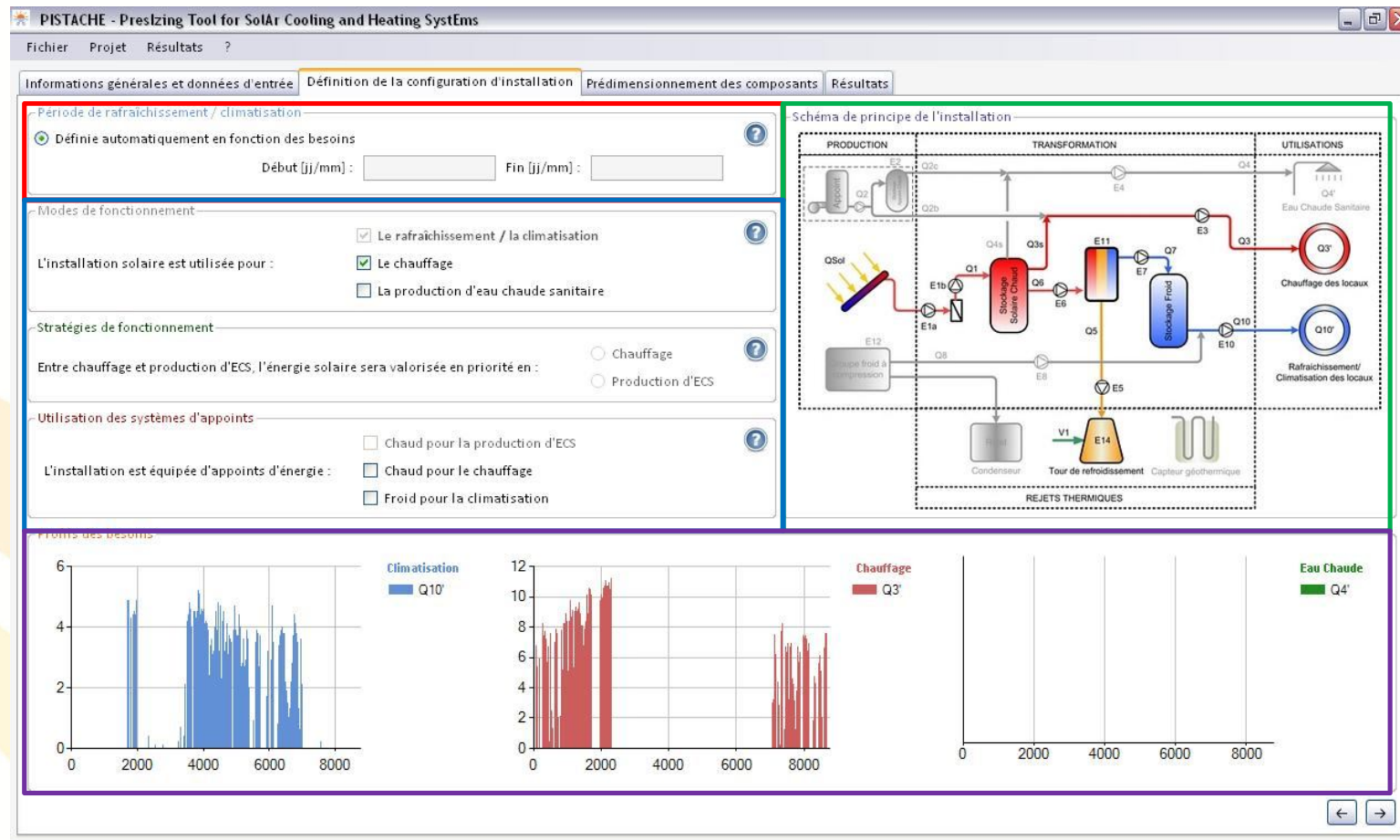
At the bottom of the interface, there is a banner for PISTACHE with the text "Energy & water costs" and a logo. The banner includes images of solar panels and a building interior with solar heating equipment.

Tools already available: PISTACHE

System scheme

Cooling
period

Working
modes



View of cooling, heating, and DHW loads over the year

Tools already available: PISTACHE

PISTACHE - Presizing Tool for Solar Cooling and Heating Systems

Fichier Projet Résultats ?

Informations générales et données d'entrée Définition de la configuration d'installation Prédimensionnement des composants Résultats

1. Machine à sorption

Besoins de climatisation max. [kW] 5,2

Puissance frigorifique idéale [kW] 3,6

Technologie de machine : aBsorption aDsorption

Choix de la machine :

Chiller parameters

System scheme

System scheme

4. Système

Tour de refroidissement

Aéroréfrigerant

Aéroréfrigerant

Sondes

Heat rejection system parameters

2. Boucle solaire

Technologie de capteurs : plan vitré tubes sous vide

Marque : générique

Modèle :

Caractéristiques des capteurs

Présence d'un échangeur primaire/secondaire ?

Surface totale [m²] 25

Collectors parameters

3. Ballons de stockage

Ballon chaud

Capacité de stockage [l] 300

Constante de refroidissement [kWh/l.K.jour] 0,13

Ballon ECS solaire

Capacité de stockage [l]

Nombre de ballons [-]

Constante de refroidissement

Buffer tanks parameters

5. Systèmes d'appoint

Appoint chaud (chauffage et/ou ECS)

Technologie : choisir...

Rendement de génération [-]

Consommation des auxiliaires [W]

Appoint

Technologie

Rendement

Consommation

Backup parameters

6. Températures de fonctionnement

Reference temperatures

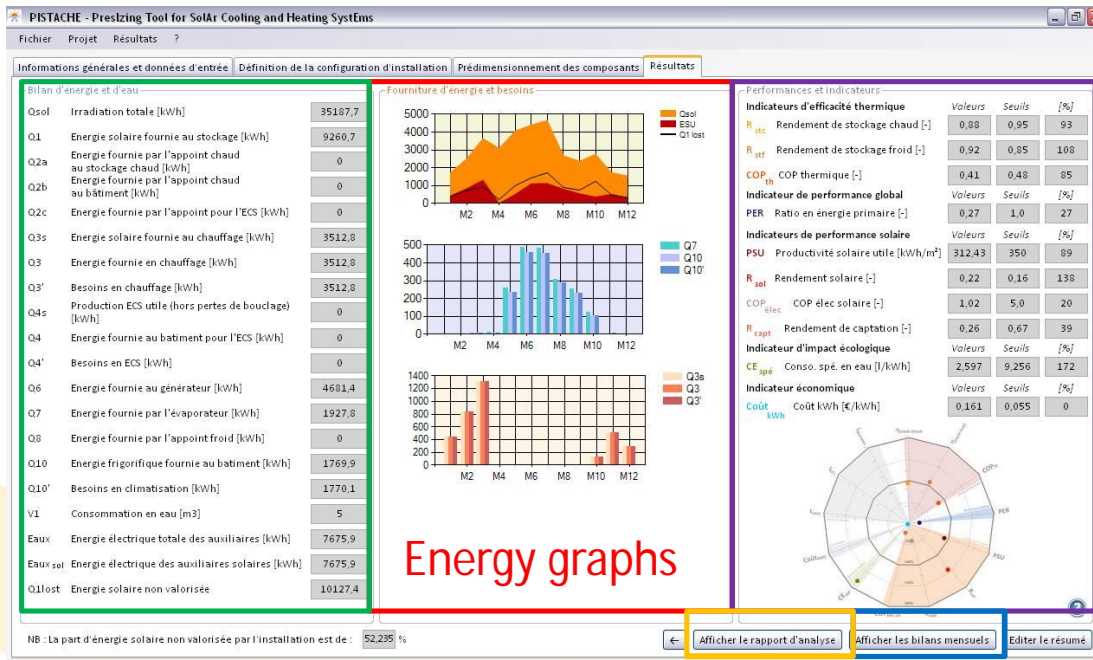
Calculer

Editer les caractéristiques de l'installation

Calculation & edit characteristics

Tools already available: PISTACHE

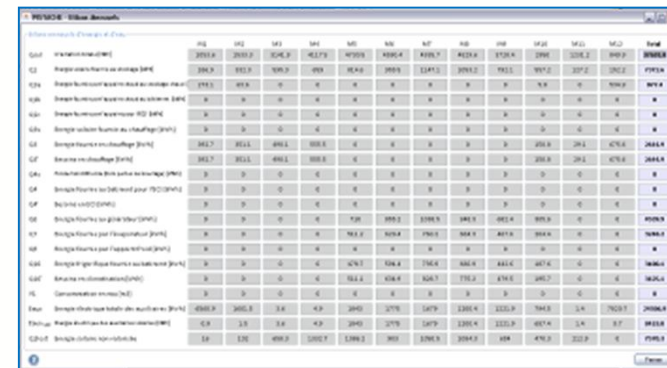
Yearly
balance



Indicators & comparison to threshold values

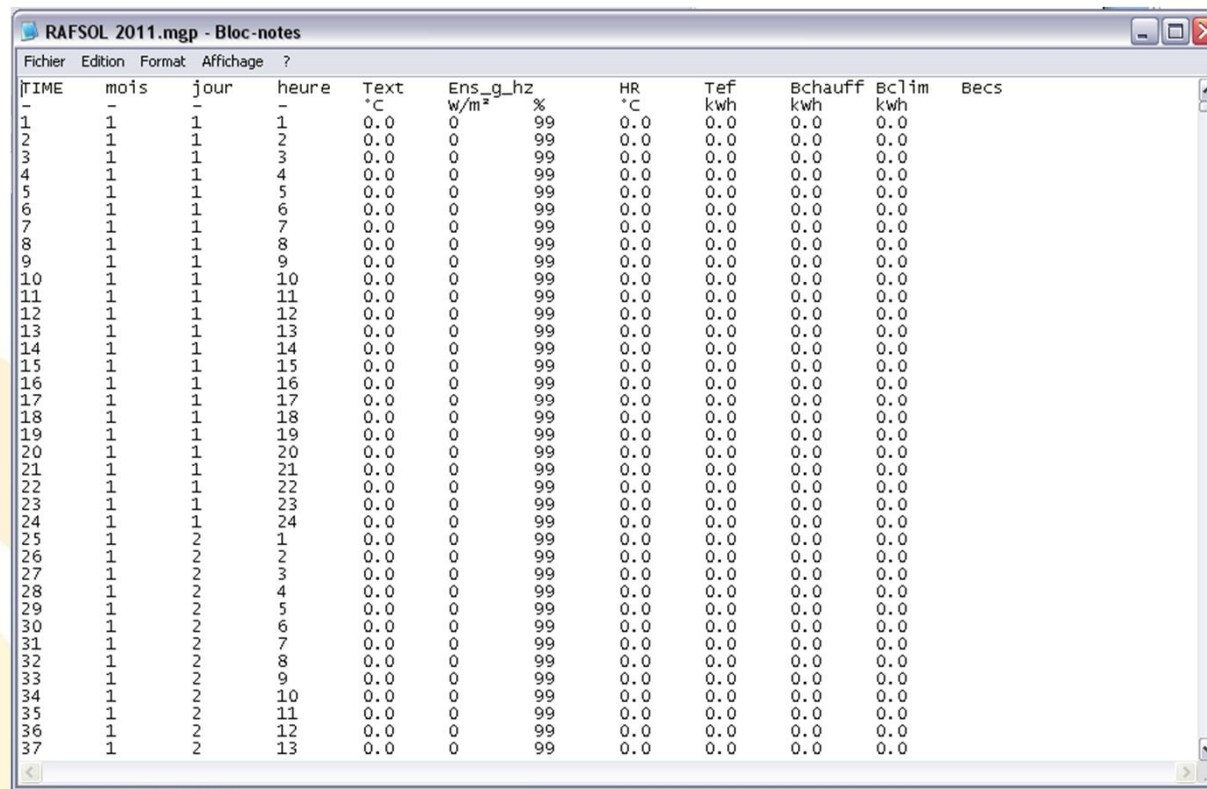
Monthly balance

Results
analysis



Tools already available: PISTACHE

- PISTACHE **input file**:



RAFSOL 2011.mgp - Bloc-notes

TIME	mois	jour	heure	Text °C	Ens_g_hz w/m²	%	HR °C	Tef kwh	Bchauff kwh	Bclim kwh	Becs
1	1	1	1	0.0	0	99	0.0	0.0	0.0	0.0	
2	1	1	2	0.0	0	99	0.0	0.0	0.0	0.0	
3	1	1	3	0.0	0	99	0.0	0.0	0.0	0.0	
4	1	1	4	0.0	0	99	0.0	0.0	0.0	0.0	
5	1	1	5	0.0	0	99	0.0	0.0	0.0	0.0	
6	1	1	6	0.0	0	99	0.0	0.0	0.0	0.0	
7	1	1	7	0.0	0	99	0.0	0.0	0.0	0.0	
8	1	1	8	0.0	0	99	0.0	0.0	0.0	0.0	
9	1	1	9	0.0	0	99	0.0	0.0	0.0	0.0	
10	1	1	10	0.0	0	99	0.0	0.0	0.0	0.0	
11	1	1	11	0.0	0	99	0.0	0.0	0.0	0.0	
12	1	1	12	0.0	0	99	0.0	0.0	0.0	0.0	
13	1	1	13	0.0	0	99	0.0	0.0	0.0	0.0	
14	1	1	14	0.0	0	99	0.0	0.0	0.0	0.0	
15	1	1	15	0.0	0	99	0.0	0.0	0.0	0.0	
16	1	1	16	0.0	0	99	0.0	0.0	0.0	0.0	
17	1	1	17	0.0	0	99	0.0	0.0	0.0	0.0	
18	1	1	18	0.0	0	99	0.0	0.0	0.0	0.0	
19	1	1	19	0.0	0	99	0.0	0.0	0.0	0.0	
20	1	1	20	0.0	0	99	0.0	0.0	0.0	0.0	
21	1	1	21	0.0	0	99	0.0	0.0	0.0	0.0	
22	1	1	22	0.0	0	99	0.0	0.0	0.0	0.0	
23	1	1	23	0.0	0	99	0.0	0.0	0.0	0.0	
24	1	1	24	0.0	0	99	0.0	0.0	0.0	0.0	
25	1	2	1	0.0	0	99	0.0	0.0	0.0	0.0	
26	1	2	2	0.0	0	99	0.0	0.0	0.0	0.0	
27	1	2	3	0.0	0	99	0.0	0.0	0.0	0.0	
28	1	2	4	0.0	0	99	0.0	0.0	0.0	0.0	
29	1	2	5	0.0	0	99	0.0	0.0	0.0	0.0	
30	1	2	6	0.0	0	99	0.0	0.0	0.0	0.0	
31	1	2	7	0.0	0	99	0.0	0.0	0.0	0.0	
32	1	2	8	0.0	0	99	0.0	0.0	0.0	0.0	
33	1	2	9	0.0	0	99	0.0	0.0	0.0	0.0	
34	1	2	10	0.0	0	99	0.0	0.0	0.0	0.0	
35	1	2	11	0.0	0	99	0.0	0.0	0.0	0.0	
36	1	2	12	0.0	0	99	0.0	0.0	0.0	0.0	
37	1	2	13	0.0	0	99	0.0	0.0	0.0	0.0	

What's next ?

- Development finalisation
 - Interface functions
 - Help files
 - Bugs and breach finding and correction
- Validation :
 - Performance validation for all architectures
 - With real installationsd
 - With comparison to existing tools
 - With comparison to the MeGaPICS detailed tool
 - Validation of the help to the pre-sizing function
- Diffusion and use
 - Finalisation of the contract between TECSOL and CEA
 - English translation for Task 48
 - Set up of the diffusion platforms