Solar Cooling Opt
Solar Cooling Monitor
Solar Cooling Roadmap

Task38fu Task Preparation Meeting – Paris
28. and 29. March 2011

AEE – Institut für Nachhaltige Technologien
A-8200 Gleisdorf, Feldgasse 19

Dieses Projekt wird aus Mitteln des Klima- und Energiefonds gefördert und im Rahmen des Programms „NEUE ENERGIEN 2020“ durchgeführt.

Solar Cooling Roadmap:

Finished: May 2011 ?!

Project Partners:

(C)	AEE INTEC
(P1)	AIT
(P2)	IWT TU-Graz
(P3)	ASIC
(P4)	Podesser Consulting
(P5)	Joanneum Research
(P6)	TU-Wien Institut für Computertechnik (ICT)
(P7)	Pink
(P8)	SOLID
(P9)	ENERTEC
(P10)	Feistritzwerke
(P11)	SOLution
(P12)	Xolar
(P13)	WILO
(P14)	Uni Innsbruck

Project Time Schedule – SC-Monitor:

Project start: 01.05.2009

Project end: 31.10.2011

Project Time Schedule – SC-Opt:

Project start: 01.10.2010

Project end: 31.12.2013

Solar Cooling Monitor

		1	2	3	4	5	6	7	8	9	10	11
Standort	Österreich	x	x	x	x	x	x	x	x	x	x	
	Südeuropa											x
Status	Gebaut	x	x	x		x	x	x		x	x	x
	In Planung/Realisierung				x				x			
Kühltechnologien	Klein-Absorptionskälteanlagen (<20 kW)									x	x	
	Absorptionskälte mittlerer Leistung			x	x		x	x	x			
	Groß-Absorptionskälteanlagen (>400 kW)											x
	Klein-Adsorptionskälteanlagen (<20 kW)		x			x						
	DEC-Anlagen	x						x				
	Kompressionskälteanlagen (gemessen)			x								
Back-up	100% solare Kühlung ausgelegt	x	x			x		x		x	x	
	Wärmeseitiges Back-up						x		x			
	Kälteseitiges Back-up			x	x							x
Solartherm. Kollektoren	Flachkollektoren	x	x	x	x	x	x			x	x	x
	Hocheffizienz-Flachkollektoren							x	x			
	Fassaden-/Dachintegration	x			x	x				x		x
Rückkühlung	Nasse Rückkühler			x	x		x	x	x			
	Hybridrückkühler		x			x				x	x	x
	Erdreich				x							
Energieverteilung	Zentrale Lüftungsanlage	x		x	x			x		?		
	Kühldecke							x	x	?		x
	Bauteilaktivierung/Fußbodenheizung	x			x		x				x	
	Fan-Coils		x	x				x		?		
	Deckenlüfter					x						

1 = ENERGYbase Wien; 2 = MA34 Wien; 3 = BH-Rohrbach; 4 = Fa. Sunmaster, Eberstalzell; 5 = Fa. Kreuzroither, Schörfling; 6 = Fa. Gasokol, Saxen; 7 = Rathaus Gleisdorf; 8 = Feistritzwerke, Gleisdorf; 9 = Fa. SOLID, Graz; 10 = Fa. Bachler, Gröbming; 11 = Bankgebäude, Lissabon

Solar Cooling Opt

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3. Models for Simulation
   (UIBK)
4. Loads/Loadprofiles
   (AIT)
5. System Configurations
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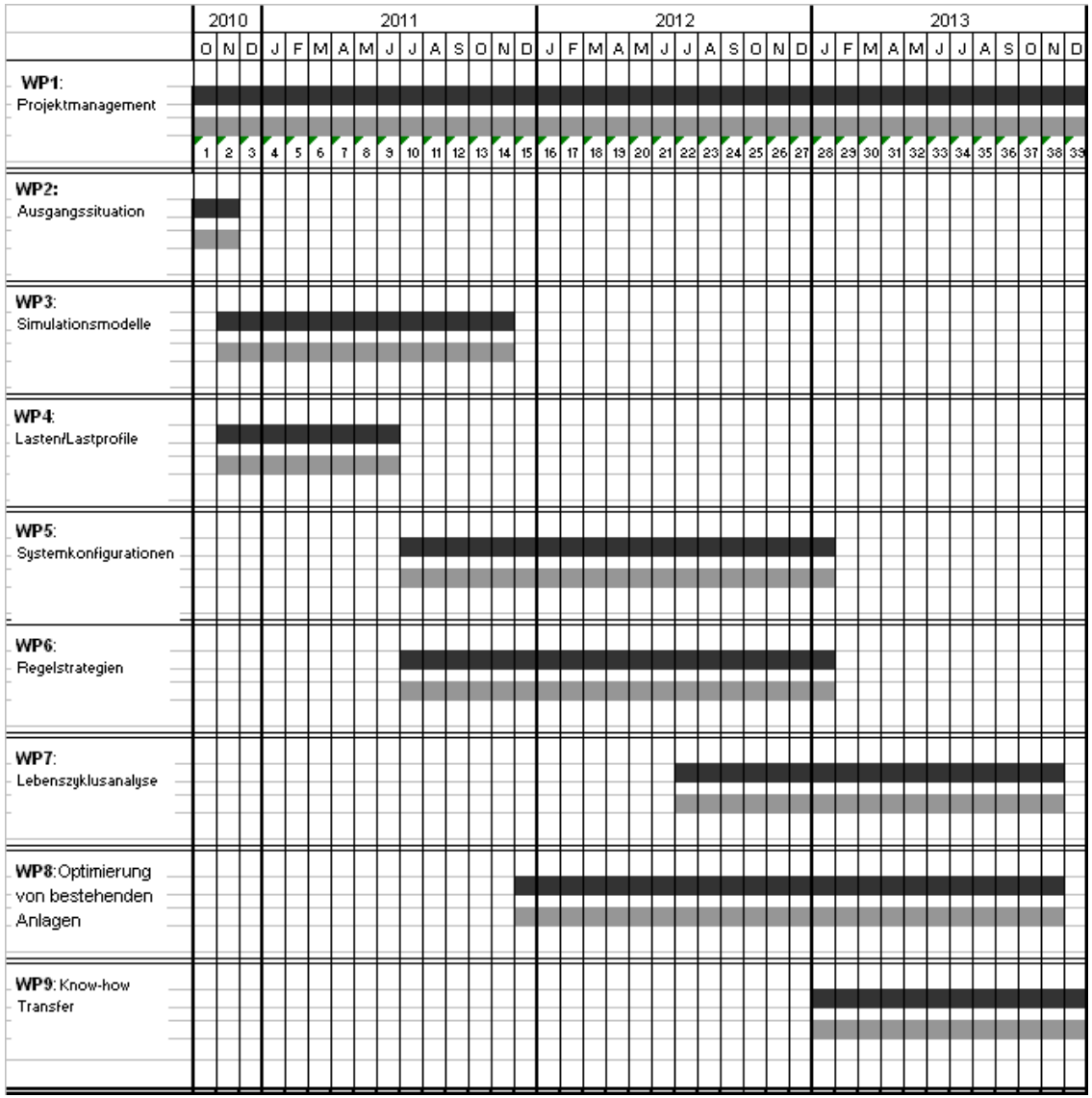
6. Control Strategies
   (AIT)
7. Life Cycle Analysis
   (Joanneum Research)
8. Optimisation of Plants
   (AEE INTEC)
9. Know-How Transfer
   (AIT)



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Goals:

Documentation of state of the art of actually used system concepts and control strategies for solar thermal heating AND cooling.

Identifikation of potentials for efficiency increase based on experience of Task38 and Solar Cooling Monitor.

Definition of requirements for simulation tools and models for improved calculations.

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Goals:

TRNSYS – Models with higher accuracy:

Absorptions chiller:

- Detailed knowledge about influences of temperatur- and flow rate changes and dynamic behaviour of the chiller.
- Physical modell based on energy balances of the single components inside the chiller. Laboratory tests of Pink chiller.
- Simplified model for system optimisation in „TRNSYS“.

Sorption- and heat recovery wheel for DEC

- Developing models for speed controlled wheels.

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Goals:

Load profiles for different applications of solar/thermal heating and cooling:

4.1:

- Residential buildings
- Offices
- Hospitals
- Hotels

4.2:

- Supermarkets
- Special selected branches (z.B. food industry, metal industry, paper and cellulose, chemical, …) cooling demand up to 500 kW for production and air conditioning ⇔ waste heat for driving the cooling process.

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Goals:

Optimised concepts for solar/thermal heating and cooling applications in residential buildings (5.1) and for industrial applications (5.2) for best possible boundary conditions.

Cooperation with WP 6, in order to find best possible control concepts.

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Goals:

Elaborate energy saving potentials based on effizient
- control hardware and
- innovative control concepts

6.1 Propose control strategies for all investigated configurations in WP 5 based on expiriences collected in WP2.

6.2 Development and simulation with TRNSYS of optimised control strategies for 4 representative systems (2 DEC + 2 absorption chiller) as basis for practical optimisation in WP8.

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Goals:
LCA of systems defined in WP5: For basic version and optimised version Comparison to compression chiller system in combination with PV and/or electrical grid.

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Goals:

8.1: Potentials of optimisation elaborated in WP5 und WP6 will be tested in 3 systems which were monitored already in the SolarCoolingMonitor project (2 x AKM und 1 x DEC) based on specific simulations.

8.2: Development of improved back cooling units and testing in an exisiting installation.

8.3: Testing in practice of the optimisation proposals elaborated in 8.1 in plants 2 (change or replacement of haydraulics and components) and in 1 further installation the control concept will be optimised; further monitoring and evaluation of the optimization measures.

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   (AIT)

Goals:

- Dissemination of results to stakeholder
- Prepare reports and teaching material for seminars and workshops

- Presentations at national and international conferences
- Articles
- Organisation of 2 national workshops
- Prepare a brochure
- Prepare scripts and slides for teaching

Involvement in Task38+:

AEE INTEC:	**Subtask A:**	**Best possible applications**
	Subtask B:	**Monitoring & Monitoring Tool Commissioning-, Operating-, Maintenance-Support Tools**
	Subtask D:	**Training Material**
ASIC:	**Subtask A:**	**Best principle applications, heat rejection**
	Subtask B:	**Monitoring**
UIBK:	**Subtask A:**	**Best possible applications**
	Subtask B:	**?!?!**
	Subtask D:	**Training Material**