



Solar Cooling® in Macau

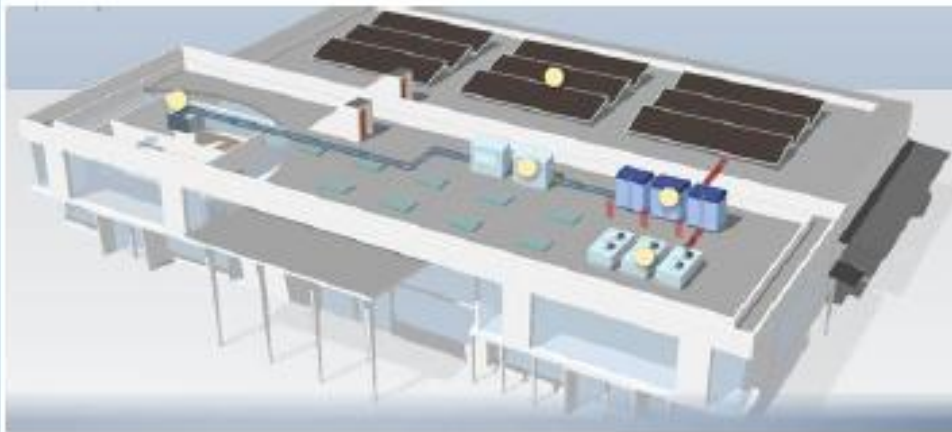
**Solar Powered
Air Conditioning**

**Lars Bryngelsson
Sales Manager**

May 2011

Solar Cooling – Solar powered indoor climate

- ✓ Solar Cooling® systems: heating, DHW and pool heating
- ✓ Unique Triple-State absorption technology
- ✓ Profitable from Day 1
- ✓ Renewable and clean energy – Sustainable solutions
- ✓ Focus on large Commercial buildings with Cooling and Hot water needs



Installation examples



SolarChiller

– the solar powered Air Conditioner

Key technical characteristics

No electrical consumption for the cooling process

Integrated energy storage in a dry salt →
Delivers Solar Cooling even night time!

Works with any intermittent energy source, no
backup heaters needed

Developed to work with standard Solar Thermal
Collectors, like *Thermomax* from *Kingspan*.

Maximum building energy efficiency

Total potential CO₂ reduction in Macau 2016 →
10 000 tons of CO₂ / year



The ClimateWell group

Based on a proprietary technology – 3 state absorption – is patented worldwide



- Stockholm, Sweden:
Corporate HQ, R&D
- Madrid, Spain:
Sales office and show-house
- Soria, Spain:
Manufacturing plant. Inaugurated 2008 by the Swedish King, HM Carl XVI Gustaf.



Distribution partners



References



Strictly proprietary & confidential

Awards and global recognition for SolarCooling

First prize at the International Solar Cooling® conference in Germany. Award granted by Otti and Fraunhofer.



2nd prize granted to CTO Göran Bolin to the prestigious innovation award "Stora Teknikpriset" in Sweden.



GE Ecomagination challenge: First prize winner, \$100 000 and a cooperation with General Electric Appliances.



ClimateWell was selected by The Guardian as one of the companies most likely to change the world, 2008, 2009 and 2010.



Best Green building in the Middle East 2010 with LEED Platinum certification



VISIONS: Good practice for Solar Cooling® award for ClimateWell's Show-house in Madrid



CEO Per Olofsson nominated by European Voice (The Economist), to the awards "Business leader of the year" and "European of the year".



Technology pioneer 2007 award granted by the World Economic Forum in Davos.



Runner-Up in the Wall Street Journal Technology Innovation Awards 2010.



Fastest Growing Company at the Cleantech Connect 2009 Awards in London organised by GP Bullhound.



ClimateWell

Top Management

- Per Olofsson, Group CEO

- Entrepreneurial CEO now 8 years with ClimateWell

- Nominated **Business Leader of the Year** and **European of the year 2007** by the *Economist*.

EuropeanVoice.com

The
Economist

- **Commander of the Order of Civil Merit**, Spain. Appointed by the Spanish King, HM Juan Carlos I.



- Göran Bolin: Founder, Executive Group VP and MD CCT

- Market driven innovation professional with 30 years of experience in renewable energy

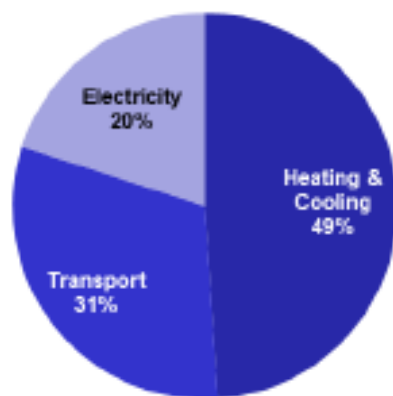
- Awarded **Technology Pioneer 2007** by the *World Economic Forum* in Davos and Top 3 in the "Stora Teknikpriset" 2008 in Sweden



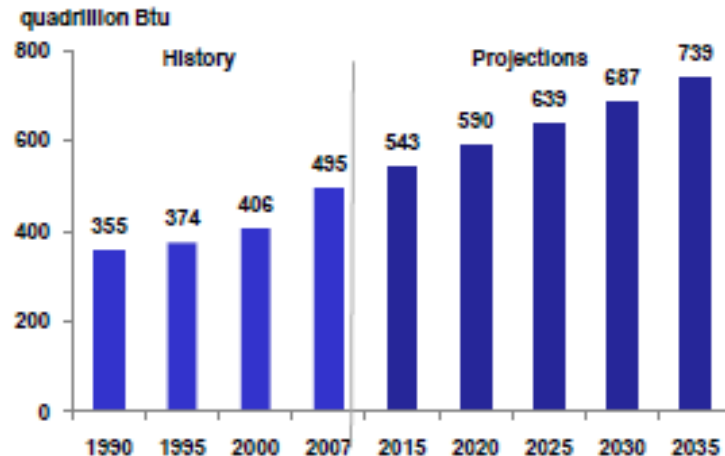
The Global Market for Energy Consumption

- Global energy demand is forecast to continue increasing along with the price of electricity
- Heating & Cooling applications make up a considerable proportion of final energy demand
- Electricity outages becoming more common as supply of electricity not able to keep up with demand, especially during the summer months when cooling demand peaks

Energy Demand Mix in the European Union⁽¹⁾



Global Energy Demand (1990 – 2035)⁽²⁾



- Renewable energy sources are key to be able to meet future energy needs and comply with increasingly strict national and international regulations
- Projected oil prices, concerns about CO₂ emissions and energy security driving the push for more renewables in the energy mix

(1) Source: EREC, 2006

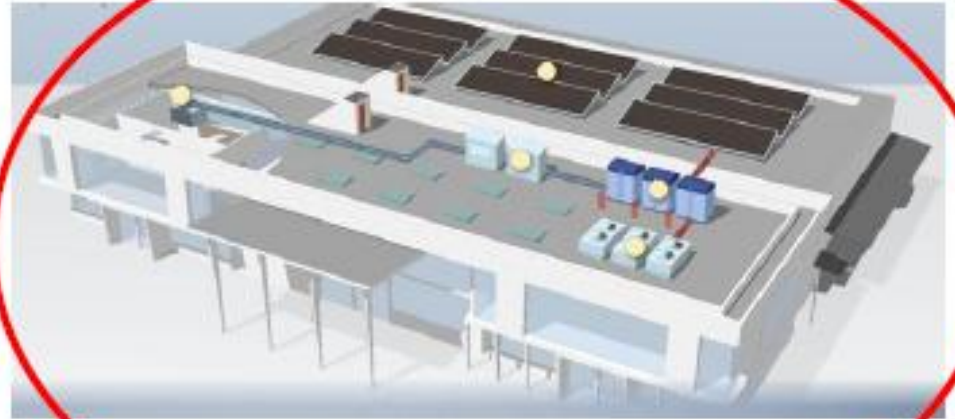
(2) Source: US Energy Information Administration's International Energy Statistics



Solutions for different segments



Blocks of flats



Hospitals, hotels and sport arenas



Single family homes

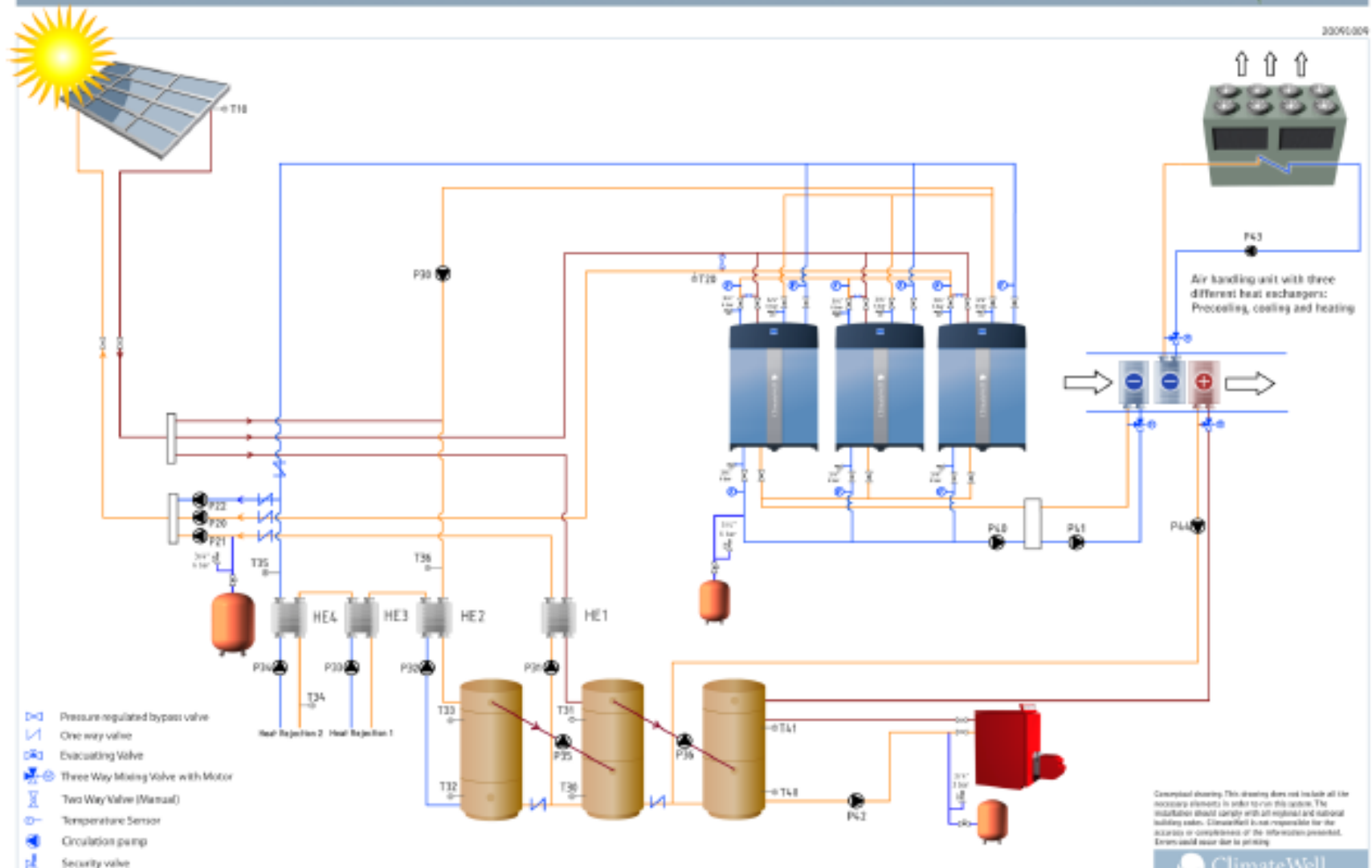


Schematic

ClimateWell's Recommended Solar Cooling System Cooling, Heating and DHW



20060309



City: Dubai

Country: UAE

Owner: ESAB

Installer: Scandinavian Cooling Systems

of Units: 6

Building Area: 2 000 m²

Solar Collectors

Type: DF Evacuated Tubes, Thermomax from Kingspan Solar

Number: 50

Area: 161 m²

Heat Sink: Wet Cooling tower

Distribution System

Type: ClimateDeck

LEED Platinum certified and voted Best Green building in the Middle East



City: Toronto

Country: Canada

Owner: Shouldice Hospital

Installer: GEMCO

of Units: 10

Building Area: 6 000 m²

Solar Collectors

Type: HP Evacuated tubes,
Thermomax from
Kingspan Solar

Number: 131

Area: 450 m²

Heat Sink: Pre-heating of Domestic
Hot Water and Wet
Cooling Tower

Distribution System

Type: Air Ducts



City: Madrid

Country: Spain

Owner: ED70 CIEMAT Ministerio de Innovación y Ciencia

Installer: CIEMAT

of Units: 4

Building Area: 1 000 m²

Solar Collectors

Type: Flat Plate Collectors

Number: 90

Area: 180 m²

Heat Sink: Cooling Tower

Distribution System

Type: Fan Coil



City:	Jerez
Country:	Spain
Owner:	Hipoteles Hotel Sherry Park
Installer:	General de Servicios
# of Units:	2
Building Area:	4 400 m ²
Solar Collectors	
Type:	Flat Plate Collectors
Number:	48
Area:	100 m ²
Heat Sink:	Domestic Hot Water + Swimming Pool
Distribution System Type:	Air Ducts

