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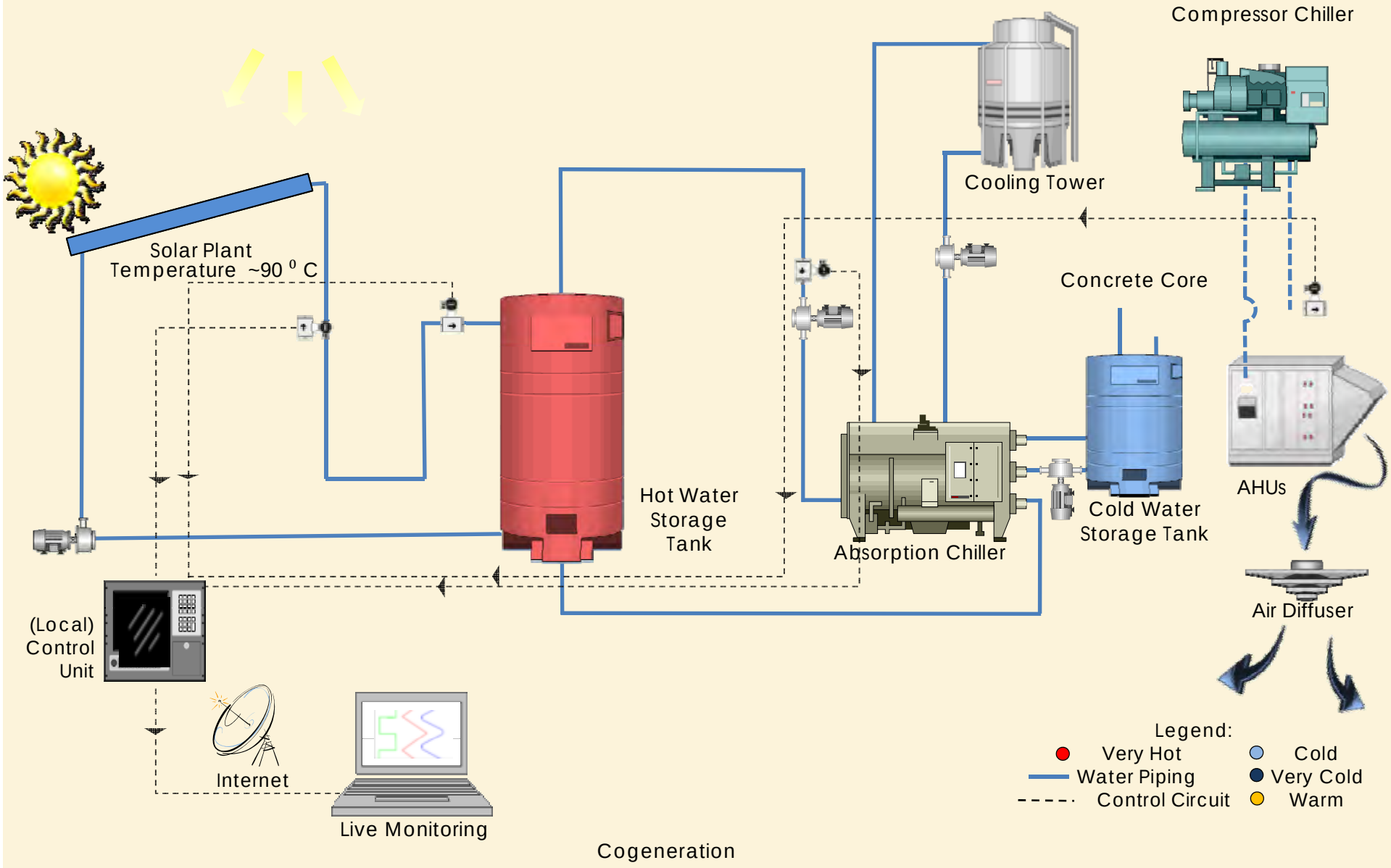
Solar Cooling System at SZDLC

Introduction to Solar Cooling

Solar Cooling - Simplified Working Principle



Cogeneration

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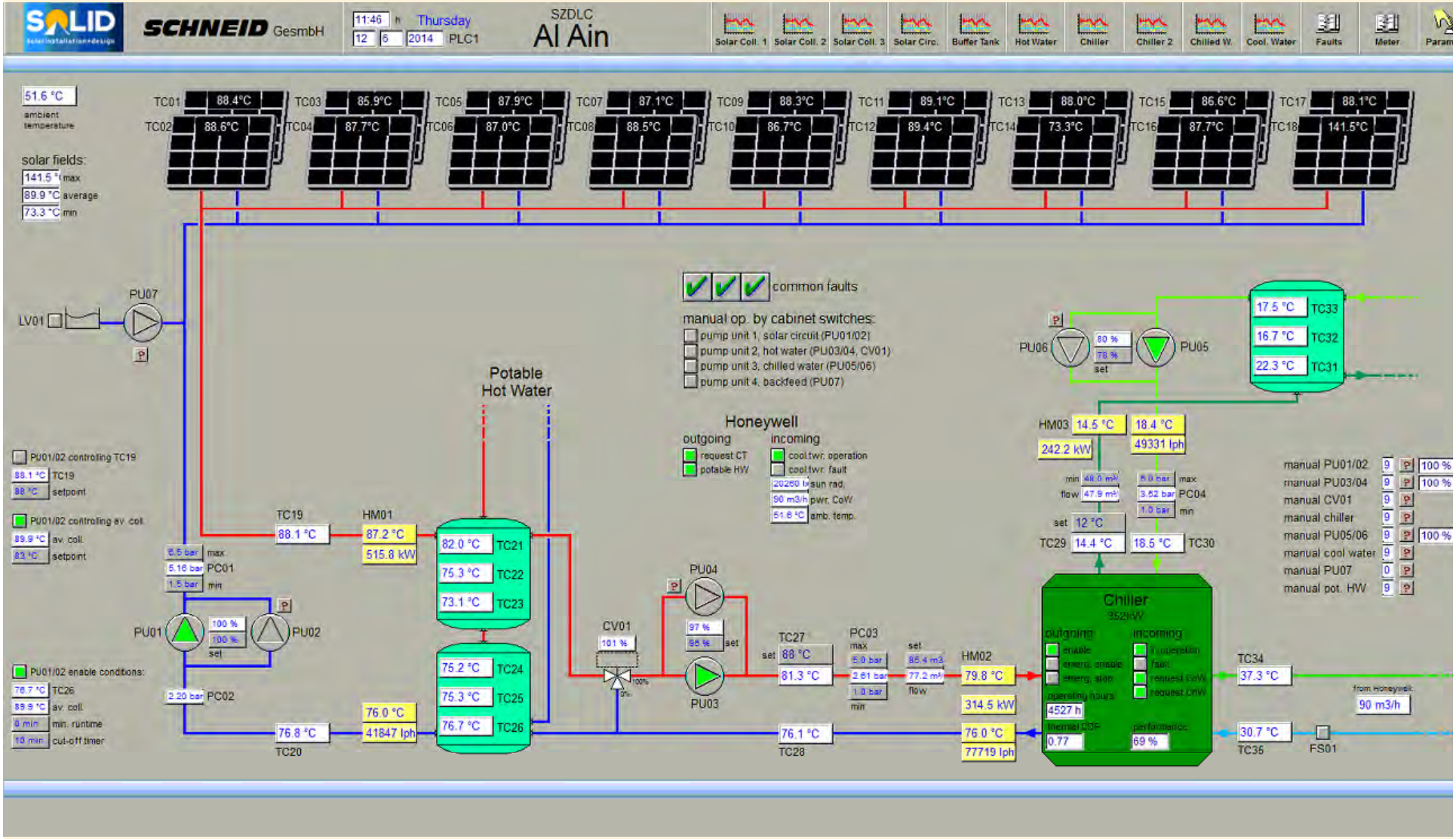

Sheik Zayed Desert Learning Center (UAE/Al Ain)

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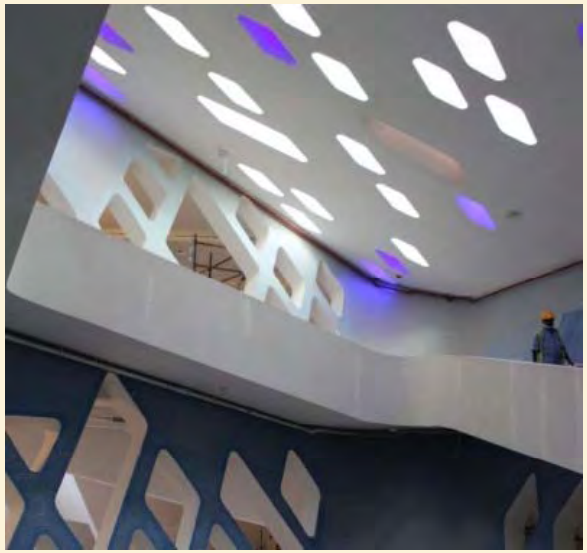
Key Data

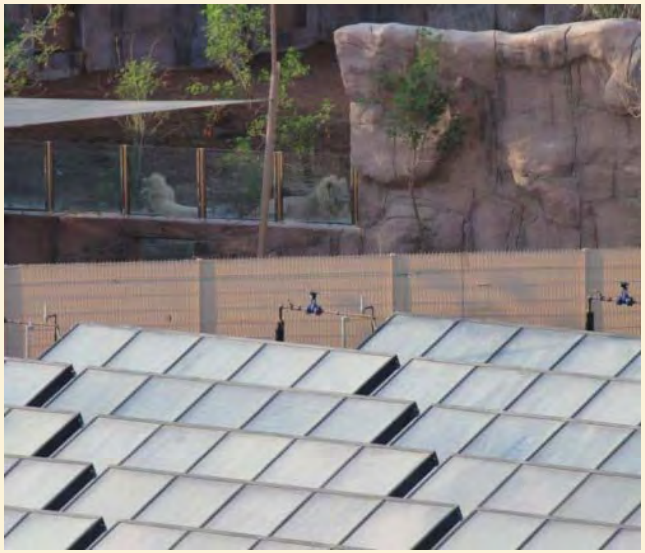
Cooling power: 400 kW

Collector area: 1108 m^2

Expected Solar yield:
825 $kWh/m^2/year$

Commissioning: 2012





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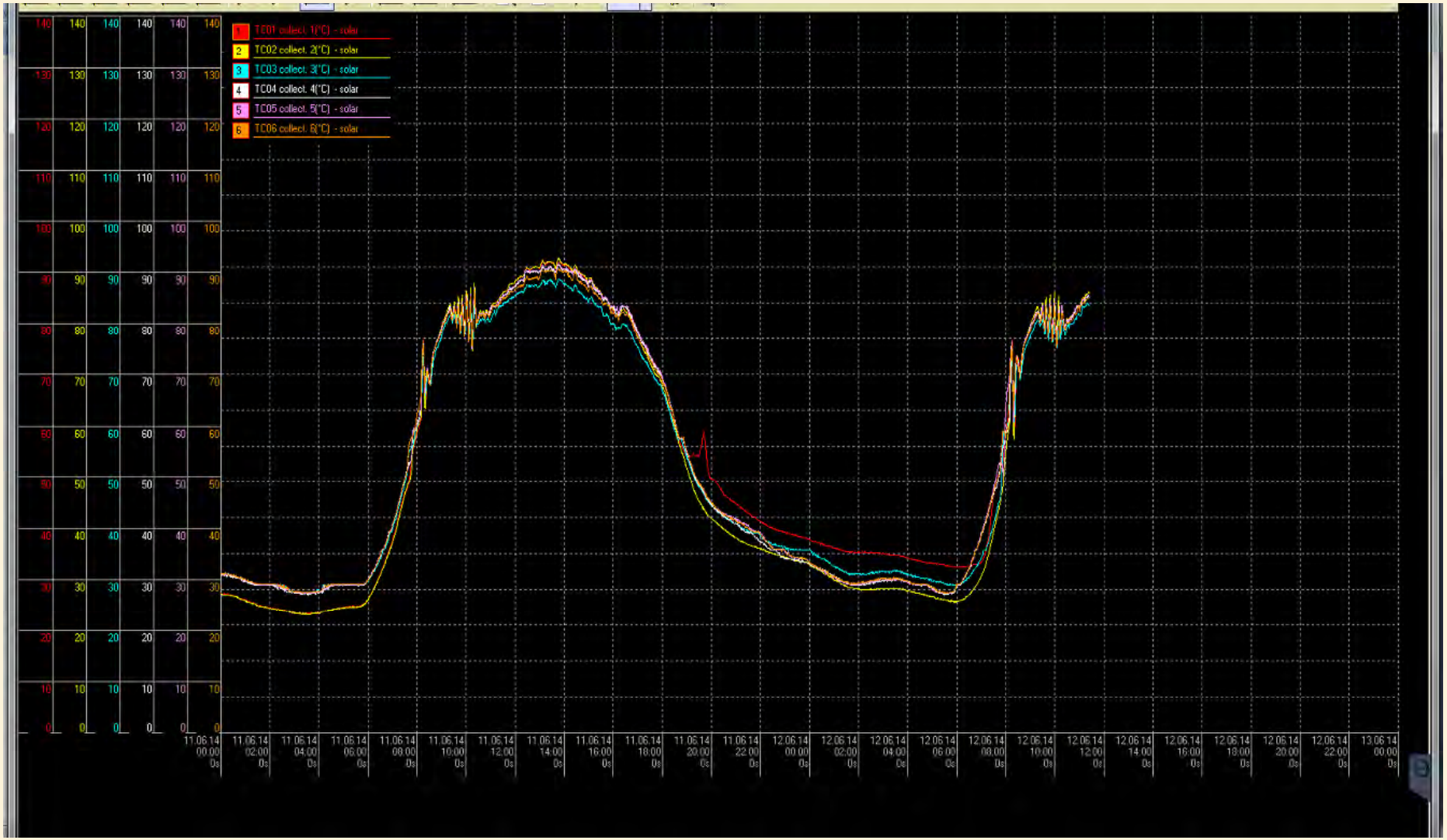
Solar Cooling

The solar heat that is causing the cooling demand is used for covering the demand at the same time!

- Solar Cooling is a renewable energy system that uses large solar hot water panels and generates large volumes of hot water at a temperature of 90°C.
- In tanks the hot water is stored (battery of the system) and sent on demand to the absorption chiller.
- The chiller produces 7°C cold water that can be pumped into the conventional HVAC cold water distribution system.
- The cold water produced by the absorption chiller relieves the normal electrical chillers so that electrical energy savings are achieved.


1 TC01 collect. 1(°C) - solar
2 TC02 collect. 2(°C) - solar
3 TC03 collect. 3(°C) - solar
4 TC04 collect. 4(°C) - solar
5 TC05 collect. 5(°C) - solar
6 TC06 collect. 6(°C) - solar
140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
11.06.14 00:00 0s
11.06.14 02:00 0s
11.06.14 04:00 0s
11.06.14 06:00 0s
11.06.14 08:00 0s
11.06.14 10:00 0s
11.06.14 12:00 0s
11.06.14 14:00 0s
11.06.14 16:00 0s
11.06.14 18:00 0s
11.06.14 20:00 0s
11.06.14 22:00 0s
12.06.14 00:00 0s
12.06.14 02:00 0s
12.06.14 04:00 0s
12.06.14 06:00 0s
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12.06.14 16:00 0s
12.06.14 18:00 0s
12.06.14 20:00 0s
12.06.14 22:00 0s
13.06.14 00:00 0s

Advantages of Solar Cooling

- Full integration with the HVAC system which directly reduces the energy use of the HVAC system and more important therefore **shaves of peak demand** as the system delivers most energy during hot hours of the day when AC demand is at its height.
- By placing the panels on the roof the **shading** effect significant reduces the heat from the roof into the building thus extra savings are realized as overall demand decreases.
- Large scale solar hot water is much more efficient so that less space is needed in comparison with solar PV.

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EAR Tower Pristina, Kosovo

2 LiBr absorption machines, total capacity of 70 kW / 20 tons

Solar Panels: 226 m^2

4 m^3 storage tank

Operating since Feb. 2003

11 th operating season, 0% unforseen down time

Desert Mountain High School

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Solar Panels: 5,200 m^2 / 3.6 MW

Cooling load: 500 tons /1750 kW

Fully Operational Now !

Solar – over parking area

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Contacts

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