suncool

Making a difference to your environment

Corey C. Blackman

www.climatewell.com
www.saltxtechnology.com

SaltX

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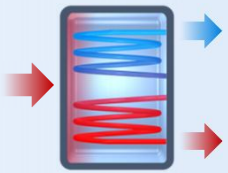
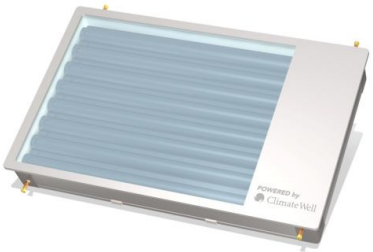
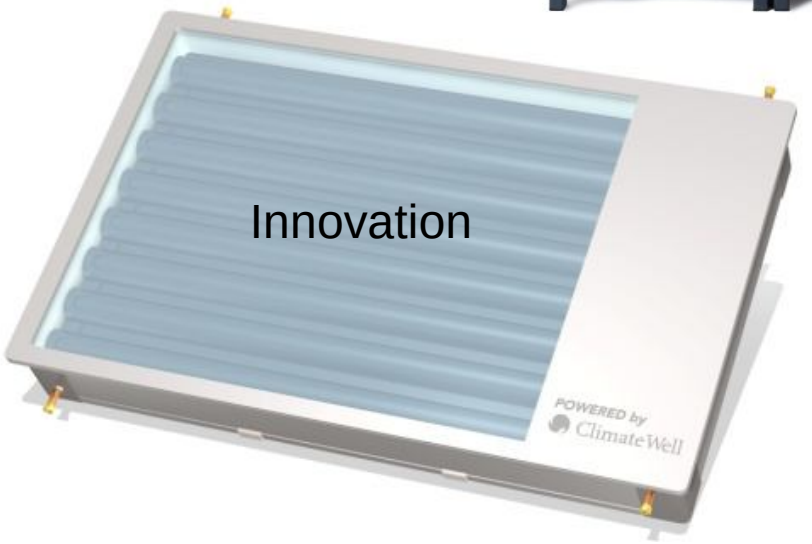
	SunCool	Verdacc	HeatBoost
ClimateWell Components			
Applications/ Customer Products			
	Solar Heating & Cooling, Energy Storage	Heat-driven A/C for Trucks & Vehicles	Gas-Driven Heat Pump Water Heaters & Boilers
Customer/ Partner			

Solar Heating & Cooling Collector (SunCool)



Heating

Cooling

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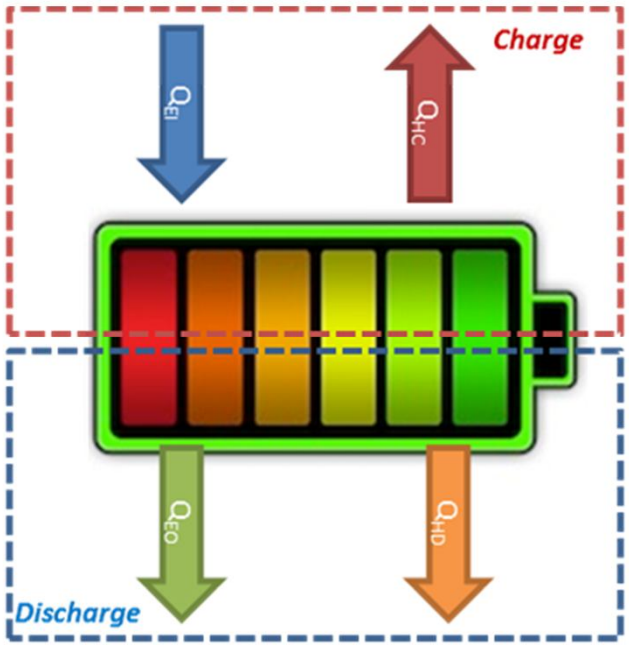
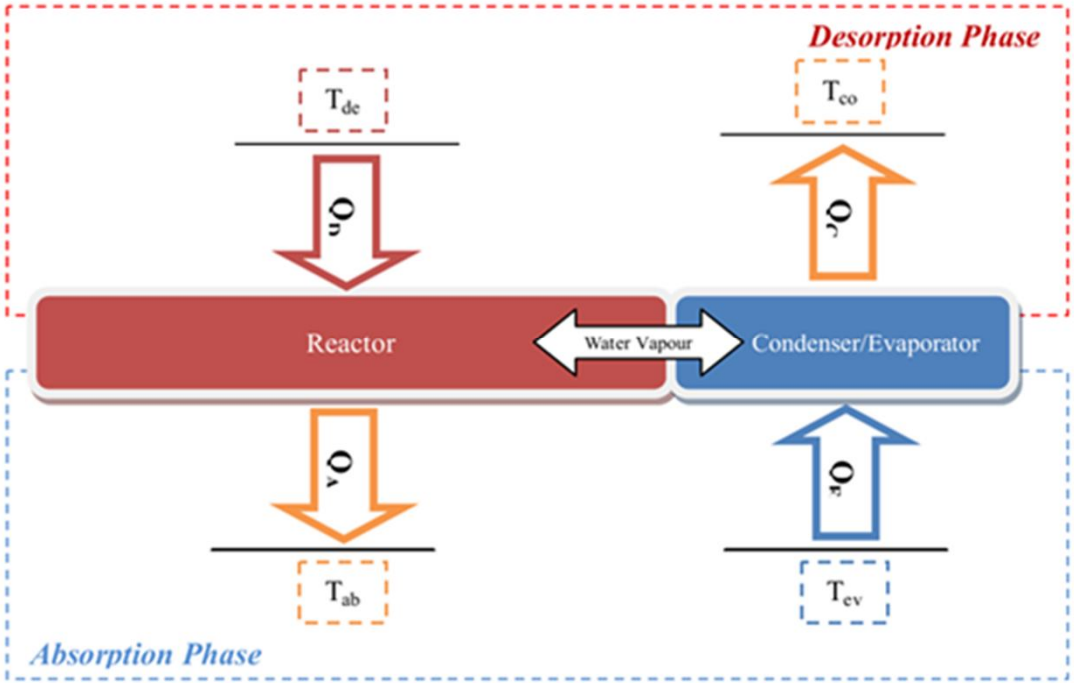
How does it work?

- A **battery** is also known as an **Electrochemical Accumulator**

- ClimateWell technology based on so-called **Thermochemical Accumulator** or **'thermal battery'**.





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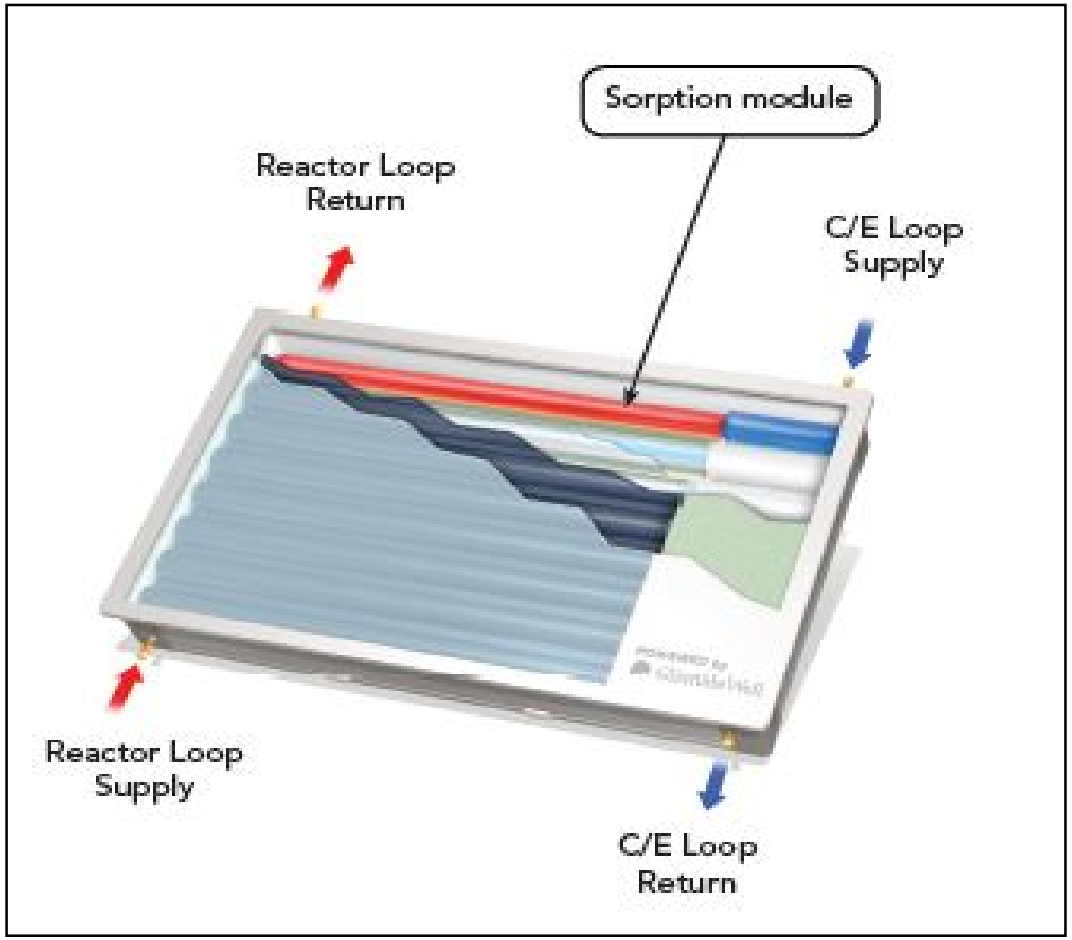
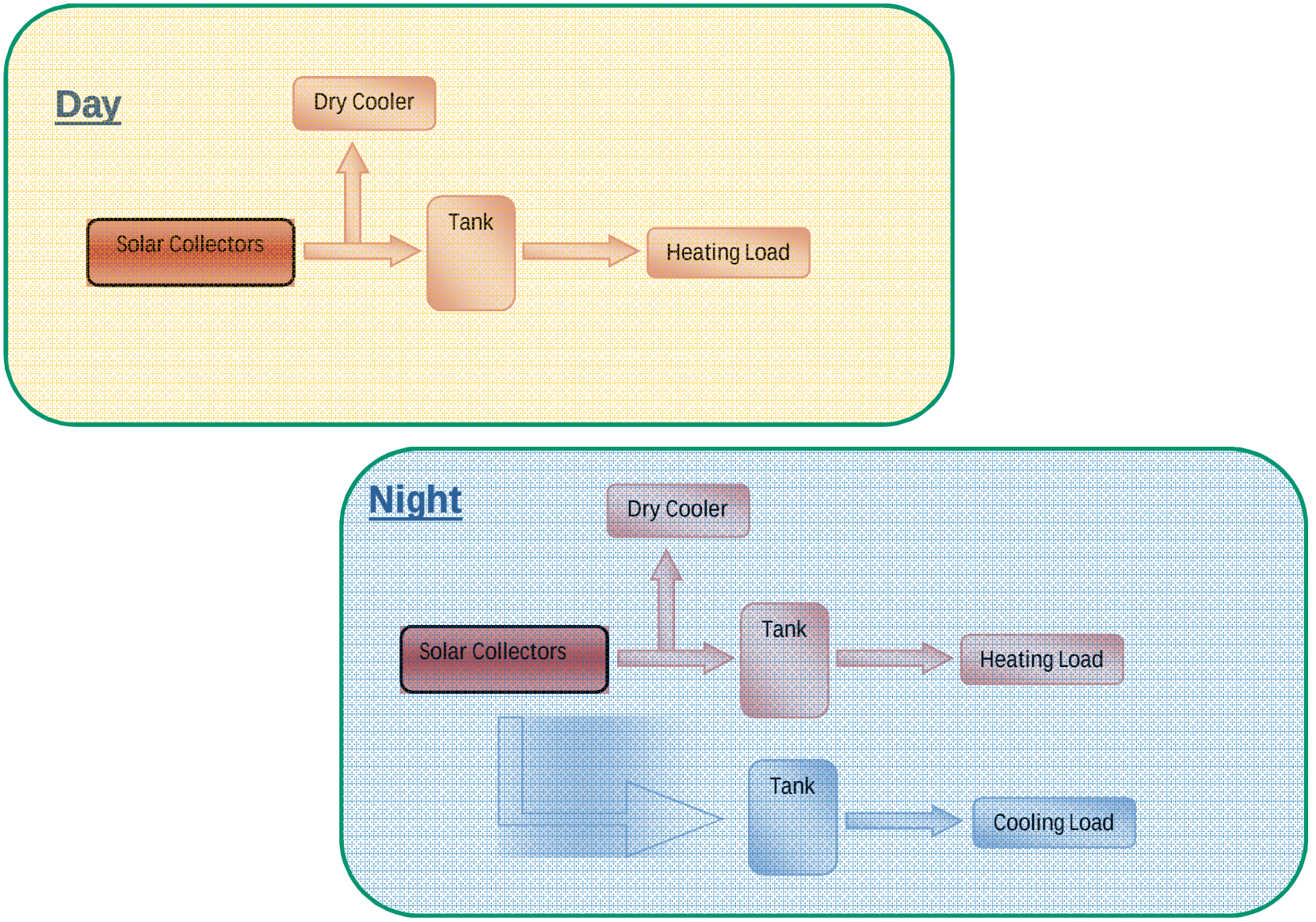
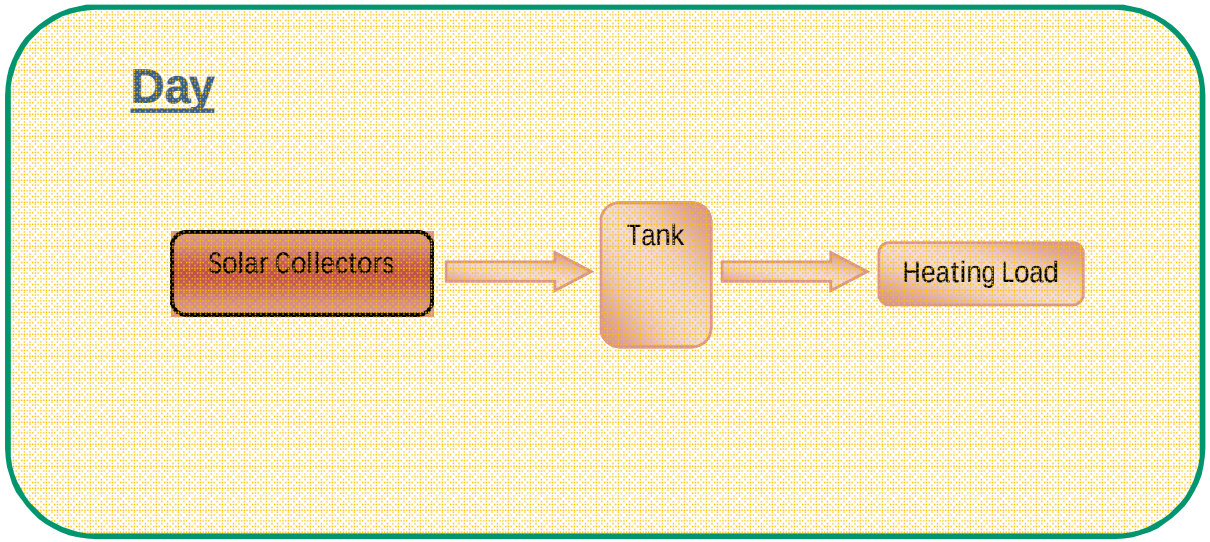
The SunCool Collector



SunCool System – Summer Operation



SunCool System – Winter Operation



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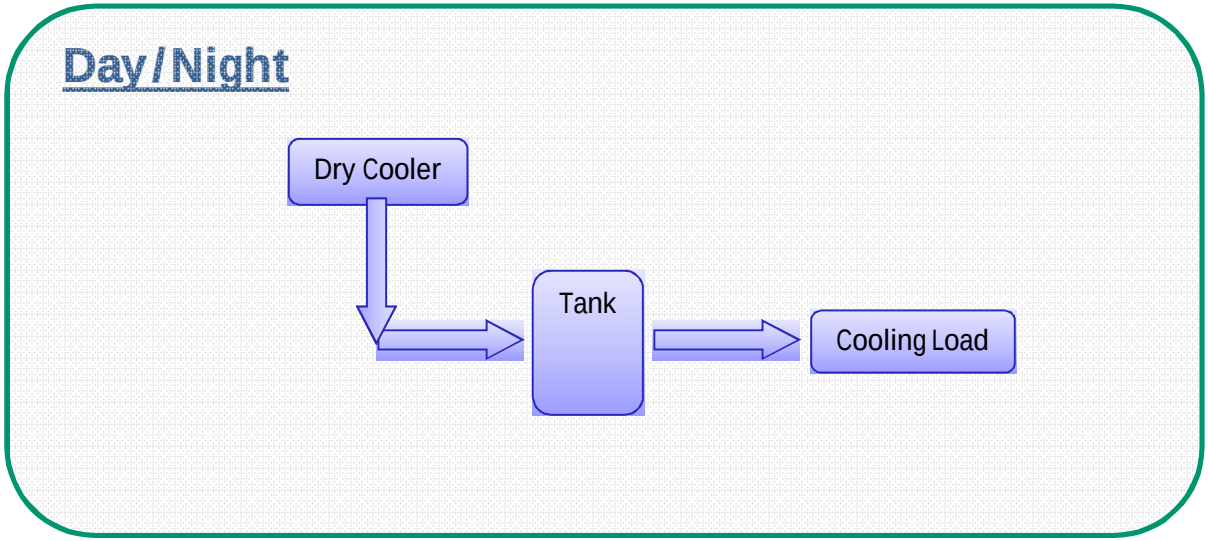
SunCool System – Free Cooling Operation



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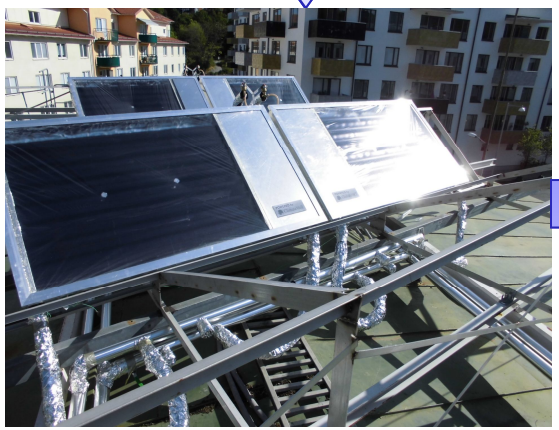
Development

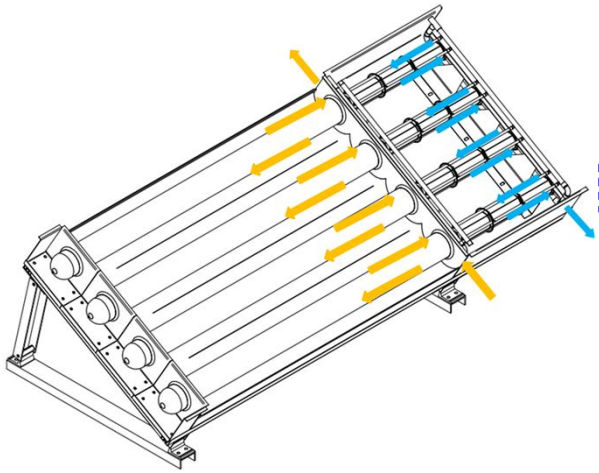
Generation 0a – Single Collector (Fraunhofer ISE, Freiburg, 2012)



Generation 0b – 5.6 m^2 Collectors (Stockholm, 2013)

Development

Generation 1 – 180 m^2
Collectors – 40kW
[360 kWh/day]
(Karlstad, 2014)
Further info in Activity A2



Generation 2 (A2PBEER) – 60m^2 Collectors – 18kW [118 kWh/day] (Ankara, June 2016)

Manufacture in China

http://goo.gl/ofBZyf

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PhD Studies

The project seeks to optimise various possible configurations of a decentralised/distributed thermally driven heat pump as a complement to, or replacement of, district heating for space and/or water heating and/or cooling.

The following research questions have been answered thus far:

- ☑ What are the primary performance indicators for a sorption integrated solar heating and cooling system?
- ☑ What are the typical values of the performance indicators for a sorption integrated solar heating and cooling system?
- ☑ What are the potential energy and monetary savings of the system?

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Generation 3 (PhD Studies)

Premise:

- Increased Robustness (tweaked sorption module technology)
- Lower Cost (decreased manufacturing time)

Remaining Research Questions:

- ☐ Development of a model that includes the possibility to carry out some sort of cost optimisation. How?
- ☐ Benchmarking: compare to other technologies. Which?
- ☐ Techno-economic sizing and optimisation of solar cooling systems. What criteria? Which applications?

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Possible Systems for Comparison

Scenario	Solar	Heating	DHW	Cooling
1	**SunCool**	**SunCool + Boiler**	**SunCool + Boiler**	**SunCool + VC Chiller**
2	PV	Boiler	Boiler	VC Chiller
3	SunCool + PV	SunCool + Boiler	SunCool + Boiler	SunCool + VC Chiller
4	PV	Electric Resistance	Electric Resistance	VC Chiller
5	Solar Thermal	ST + Boiler	ST + Boiler	Absorption Chiller + VC Chiller
6	Solar Thermal	ST + Reversible HP	ST + Reversible HP	Reversible HP
7	Solar Thermal	ST + GHP	ST + GHP	GHP + VC Chiller
8	**PV**	**Reversible HP**	**Electric Resistance**	**Reversible HP**
9	**PV**	**Reversible HP**	**Reversible HP**	**Reversible HP**
10	SunCool	SunCool + Boiler	SunCool + Boiler	SunCool
11	Solar Thermal + PV	PV + Reversible HP	ST + Electric Resistance	Reversible HP

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THANK YOU FOR YOUR ATTENTION

QUESTIONS?

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