



AquaPackages – Ideas, Innovations, Perspectives

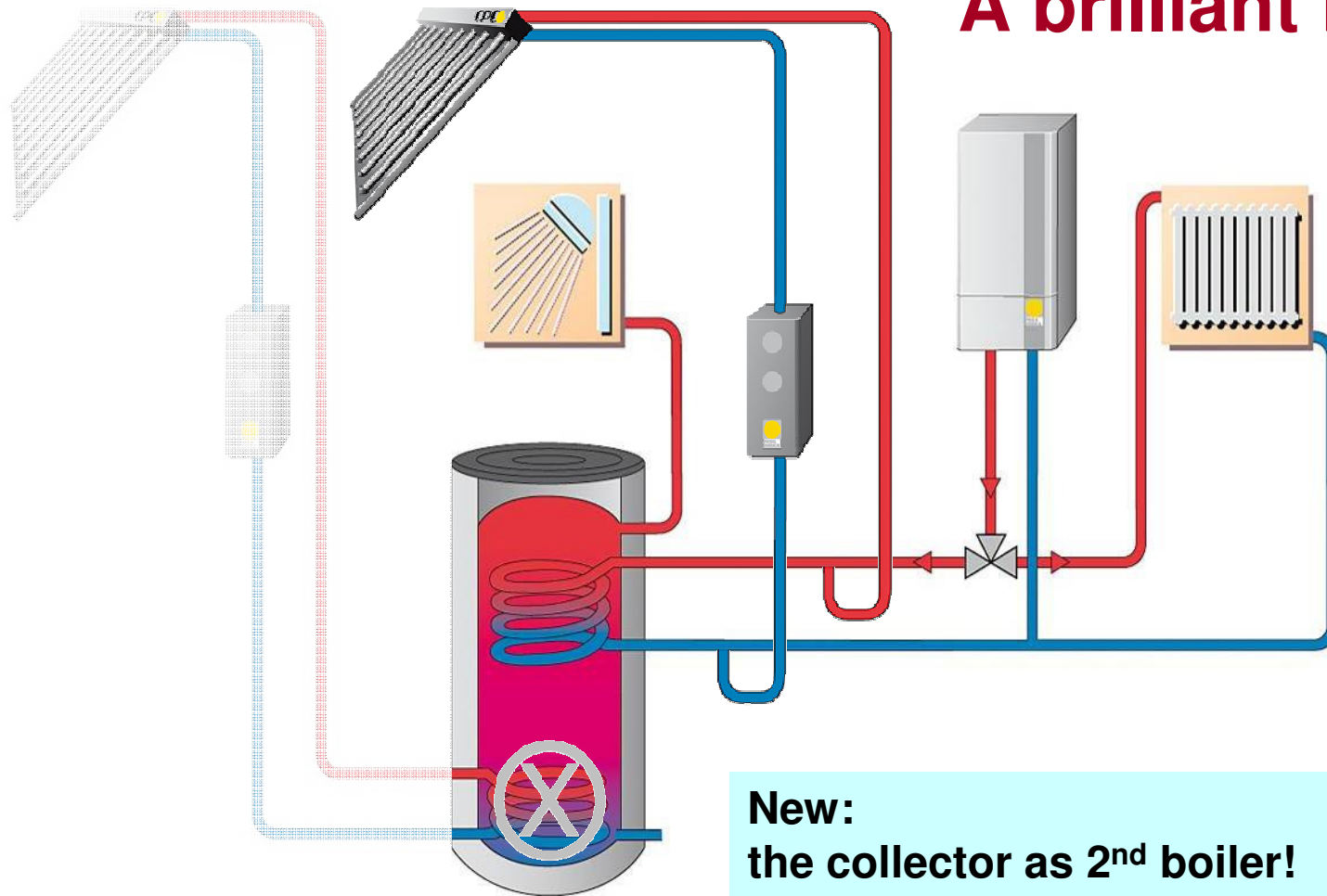
inter
solar 2008

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A brilliant idea



**New:
the collector as 2nd boiler!**

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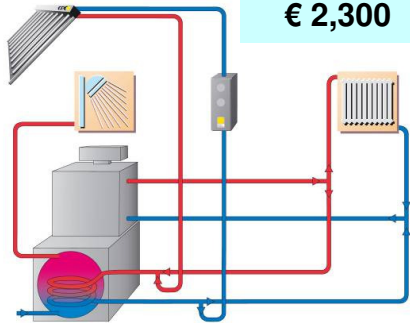




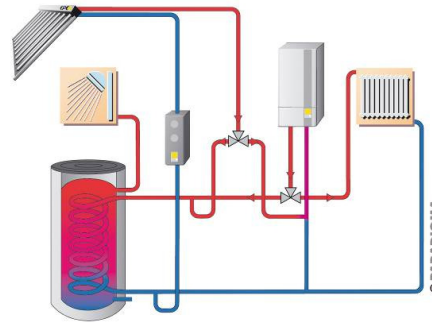
AquaPackages for every application

Water heating

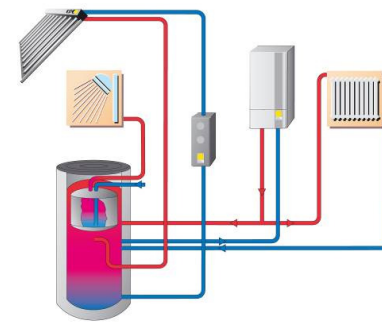
from
€ 2,300



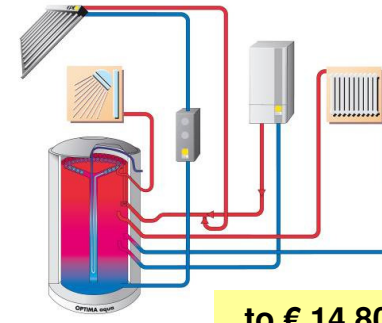
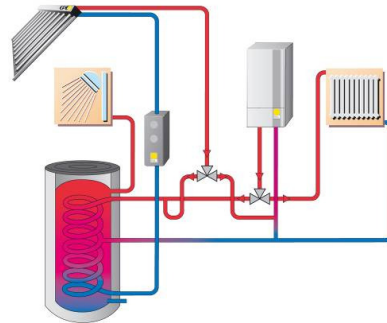
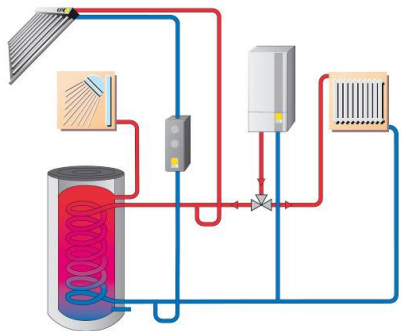
Heating support



Partial solar heating



Retrofitting



New system

to € 14,800

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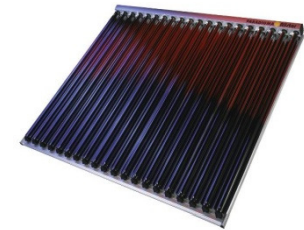




Technical highlights of the AquaPackages

1. Exclusively CPC evacuated tube collectors

- Lowest heat loss (vacuum and CPC reflector)
- Extremely high annual energy yields
- High supply temperatures at almost every radiation level



2. Water, the ideal heat transfer medium

- Best heat transport properties
- Low purchasing and operation costs
- • Unrivalled long-term stability



3. Ingenious, the SystaSolar Aqua solar controller

- Permanent functional monitoring
- Audible warning signal in case of faults
- • New: integrated fault diagnosis



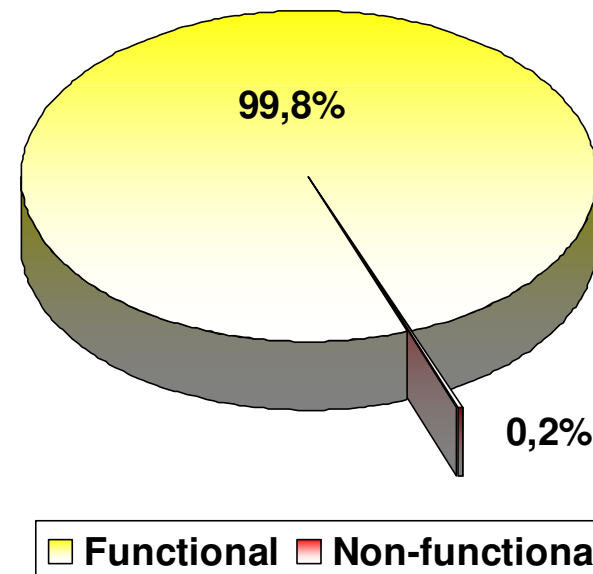
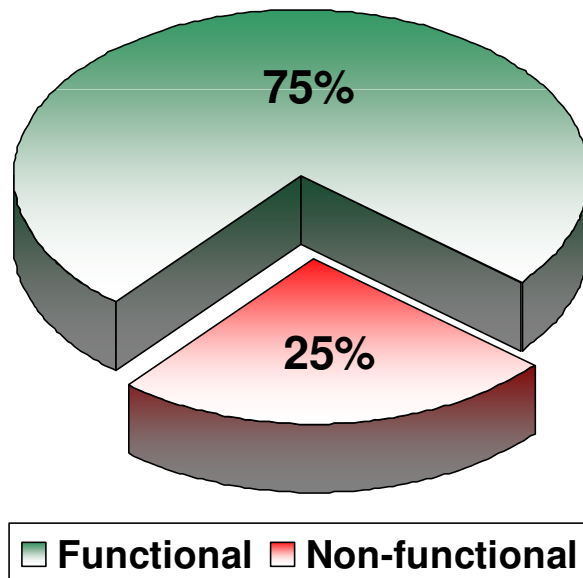
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Functional reliability of German solar systems

Solar sector: approx. 75% (estimated) AquaSystem: > 99,8% (estimated)





Unbeatable reliability – SystsSolar Aqua

1. New: enhanced functional monitoring

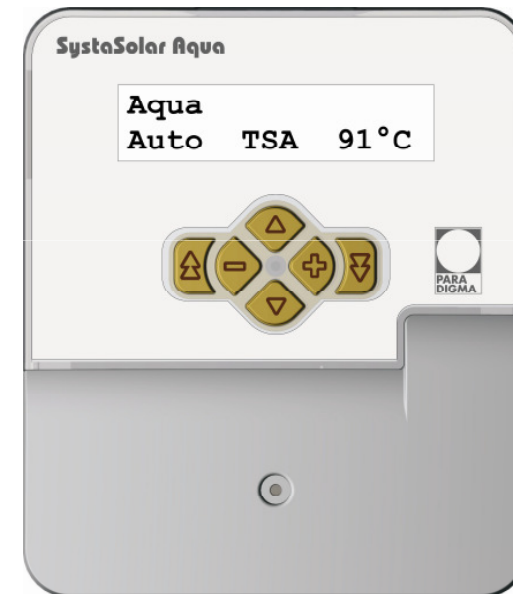
- Unparalleled operational reliability
- Guaranteed energy yields

2. New: internal self correction

- Remedies minor faults
- Cuts down on servicing

3. New: extensive fault diagnosis

- Explicit fault designation
- Quick fault correction
- Low down time



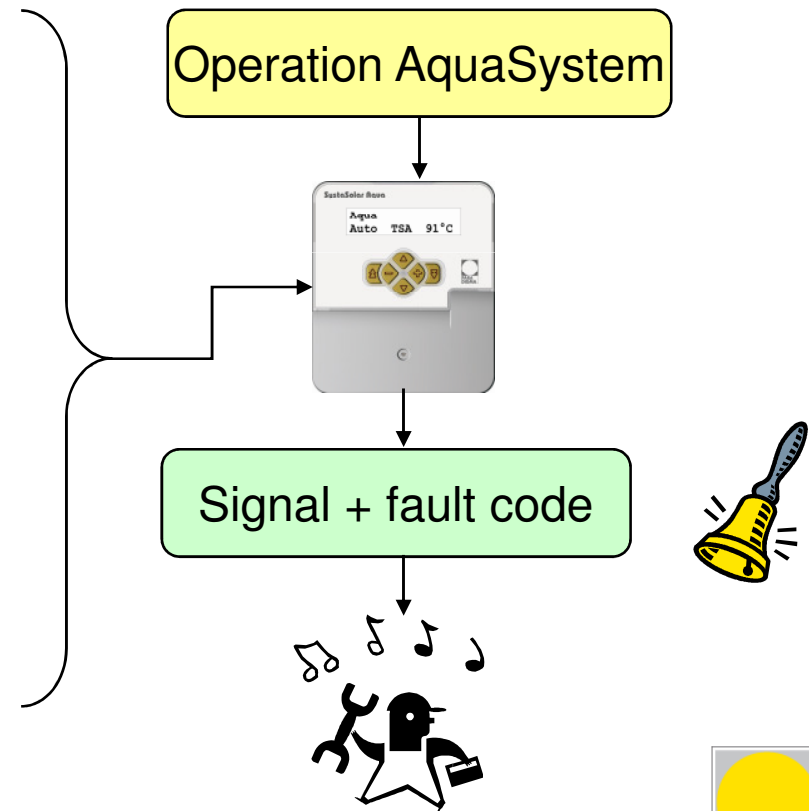
Since April 2008 in all AquaPackages!



World first – solar controller fault diagnosis

- No throughput (pump defective)
- Throughput too low (kink in pipe)
- Air in system (commissioning, leak)
- CPC supply and return interchanged
- Gravity brake leaking (soiled) *
- Wrong time setting *
- Pressure loss (leak, blow off over SV)
- Wrong hydraulic structure
- No permanent power supply (light switch)

* Internal self correction possible

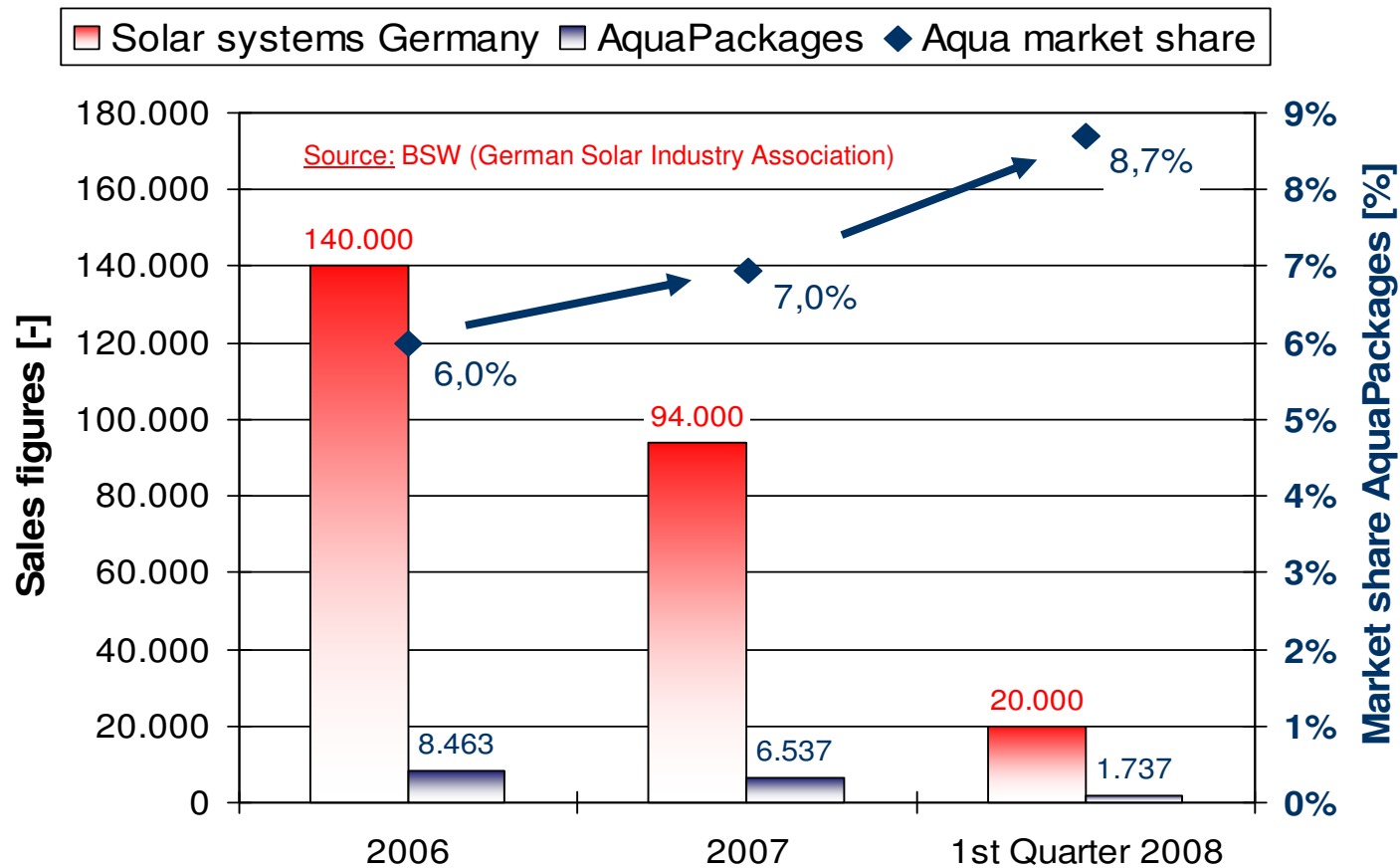


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Market success – 25,000 AquaPackages



1st Quarter 2008:
 Every 12th newly installed solar system in Germany was an AquaPackage from Paradigma!

June 2008:
 A total of 25,000 AquaPackages in operation!



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Potential process heat with AquaSystems

- Total process heat requirement approx. 390,000,000,000 kWh per year in Germany
- Solar coverage rate e.g. 10%
- 100,000,000 m² CPC collectors
- 15,000 football fields
- 300 times current Paradigma CPC surface area
- 1,000 years production capacity utilisation for Ritter Solar (2006 capacity)



ritter Solar

Source: process heat requirement, FhG-ISI, Karlsruhe



Main barriers to large-scale solar energy systems

1. High temperatures for process heat cannot be achieved with flat plate collectors
2. Solar yields with “summer collectors” are far too low, economic inefficiency
3. All large-scale systems constructed so far function badly or not at all
4. Operators shy away from ageing systems and replacing heat transfer media
5. Difficulties and complexity grow with the size of the system

⇒ **Ideal solution - large-scale solar energy systems according to the Aqua principle**



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