

VALSANA

Hotel & Appartements Arosa

ENERGY CONCEPT

Kontakt

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Energy concept ice battery

The entire Valsana complex is heated using geothermal probes and by capturing and reusing waste heat from other appliances (commercial cooling systems, server rooms) that is ordinarily lost to the surroundings. This waste heat is stored in a large tank or “ice battery”, essentially a large water tank (850 m³) housing a 400m pipe register of 1.5 m high pipes (see picture). Heat pumps draw their energy directly from this storage tank. A water-glycol mixture flows through these pipes which are in turn connected to the heat pump circuitry. When the heat pumps extract a large amount of energy, the water in the pipes freezes to form an ice block. The waste heat from the heat recovery system is fed back into the water basin to thaw the ice. If more waste heat is generated than energy withdrawn, the ice is melted and the water in the circuitry can heat up to 15°C.



Waste water heat recovery

A large part of our thermal energy requirement is used for heating water. The kitchen and especially the spa have a great demand for hot water. More than 50% of the heat emissions from the used water can be captured and recycled before the water is discharged into the sewage system. The waste heat is fed into the ice battery at relatively low temperatures, once again storing energy through the combined effect of freezing and thawing the water-glycol mixture.

Advantages:

- This energy concept is autonomous
- It produces no emissions
- Large CO₂ savings
- 100% recovery of waste heat
- Heat recovery systems are very efficient as temperatures as low as 5 C can be used to melt the ice in the “battery”
- Regeneration of the geothermal probes through waste heat during summer time

Facts about the power saving system:

- Latent ice storage with 850 m³ volume
- 2'200 m earth probes, 20 boreholes in approx. 100 m depth
- Waste heat recovered from neighbouring supermarket approx. 150'000 kWh/year

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