
HydD_mfb30_real_dryN- CityBAS_dryNAc1.0x58.086Vice0.4x58.086HP1.0x18.4 Year0

Energy generation costs

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Table 1: Assumptions for calculation of heat generation costs

Rate	3.0 % <i>per annum</i>
Analysis period	30 <i>years</i>
Maintenance	1.0 % <i>of Investment costs per year</i>
Electricity	Fix costs: 0 <i>Fr. per year</i> Variable costs: 0.20 <i>Fr. per kWh</i>
Increase of electricity costs	0.0 % <i>per year</i>
Electricity costs year 1	4698 <i>Fr. in year 1</i>

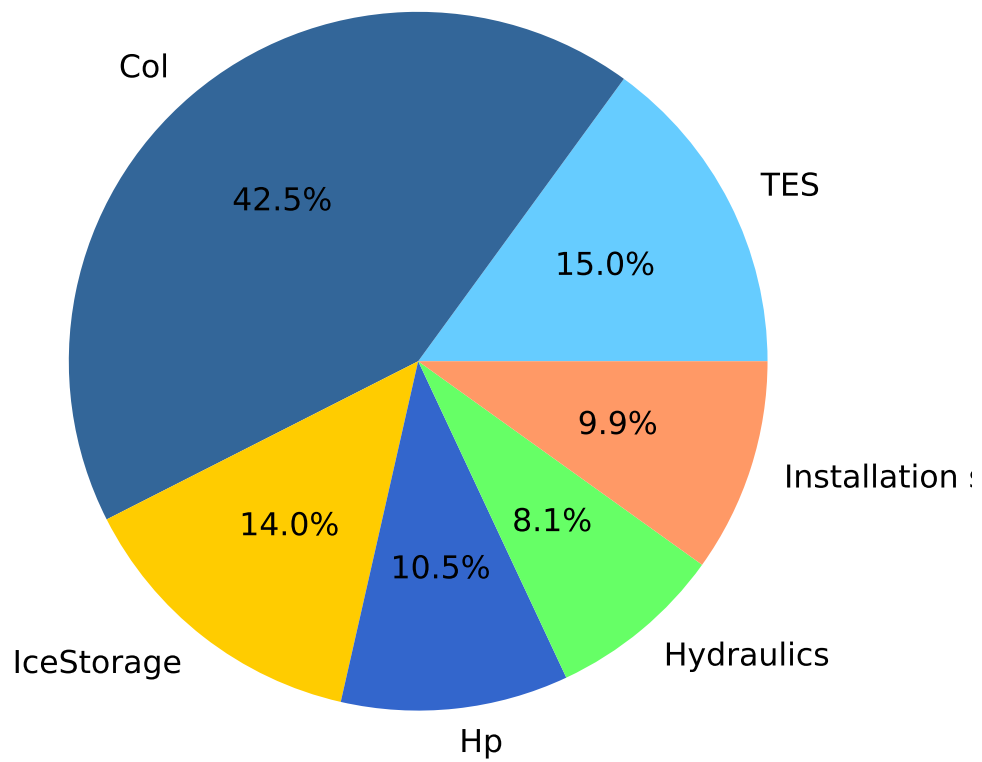


Figure 1: System cost

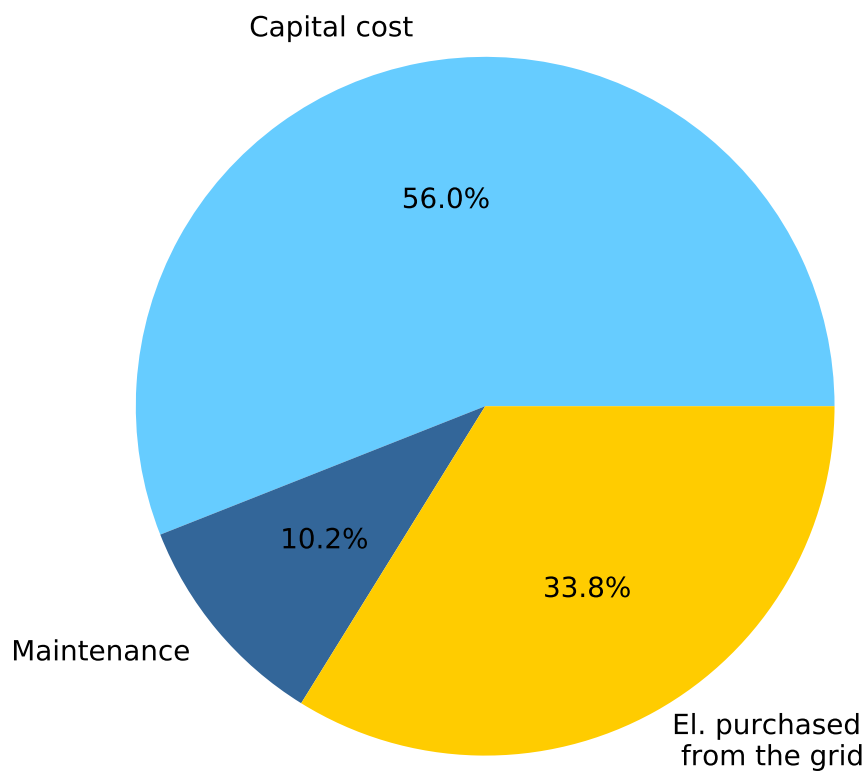


Figure 2: System cost annuity share

Table 2: System and Heat generation costs (all values incl. 8% VAT)

Group	Component	Costs [CHF]	Size	LifeTime Years	Total Costs [CHF]
TES	Storage (Stainless Steel)	-2000+10173 ⁺²⁵⁰ ₋₁₀₀ /m ³	2.00 m ³	30	18345.6 ^{+500.0} _{-200.0} (13.0 ^{+0.4%} _{-0.2%})
	Storage (Steel)	666+1214/m ³	1.30 m ³	30	2238.2 (1.6 ^{+0.0%} _{-0.0%})
	electric rod	600+0/m ³	2.00 m ³	30	600.0 (0.4 ^{+0.0%} _{-0.0%})
	Total TES				21183.8 ^{+500.0} _{-200.0} (15.0 ^{+0.4%} _{-0.2%})
Col	Collector	9282+875/m ²	58.09 m ²	30	60107.2 (42.5 ^{+0.1%} _{-0.1%})
IceStorage	Ice Storage (inc. installation)	0+850/m ³	23.23 m ³	20	19749.2 (14.0 ^{+0.0%} _{-0.0%})
Hp	HeatPump	8194+363/kW	18.44 kW	20	14888.4 (10.5 ^{+0.0%} _{-0.0%})
Hydraulics	Hydraulics	11500+0/kW	18.44 kW	30	11500.0 (8.1 ^{+0.0%} _{-0.0%})
Installation system	Installation System	14000+0/kW	18.44 kW	30	14000.0 (9.9 ^{+0.0%} _{-0.0%})
	Total Investment Cost				141428.71^{+500.00}_{-200.00} (100%)
Annuity	Annuity (yearly costs over lifetime)				13889 ⁺³¹ ₋₁₂ /a
	Share of Investment				7777 ⁺²⁶ ₋₁₀ /a (56 ^{+0%} _{-0%})
	Share of Electricity				4698 /a (34 ^{+0%} _{-0%})
	Share of Maintenance				1414 ⁺⁵ ₋₂ /a (10 ^{+0%} _{-0%})
	Share of Residual Value				0 /a (0%)
Present Value	Present Value of all costs				261237.88 ^{+598.00} _{-239.20} CHF
Energy Generation Costs	Using annuity:			23.96 ^{+0.05} _{-0.02}	Rp./kWh