

HydD_mfb30_ideal_dryN- CityBAS_dryNAC1.0x35.659Vice0.4x35.659HP1.0x17.1 Year0

Energy generation costs

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2021/06/05 at: 00:54:35 h

Table 1: Assumptions for calculation of heat generation costs

Rate	3.0 % per annum
Analysis period	30 years
Maintenance	1.0 % of Investment costs per year
Electricity	Fix costs: 0 Fr. per year Variable costs: 0.20 Fr. per kWh
Increase of electricity costs	0.0 % per year
Electricity costs year 1	3579 Fr. in year 1
Energy demand per year	35585 kWh

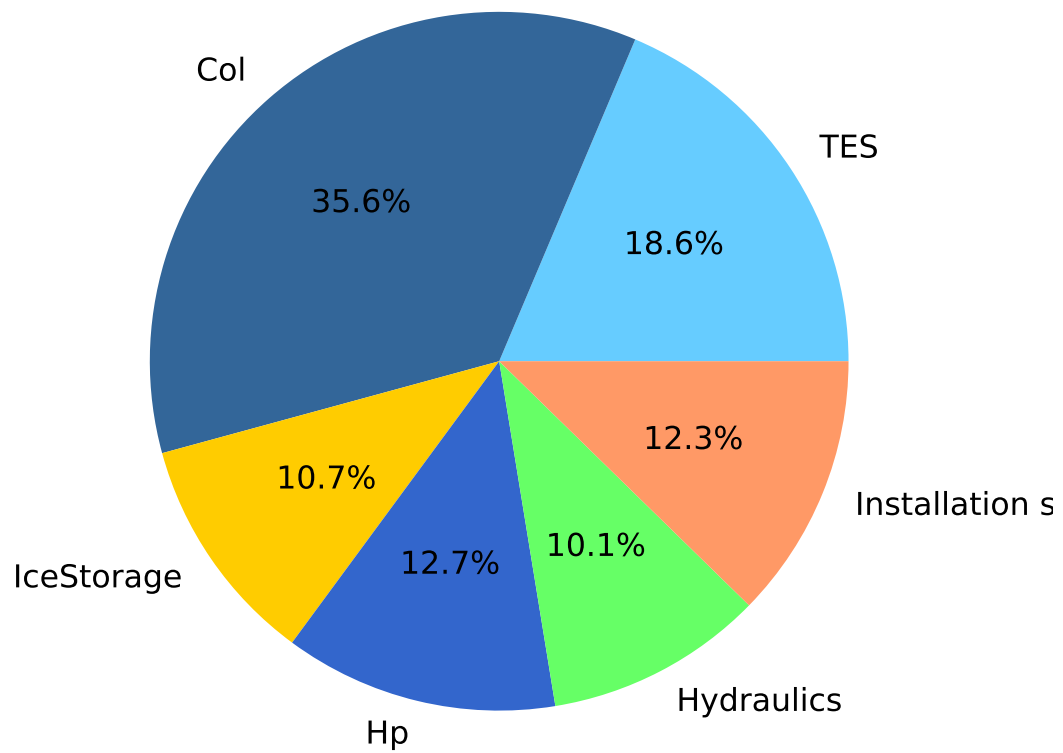


Figure 1: System cost

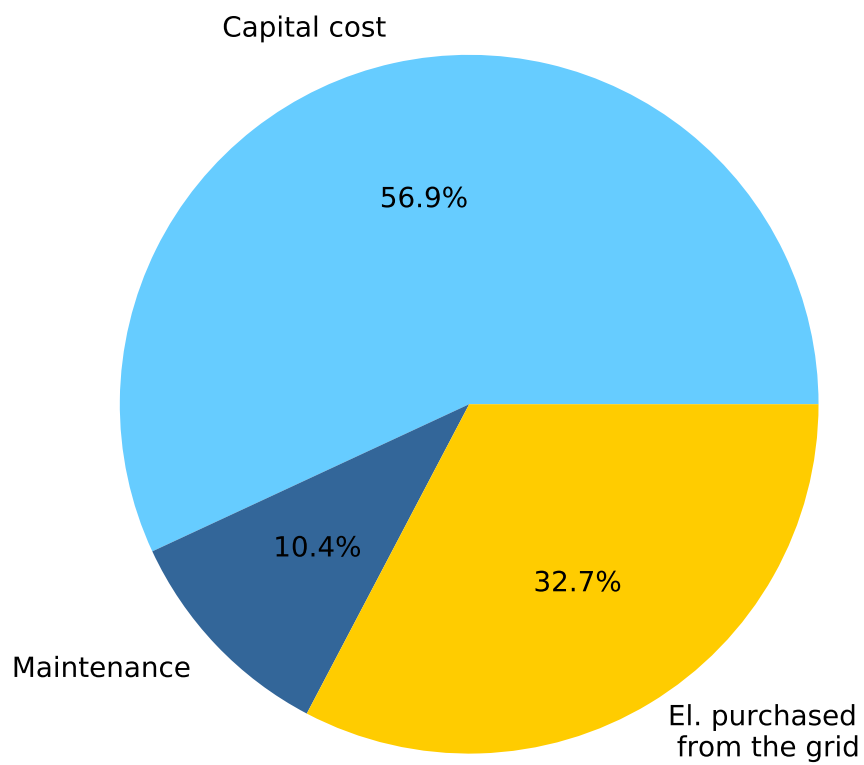


Figure 2: System cost annuity share

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} (16.1 ^{+0.5%} _{-0.2%})
	Storage (Steel)	666+1214/m ³	1.30 m ³	30	2238.2 (2.0 ^{+0.0%} _{-0.0%})
	electric rod	600+0/m ³	2.00 m ³	30	600.0 (0.5 ^{+0.0%} _{-0.0%})
	Total TES				21183.8 ^{+500.0} _{-200.0} (18.6 ^{+0.5%} _{-0.3%})
Col	Collector	9282+875/m ²	35.66 m ²	30	40483.6 (35.6 ^{+0.1%} _{-0.2%})
IceStorage	Ice Storage (inc. installation)	0+850/m ³	14.26 m ³	20	12124.1 (10.7 ^{+0.0%} _{-0.0%})
Hp	HeatPump	8194+363/kW	17.11 kW	20	14404.6 (12.7 ^{+0.0%} _{-0.1%})
Hydraulics	Hydraulics	11500+0/kW	17.11 kW	30	11500.0 (10.1 ^{+0.0%} _{-0.0%})
Installation system	Installation System	14000+0/kW	17.11 kW	30	14000.0 (12.3 ^{+0.0%} _{-0.1%})
	Total Investment Cost				113696.03^{+500.00}_{-200.00} (100%)
Annuity	Annuity (yearly costs over lifetime)				10946 ⁺³¹ ₋₁₂ /a
	Share of Investment				6230 ⁺²⁶ ₋₁₀ /a (57 ^{+0%} _{-0%})
	Share of Electricity				3579 /a (33 ^{+0%} _{-0%})
	Share of Maintenance				1137 ⁺⁵ ₋₂ /a (10 ^{+0%} _{-0%})
	Share of Residual Value				0 /a (0%)
Present Value	Present Value of all costs				206123.53 ^{+598.00} _{-239.20} CHF
Energy Generation Costs	Using annuity:			30.76 ^{+0.09} _{-0.03}	Rp./kWh