# HydD_mfb30_ideal_dryN-CityBAS_dryNAc1.0x35.659Vice0.2x35.659HP1.0x17.1 Year0

# Energy generation costs

**damian.birchler**
damian.birchler

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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 $Fr.\ per\ year$<br>Variable costs: 0.20 $Fr.\ per\ kWh$ |
| Increase of electricity costs | 0.0 % $per\ year$ |
| Electricity costs year 1 | 3780 Fr. in year 1 |

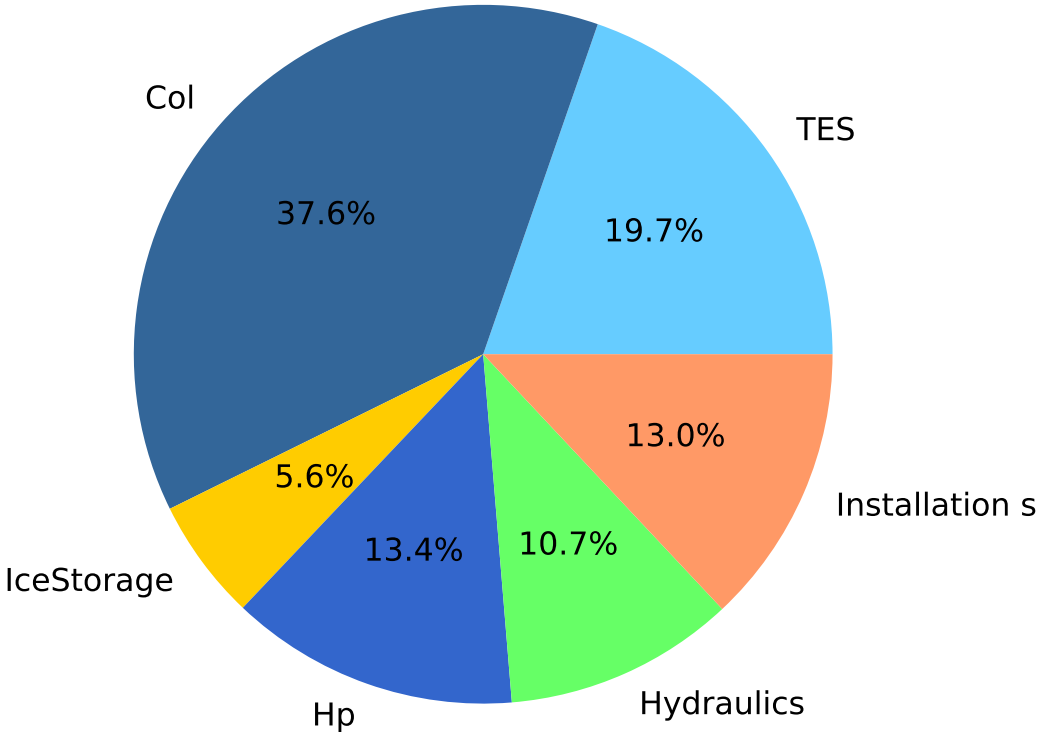


Figure 1: System cost

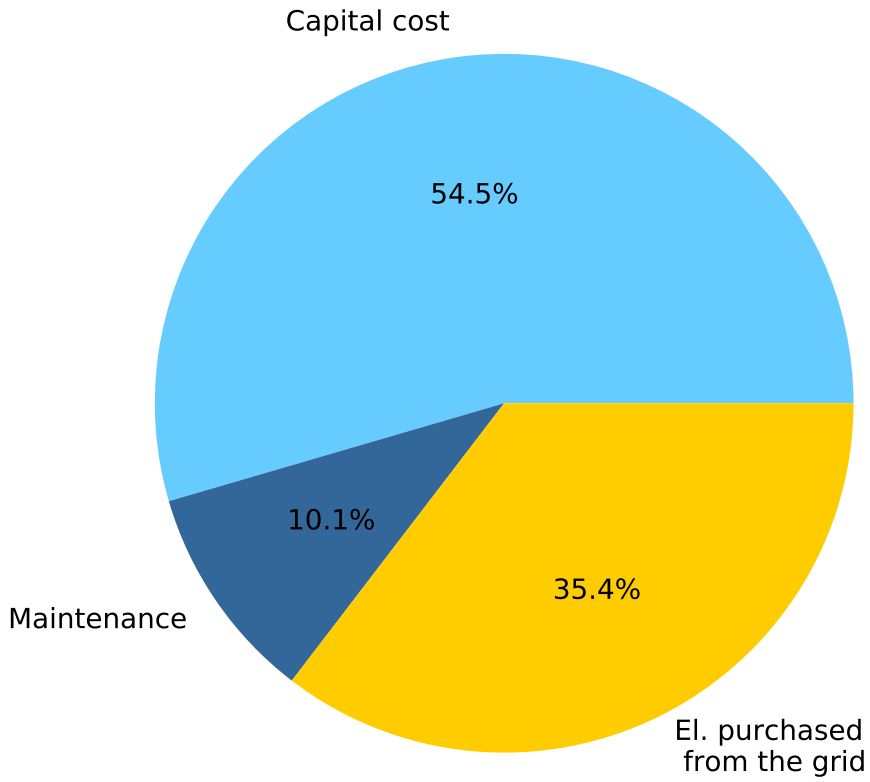


Figure 2: System cost annuity share

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$^{+500.0}_{-200.0}$ (17.0$^{+0.5}_{-0.3}$%) |
| | Storage (Steel) | 666+1214/m$^3$ | 1.30 m$^3$ | 30 | 2238.2 (2.1$^{+0.0}_{-0.0}$%) |
| | electric rod | 600+0/m$^3$ | 2.00 m$^3$ | 30 | 600.0 (0.6$^{+0.0}_{-0.0}$%) |
| | **Total TES** | | | | 21183.8$^{+500.0}_{-200.0}$ (19.7$^{+0.5}_{-0.3}$%) |
| **Col** | Collector | 9282+875/m$^2$ | 35.66 m$^2$ | 30 | 40483.6 (37.6$^{+0.1}_{-0.2}$%) |
| **IceStorage** | Ice Storage (inc. installation) | 0+850/m$^3$ | 7.13 m$^3$ | 20 | 6062.0 (5.6$^{+0.0}_{-0.0}$%) |
| **Hp** | HeatPump | 8194+363/kW | 17.11 kW | 20 | 14404.6 (13.4$^{+0.0}_{-0.1}$%) |
| **Hydraulics** | Hydraulics | 11500+0/kW | 17.11 kW | 30 | 11500.0 (10.7$^{+0.0}_{-0.0}$%) |
| **Installation system** | Installation System | 14000+0/kW | 17.11 kW | 30 | 14000.0 (13.0$^{+0.0}_{-0.1}$%) |
| | **Total Investment Cost** | | | | **107634.00**$^{+500.00}_{-200.00}$ (100%) |
| Annuity | Annuity (yearly costs over lifetime) | | | | 10680$^{+31}_{-12}$ /a |
| | Share of Investment | | | | 5823$^{+26}_{-10}$ /a (55$^{+0}_{-0}$%) |
| | Share of Electricity | 0+0.20/kWh | 18902 kWh | | 3780 /a (35$^{+0}_{-0}$%) |
| | Share of Maintenance | | | | 1076$^{+5}_{-2}$ /a (10$^{+0}_{-0}$%) |
| | Share of Residual Value | | | | 0 /a ( 0%) |
| Present Value | Present Value of all costs | | | | 202828.94$^{+598.00}_{-239.20}$ CHF |
| Energy Generation Costs | Using annuity: | | | 30.01$^{+0.09}_{-0.03}$ | Rp./kWh |