

Výhody a obmedzenia použitia tepelných čerpadiel v kombinácii s fotovoltaickými systémami

BD Hviezdne - Hviezdoslavov



Špecifikácia zdroja tepla/chladiu pre BD -12 bytov

- Duálne TČ vzduch/voda A5/W30 - 2 x 15 kW
Faktor COP - 3,50 el. príkon 2 x 3,3 kW
- Vysokoteplotné TČ voda/voda
W30/W60 - 29,7 kW
- Faktor COP - 4,0 el. príkon 7,6 kW
- Pre odmrazovanie suchého chladiča je použitý
elektrokotol, tepelný výkon 2-24 kW
- Fotovoltické panely 9,0 kWp

Špecifikácia zdroja tepla/chladu pre BD -12 bytov

- Teplovodné stropné vykurovanie
 - tepl.spád 35/30°C
- Stropné chladenie
 - tepl.spád 17/22°C
- Teplá voda
 - tepl.spád 55/10°C
- Zásobníkový ohrev TV - 2 x 500 litrov
s elektrickou špirálou 2 x 6 kW
- Zásobník vykurovacej/chladiacej vody
- 1 x 500 litrov











Strojovna č.10

Strojovna č.11

Strojovna č.12

Strojovna č.13

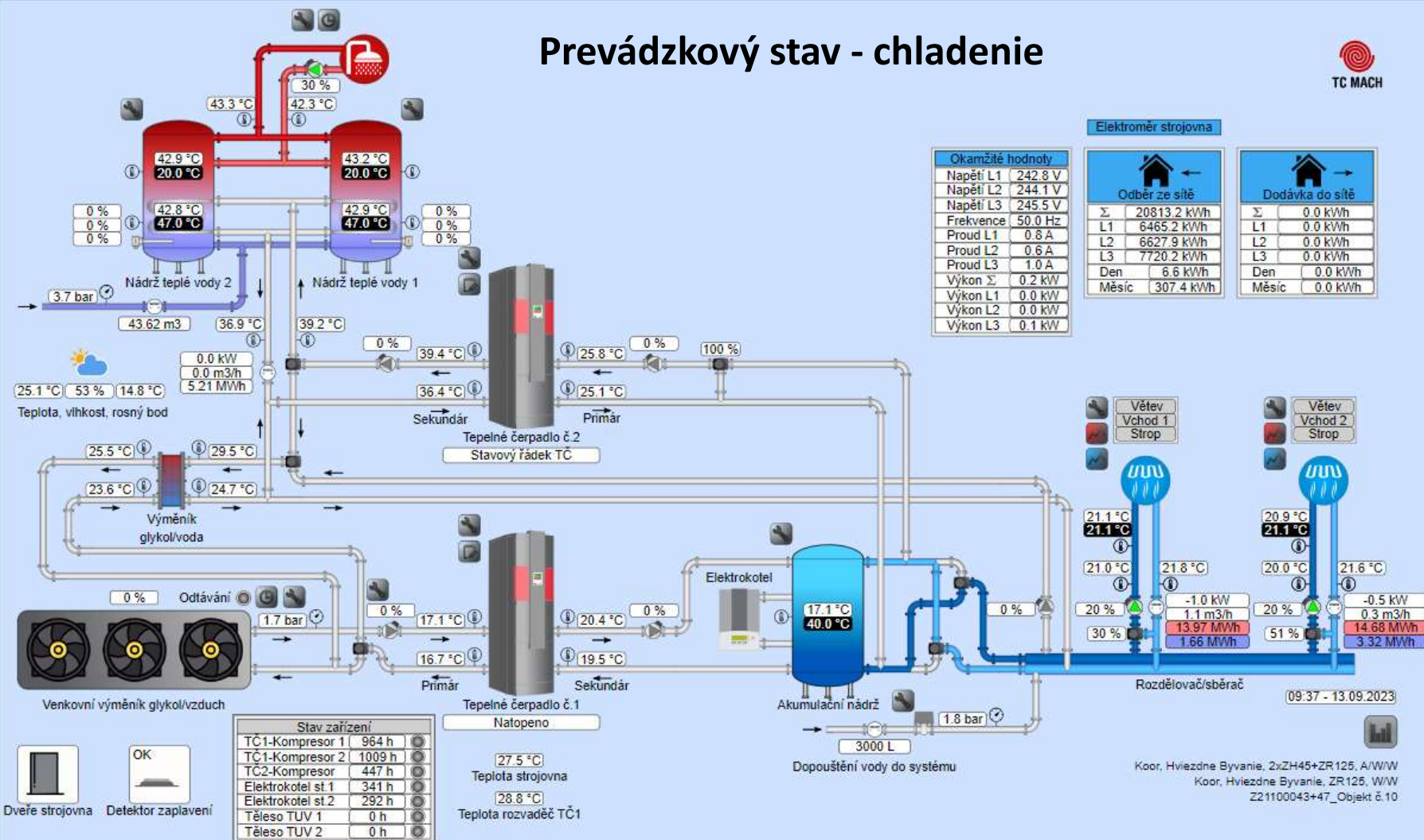
Strojovna č.14

Strojovna č.15

Strojovna č.16

Strojovna č.23

Prevádzkový stav - chladenie



Koor, Hviezdne Byvanie, 2xZH45+ZR125, A/W/W
Koor, Hviezdne Byvanie, ZR125, W/W
Z21100043+47 Objekt č.10

Strojovna č.10

Strojovna č.11

Strojovna č.12

Strojovna č.13

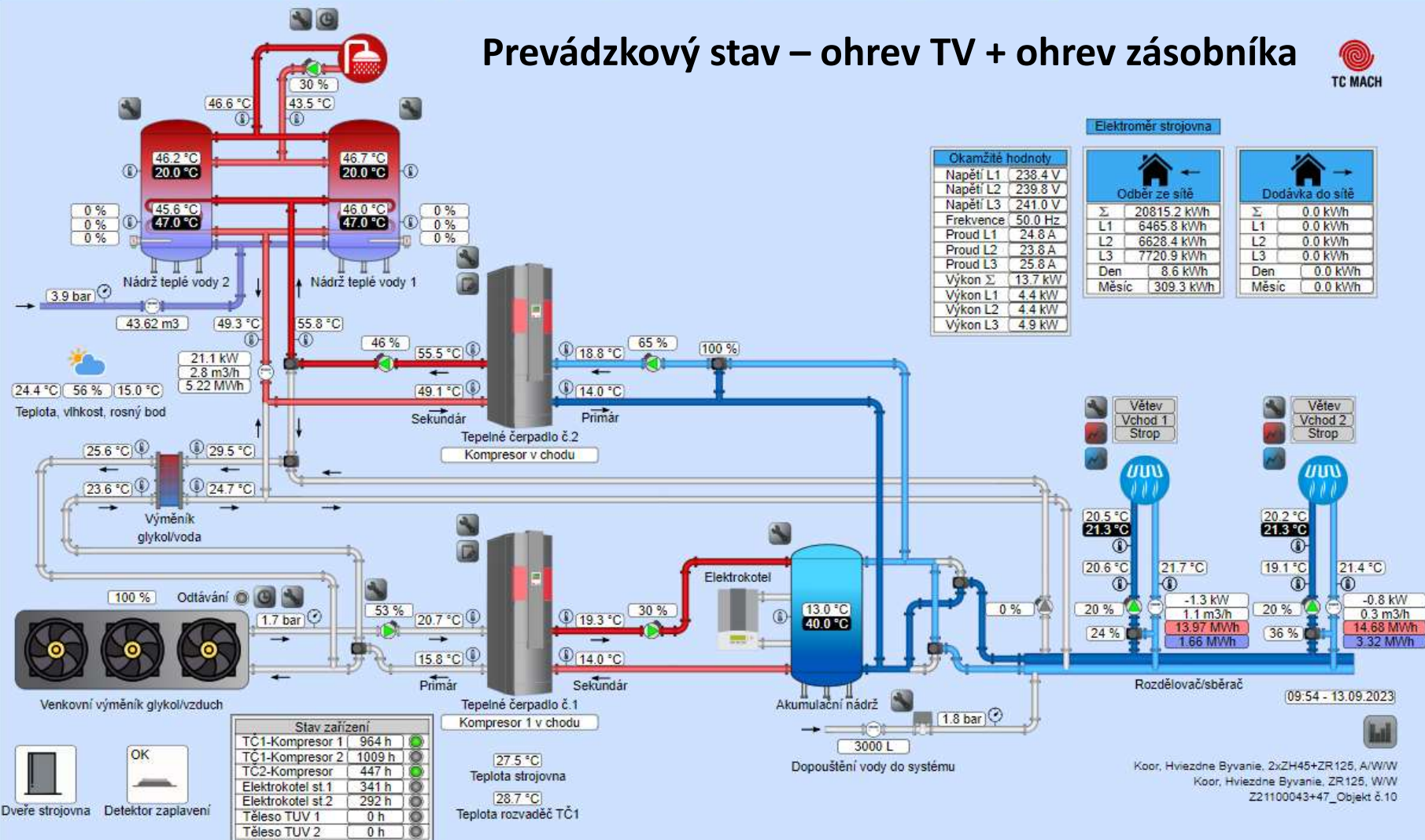
Strojovna č.14

Strojovna č.15

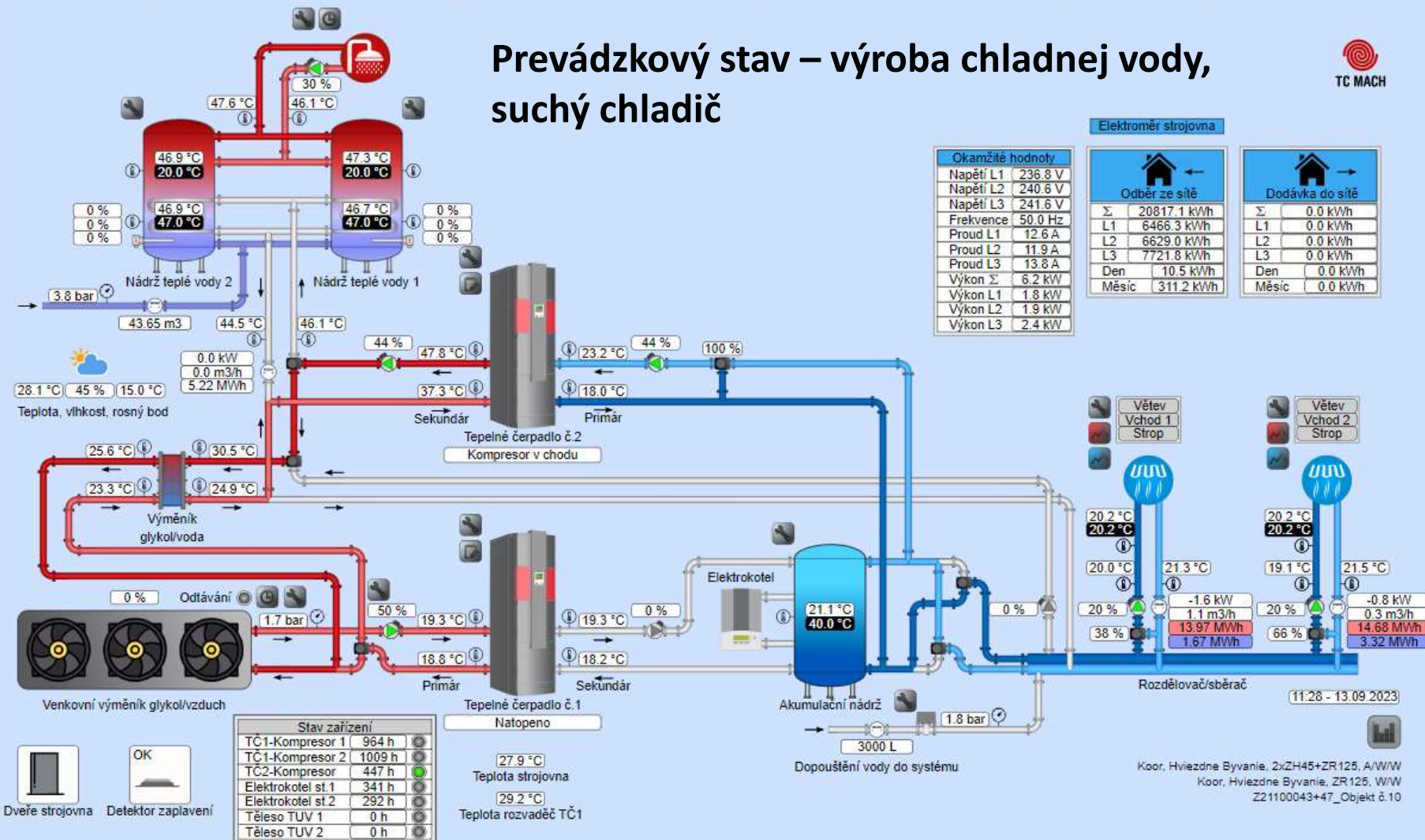
Strojovna č.16

Strojovna č.23

Prevádzkový stav – ohrev TV + ohrev zásobníka



Prevádzkový stav – výroba chladnej vody, suchý chladič



Spotreba/ výroba elektriny z fotovoltiky

- Denný priebeh - OST3 Strážske
fotovoltika s výkonom 8 kWp

Energy Management

Day

Month

Year

Lifetime



2023-01-15



Yield: **0.75** kWh

100.00%

0.00%

Consumed: 0.75 kWh

Fed to grid: 0.00 kWh

Consumption: **73.17** kWh

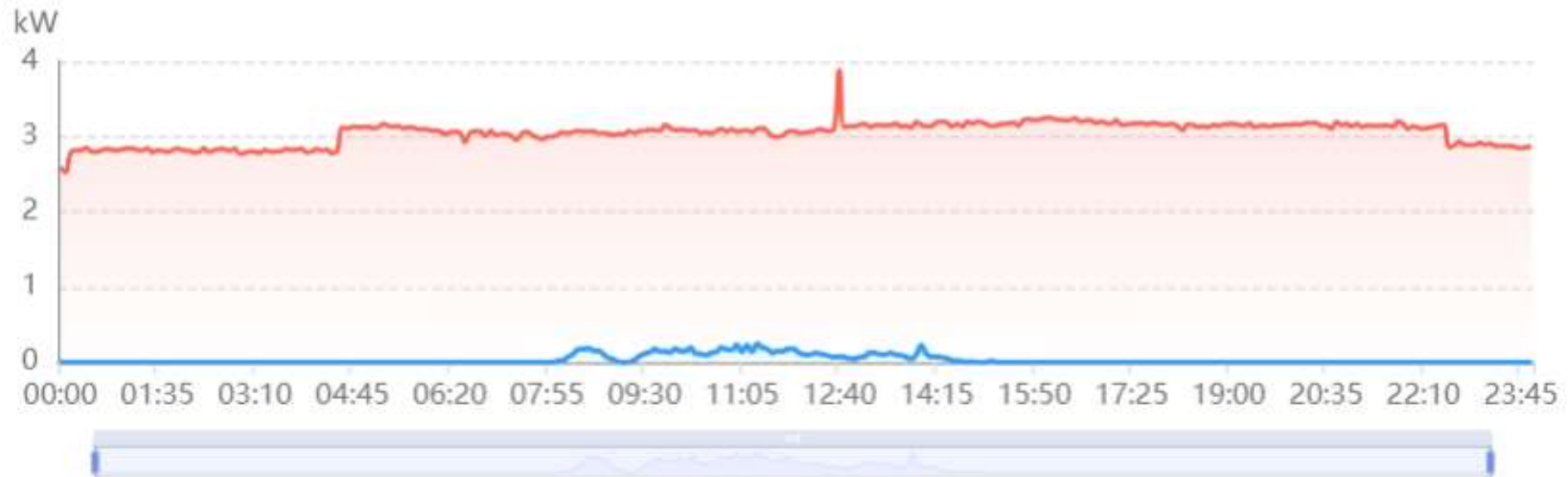
1.03%

98.97%

From PV: 0.75 kWh

From grid: 72.42 kWh

● PV output ● Total consumption ● Consumed from PV (kW)



Energy Management

Day

Month

Year

Lifetime



2023-01



Yield: **67.67** kWh

100.00%

0.00%

Consumed: 67.67 kWh

Fed to grid: 0.00 kWh

Consumption: **2.17** MWh

3.11%

96.89%

From PV: 67.67 kWh

From grid: 2.10 MWh

Yield Consumption Consumed from PV



Energy Management

Day

Month

Year

Lifetime



2023-02-15



Yield: **5.92** kWh

100.00%

0.00%

Consumed: 5.92 kWh

Fed to grid: 0.00 kWh

Consumption: **73.16** kWh

8.09%

91.91%

From PV: 5.92 kWh

From grid: 67.24 kWh

● PV output ● Total consumption ● Consumed from PV (kW)



Energy Management

Day

Month

Year

Lifetime



2023-02



Yield: **127.78** kWh

100.00%

0.00%

Consumed: 127.78 kWh

Fed to grid: 0.00 kWh

Consumption: **1.97** MWh

6.48%

93.52%

From PV: 127.78 kWh

From grid: 1.85 MWh

Yield Consumption Consumed from PV



Energy Management

Day

Month

Year

Lifetime



2023-03-15



Yield: **3.22** kWh

100.00%

0.00%

Consumed: 3.22 kWh

Fed to grid: 0.00 kWh

Consumption: **68.95** kWh

4.67%

95.33%

From PV: 3.22 kWh

From grid: 65.73 kWh

● PV output ● Total consumption ● Consumed from PV (kW)



Energy Management

Day

Month

Year

Lifetime



2023-03



Yield: **296.57** kWh

99.95%

0.05%

Consumed: 296.42 kWh

Fed to grid: 0.15 kWh

Consumption: **1.81** MWh

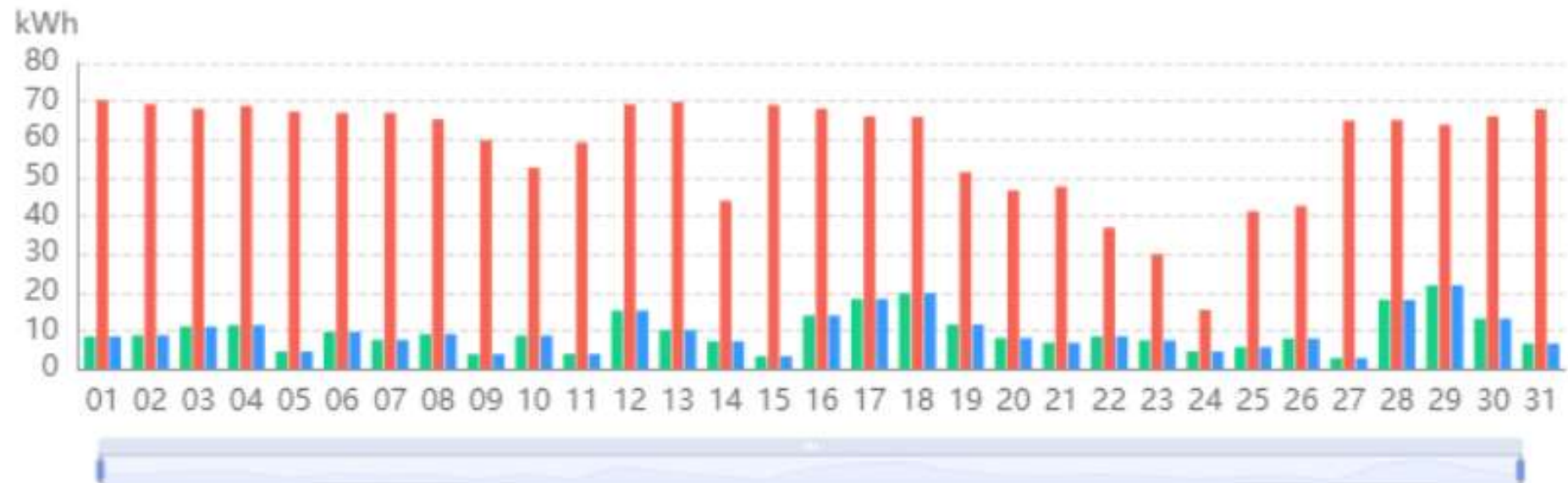
16.42%

83.58%

From PV: 296.42 kWh

From grid: 1.51 MWh

Yield Consumption Consumed from PV



Energy Management

Day

Month

Year

Lifetime



2023-04-15



Yield: **12.99** kWh

93.76%

6.24%

Consumed: 12.18 kWh

Fed to grid: 0.81 kWh

Consumption: **60.57** kWh

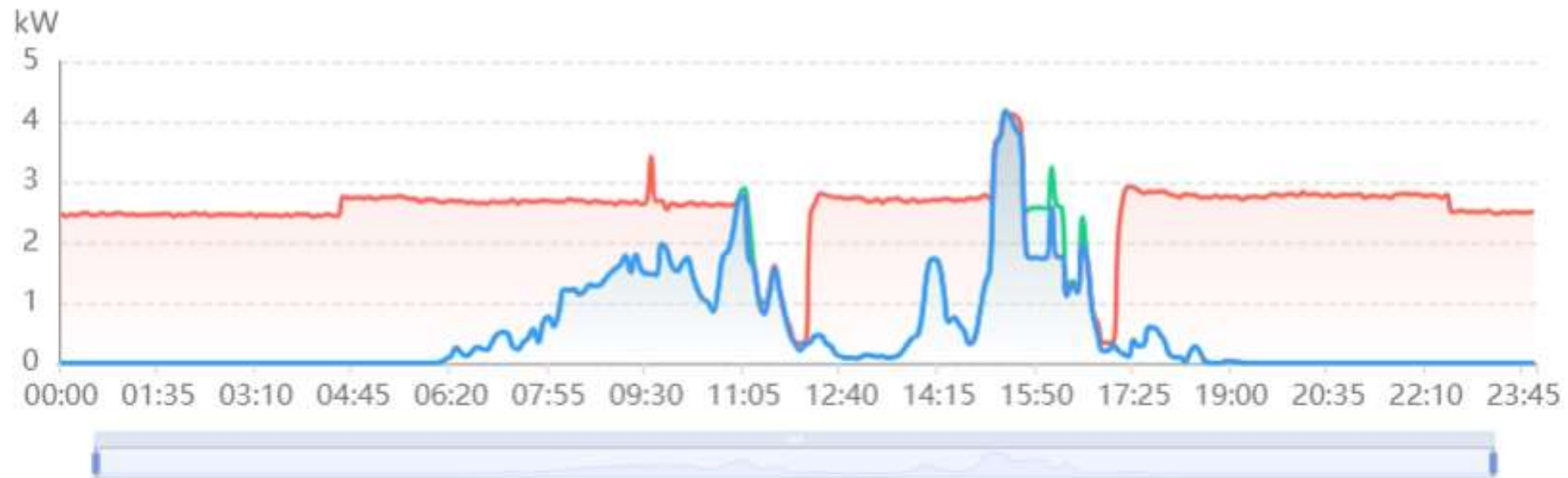
20.11%

79.89%

From PV: 12.18 kWh

From grid: 48.39 kWh

● PV output ● Total consumption ● Consumed from PV (kW)



Energy Management

Day

Month

Year

Lifetime



2023-04



Yield: **380.22** kWh

95.52%

4.48%

Consumed: 363.17 kWh

Fed to grid: 17.05 kWh

Consumption: **1.29** MWh

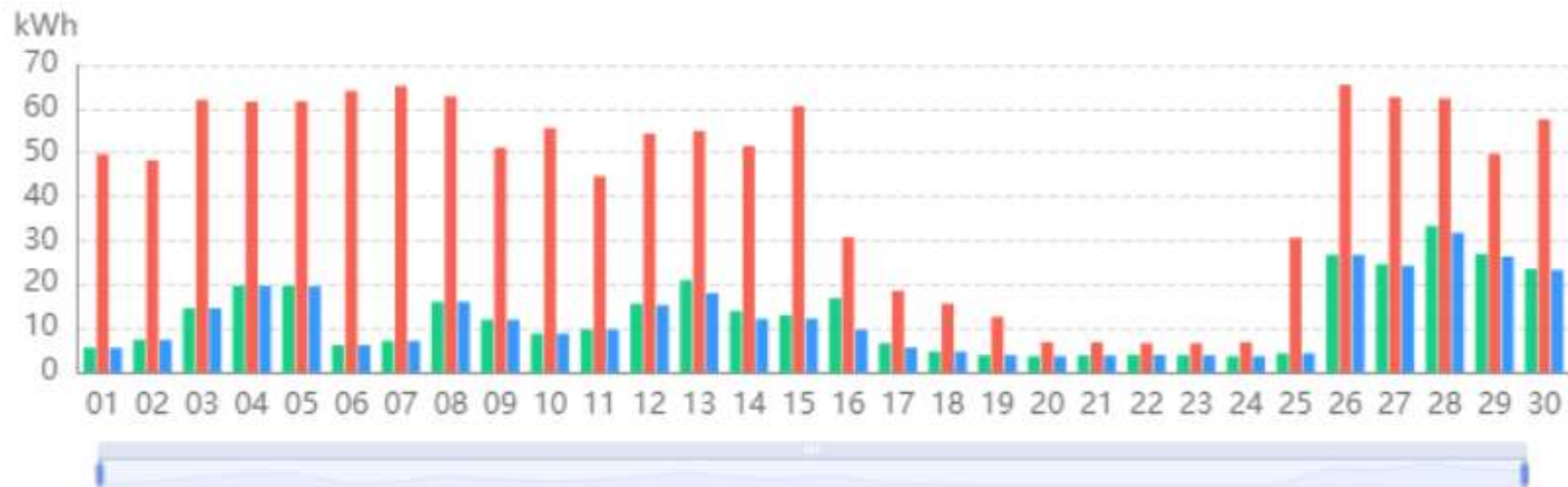
28.20%

71.80%

From PV: 363.17 kWh

From grid: 924.45 kWh

Yield Consumption Consumed from PV



Energy Management

Day

Month

Year

Lifetime



2023-05-15



Yield: **3.94** kWh

98.98%

1.02%

Consumed: 3.90 kWh

Fed to grid: 0.04 kWh

Consumption: **7.52** kWh

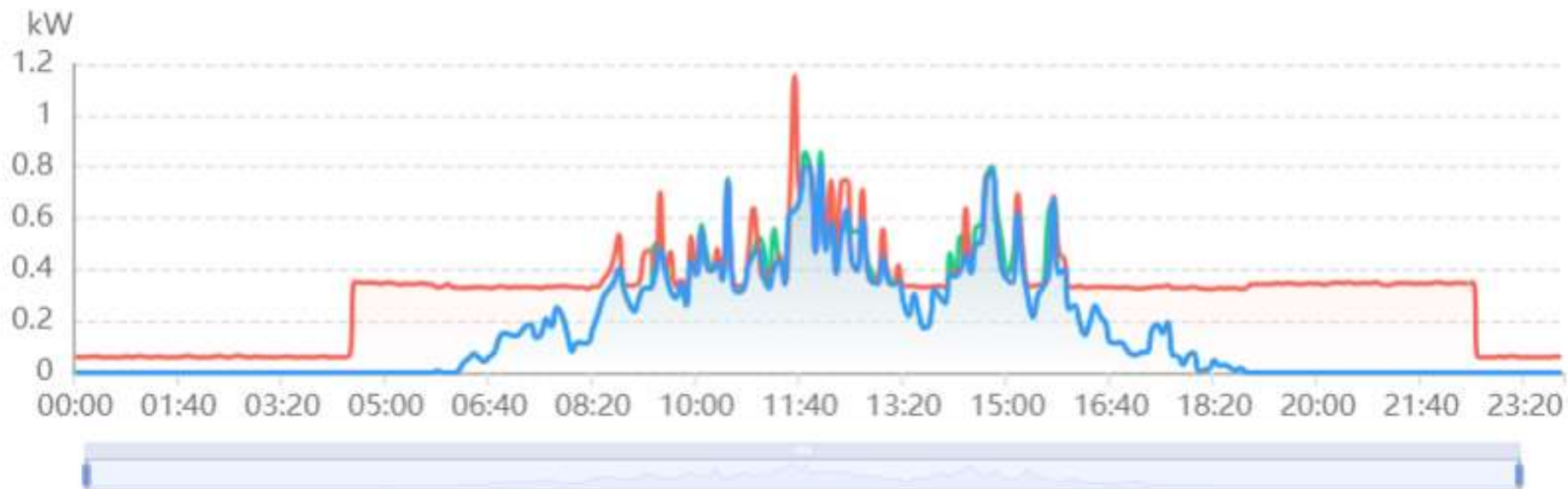
51.86%

48.14%

From PV: 3.90 kWh

From grid: 3.62 kWh

● PV output ● Total consumption ● Consumed from PV (kW)



Energy Management

Day

Month

Year

Lifetime



2023-05



Yield: **989.06** kWh

95.43%

4.57%

Consumed: 943.90 kWh

Fed to grid: 45.16 kWh

Consumption: **1.06** MWh

89.36%

10.64%

From PV: 943.90 kWh

From grid: 112.35 kWh

Yield Consumption Consumed from PV

kWh



Energy Management

Day

Month

Year

Lifetime



2023-06-06



Yield: **14.22** kWh

96.98%

3.02%

Consumed: 13.79 kWh

Fed to grid: 0.43 kWh

Consumption: **15.91** kWh

86.68%

13.32%

From PV: 13.79 kWh

From grid: 2.12 kWh

● PV output ● Total consumption ● Consumed from PV (kW)



Energy Management

Day

Month

Year

Lifetime



2023-06



Yield: **891.44** kWh

94.31%

5.69%

Consumed: 840.71 kWh

Fed to grid: 50.73 kWh

Consumption: **901.79** kWh

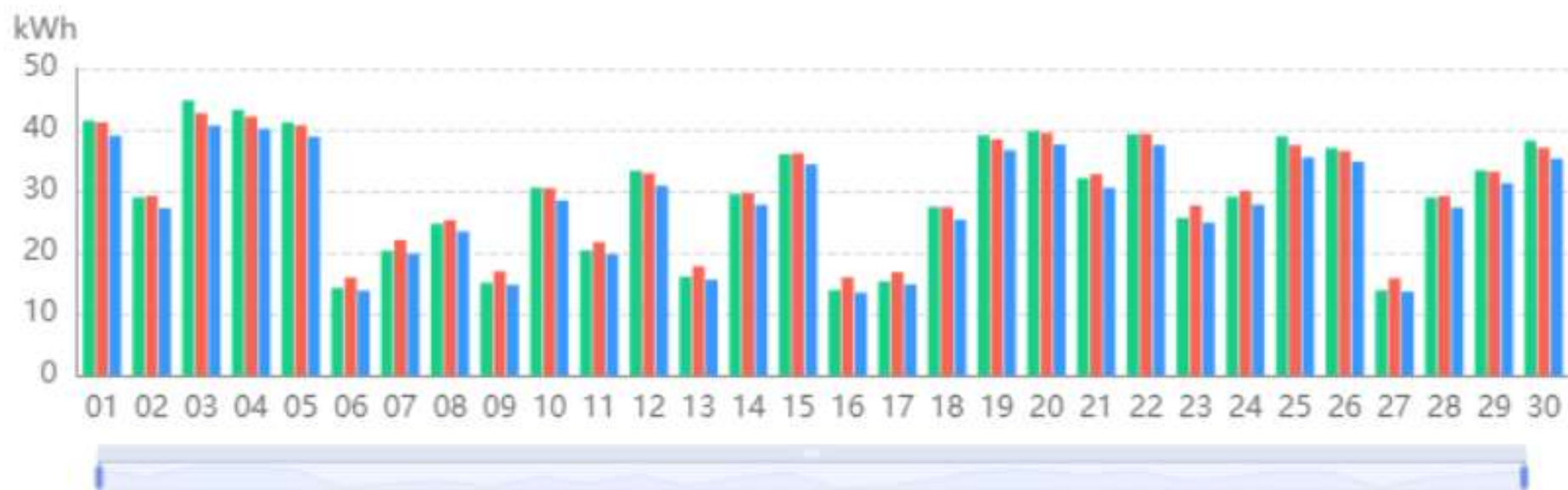
93.23%

6.77%

From PV: 840.71 kWh

From grid: 61.08 kWh

Yield Consumption Consumed from PV



Energy Management

Day

Month

Year

Lifetime



2023-07-15



Yield: **38.58** kWh

93.88%

6.12%

Consumed: 36.22 kWh

Fed to grid: 2.36 kWh

Consumption: **38.18** kWh

94.87%

5.13%

From PV: 36.22 kWh

From grid: 1.96 kWh

● PV output ● Total consumption ● Consumed from PV (kW)



Energy Management

Day

Month

Year

Lifetime



2023-07



Yield: **925.61** kWh

94.95%

5.05%

Consumed: 878.86 kWh

Fed to grid: 46.75 kWh

Consumption: **947.20** kWh

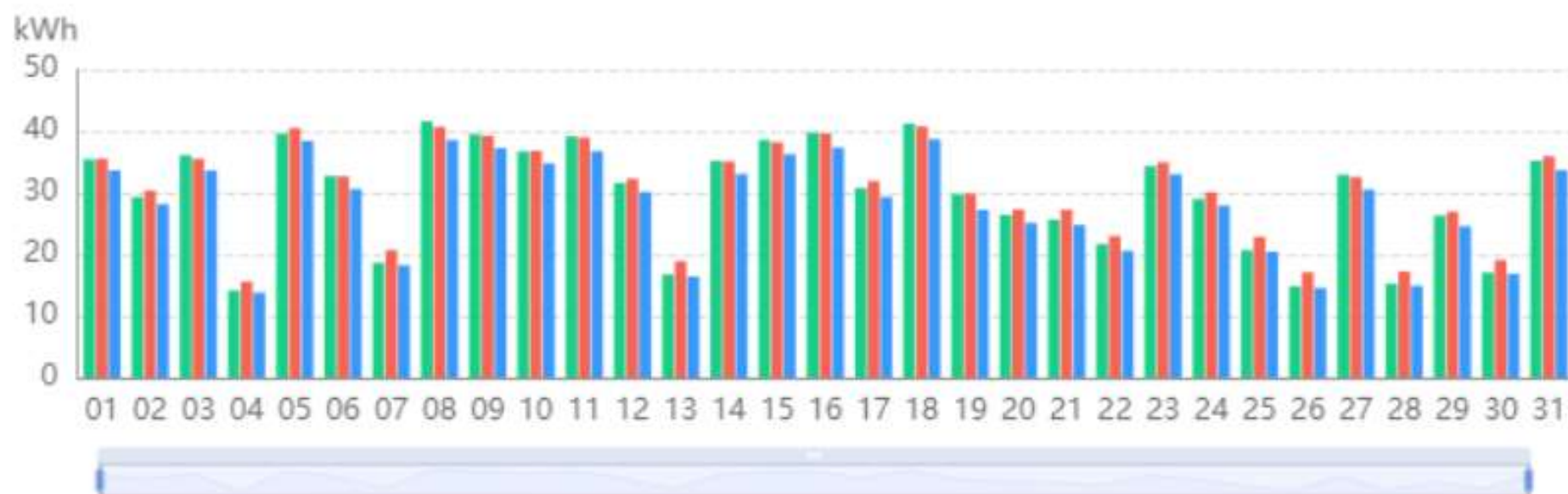
92.79%

7.21%

From PV: 878.86 kWh

From grid: 68.34 kWh

Yield Consumption Consumed from PV



Energy Management

Day

Month

Year

Lifetime



2023-08-15



Yield: **33.61** kWh

97.95%

2.05%

Consumed: 32.92 kWh

Fed to grid: 0.69 kWh

Consumption: **34.55** kWh

95.28%

4.72%

From PV: 32.92 kWh

From grid: 1.63 kWh

● PV output ● Total consumption ● Consumed from PV (kW)



Energy Management

Day

Month

Year

Lifetime



2023-08



Yield: **836.81** kWh

97.51%

2.49%

Consumed: 815.97 kWh

Fed to grid: 20.84 kWh

Consumption: **877.96** kWh

92.94%

7.06%

From PV: 815.97 kWh

From grid: 61.99 kWh

Yield Consumption Consumed from PV



Energy Management

Day

Month

Year

Lifetime



2023-09-15



Yield: **24.32** kWh

97.82%

2.18%

Consumed: 23.79 kWh

Fed to grid: 0.53 kWh

Consumption: **25.64** kWh

92.78%

7.22%

From PV: 23.79 kWh

From grid: 1.85 kWh

● PV output ● Total consumption ● Consumed from PV (kW)



Energy Management

Day

Month

Year

Lifetime



2023-09



Yield: **417.74** kWh

98.53%

1.47%

Consumed: 411.58 kWh

Fed to grid: 6.16 kWh

Consumption: **444.12** kWh

92.67%

7.33%

From PV: 411.58 kWh

From grid: 32.54 kWh

Yield Consumption Consumed from PV



Energy Management

Day

Month

Year

Lifetime



2023



Yield: **4.93** MWh

96.21%

3.79%

Consumed: 4.75 MWh

Fed to grid: 186.87 kWh

Consumption: **11.47** MWh

41.40%

58.60%

From PV: 4.75 MWh

From grid: 6.72 MWh

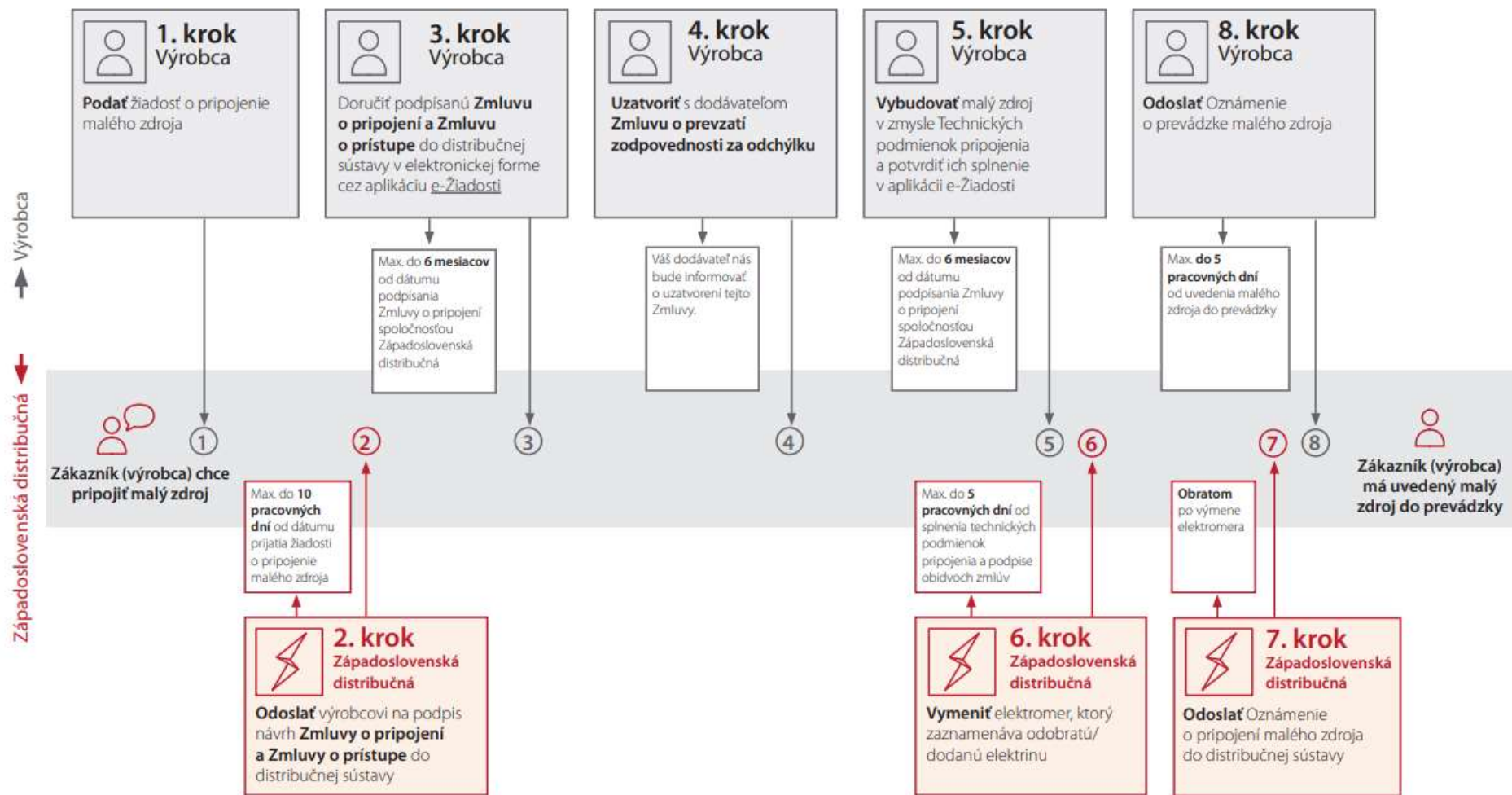
Yield Consumption Consumed from PV



Záver – obmedzenia FV

1. Inštalovaná FV, dokáže v mesiacoch máj až september bez batérie zabezpečiť dodávku elektriny pre zdroj tepla/chladu TČ na úrovni 50-70%. S vykurovacou špirálou bude využitie elektriny z FV určite vyššie.
2. Celoročne očakávame podiel elektriny z FV vo výške 25 -35%
3. Dlhá doba od podania Žiadosti o pripojenie malého zdroja až po odoslanie Oznámenia o jeho prevádzke
4. Pre lepšie využitie FV je výhodné, keď TČ má invertor /invertor mení otáčky kompresora a ventilátora/

Kroky potrebné k pripojeniu malého zdroja do 10,8 kW



Ďakujem za pozornosť