Scenario — PV
Old house to improve Austria - Inning 48.182, 15.417

Name	Slope °	Azimuth °	Wp	Wall d/h m	Face	Bifacial	Wp counted
Garage roof	1	0	10,740	—	front	—	yes
Garage side wall south	90	0	3,475	5 / 4	front	—	yes
Garage side wall north	90	180	3,475	5 / 4	front	—	yes
Garage door side	90	90	700	5 / 4	front	—	yes
Garage back side	90	-90	2,540	5 / 4	front	—	yes
Garden fence east	90	-90	6,000	5 / 4	face 1	—	yes
Garden fence east face2	90	90	4,800	5 / 4	face 2	80 %	no
Roof south	22	0	3,000	—	front	—	yes
Roof east	22	-90	3,000	—	front	—	yes
Roof west	22	90	3,000	—	front	—	yes
Roof north	22	180	3,000	—	front	—	yes
Total counted			38,930				

Location: My most visited location in “lower Austria”, just at the Tesla SuC.
Database PVGIS-SARAH3 2005–2023 loss 14 % azimuth 0 = south, 90 = west, −90 = east.
Price bands and charts use UTC+1 from longitude (15° per hour), not the political time zone.
Peak hour 2012-05-18 10:10 local (09:10 UTC) 21,261 W 0.546 W/Wp of 38,930 Wp.
Database gaps: 10 days with 0 yield while the sun reached the horizon at noon. 2008-01-23, 2008-03-01, 2008-03-06, 2008-05-17, 2008-05-18, 2009-04-18, 2009-04-19, 2009-08-15, 2009-08-16, 2016-10-16. Yield charts skip them. The simulation uses the lowest-yield day of that month.
Sell when the export price is above 0. At 0 cent export PV yield only, not the battery. Do not sell when the earning is negative. At 15:00 import/export scheduling.

Click here to work on this simulation. If the click does nothing, copy the address below and paste it in the browser. PEGE energy sim server has to run.

http://127.0.0.1:8765/form?name=Austria+-+Inning&simname=PEN+EWG+max+PV+-+air+exchange+with+heat+recovery&lat=48.182&lon=15.417&startyear=2005&endyear=2023&loss=14.0&raddatabase=auto&usehorizon=1&outdir=%2Fhome%2Ffounder%2F

Scenario — house, heat pump, battery
Old house to improve Austria - Inning 48.182, 15.417

Chapter	Parameter	Value
Building	Design out / in / heat	-10.0 °C / 20.0 °C / 3,300 W
	Heat on / cool on / ground	24.0 °C / 26.0 °C / 10.0 °C
	Curve / flow min / max	0.3 / 25.0 °C / 55.0 °C
	Thermal mass of the house	25.0 kWh/K
	Household only	4.0 kWh/day
DHW	Litres at 40 °C / tank	120 L tank 62.0 °C 8–18 h
	Water out of the pipe Q1–Q4	8 °C 10 °C 12 °C 10 °C
Heat pump	Source	air and ground
	COP −10/0/10 @ 35 °C	2.4 3.4 4.5
	COP −10/0/10 @ 50 °C	1.9 2.6 3.3
	kW −10/0/10 @ 35 °C	4.0 5.0 6.0
	kW −10/0/10 @ 50 °C	3.5 4.5 5.0
Battery	kWh / C-rate / SOC min–max–start	45.0 kWh C 0.5 5 / 95 / 50 %
	Nameplate	—
	Charge / discharge η	95 % / 90 %
Grid	Inverter / grid connection	12.0 kW / 12.0 kW
	Max export	12.0 kW
	Import cap Jan–Jun kW	Jan 3 Feb 3 Mar 3 Apr 3 May 3 Jun 3
	Import cap Jul–Dec kW	Jul 3 Aug 3 Sep 3 Oct 3 Nov 3 Dec 3
Cars	Lunch DC / night AC	0.0 kWh @ 30.0 kW night 6.0 kWh @ 4.0 kW

Clock is winter time UTC+1. Emergency import is an hour above the monthly kW cap.

Records 1–10 contribution of each PV
Austria - Inning 48.182, 15.417

PV	2012-05-18 09:10	2016-05-17 09:10	2013-05-13 09:10	2006-05-25 09:10	2009-06-13 09:10	2020-05-07 09:10	2021-05-26 09:10	2009-06-03 09:10	2009-06-04 09:10	2017-04-30 09:10
Garage roof	7,617	7,574	7,581	7,713	7,701	7,489	7,689	7,640	7,498	7,365
Garage side wall south	1,509	1,520	1,561	1,424	1,299	1,625	1,409	1,339	1,342	1,723
Garage side wall north	178	202	171	137	175	155	111	168	228	141
Garage door side	36	41	34	28	35	31	22	34	46	28
Garage back side	1,114	1,115	1,118	1,098	1,102	1,124	1,094	1,086	1,086	1,146
Garden fence east	2,632	2,634	2,642	2,595	2,604	2,654	2,585	2,564	2,566	2,708
Garden fence east face2	245	279	236	190	242	214	154	232	315	195
Roof south	2,331	2,321	2,341	2,343	2,304	2,341	2,329	2,301	2,251	2,330
Roof east	2,335	2,323	2,333	2,363	2,357	2,318	2,351	2,338	2,288	2,290
Roof west	1,626	1,621	1,604	1,643	1,654	1,563	1,640	1,638	1,629	1,519
Roof north	1,637	1,629	1,602	1,673	1,721	1,544	1,672	1,687	1,677	1,478
Watt at record	21,261	21,257	21,223	21,206	21,194	21,058	21,057	21,028	20,926	20,923
Percent of installed peak	54.6	54.6	54.5	54.5	54.4	54.1	54.1	54.0	53.8	53.7

Values are watts at that hour. Date and time are UTC. Record 21,261 W (54.6 % of 38,930 Wp).

Hours at or above a share of the record
Austria - Inning 48.182, 15.417

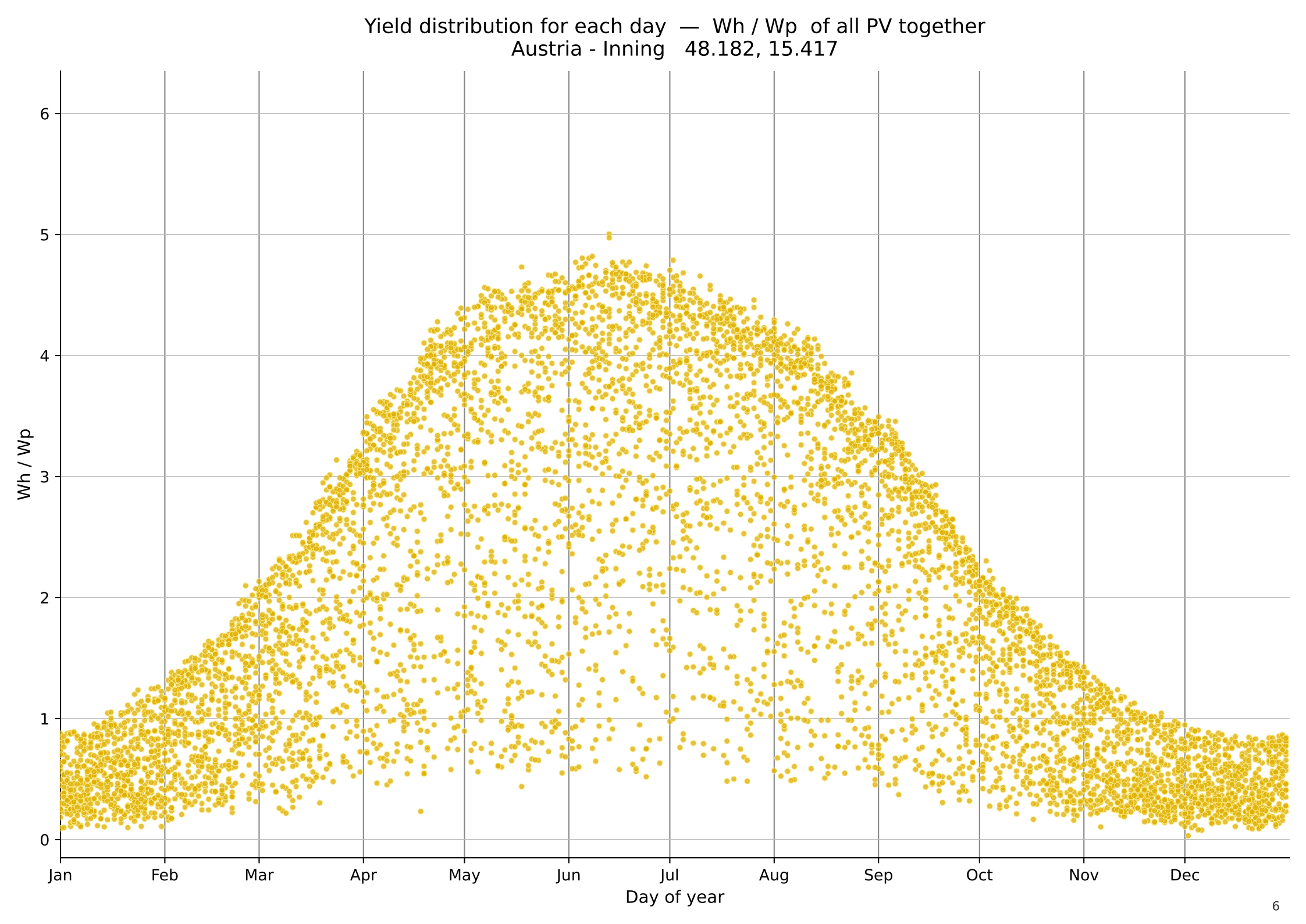
Of the record	Hours	Watts
98 %	14	20,836 W
96 %	78	20,410 W
94 %	255	19,985 W
92 %	654	19,560 W
90 %	1,338	19,135 W

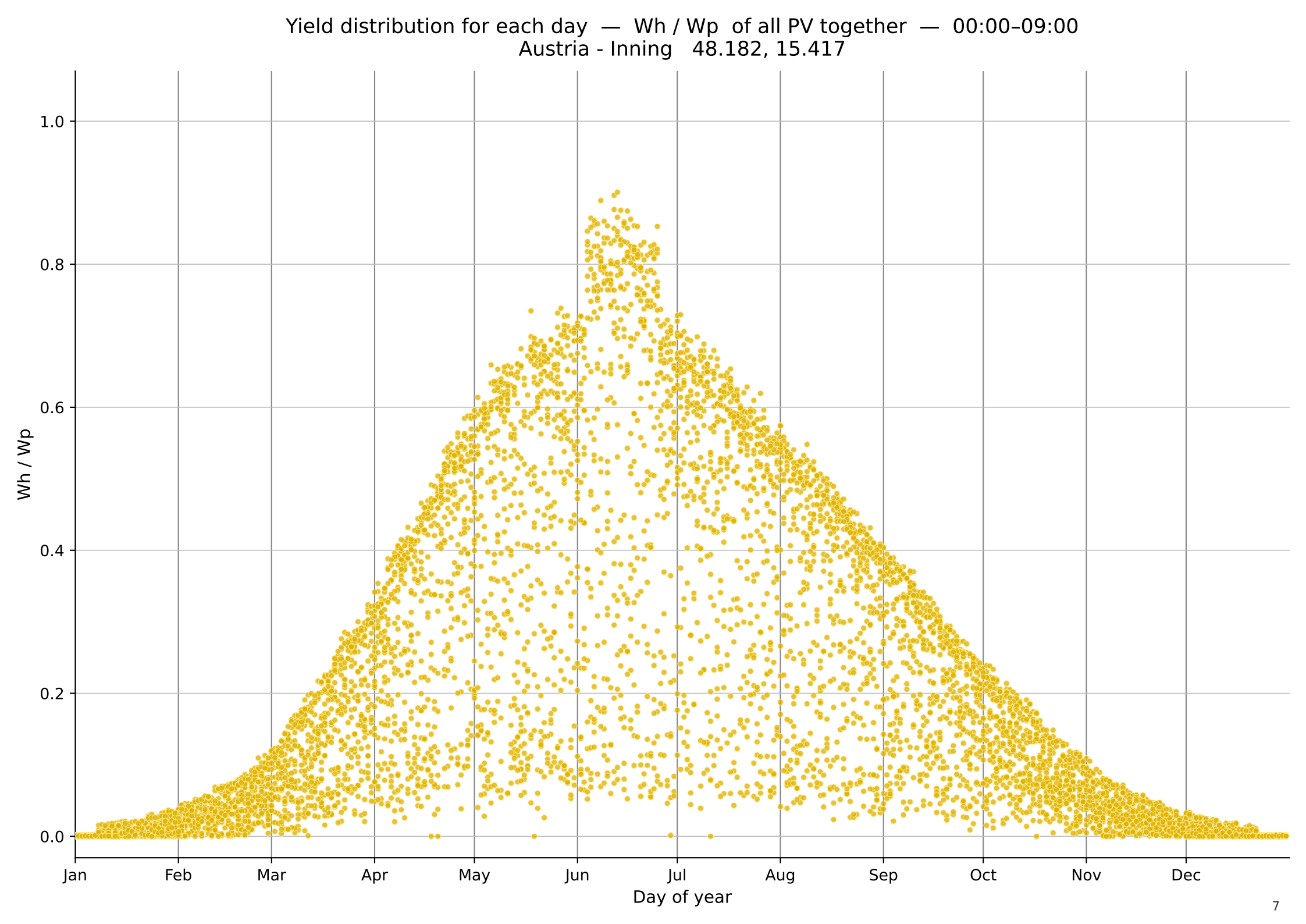
Record hour = 21,261 W combined.

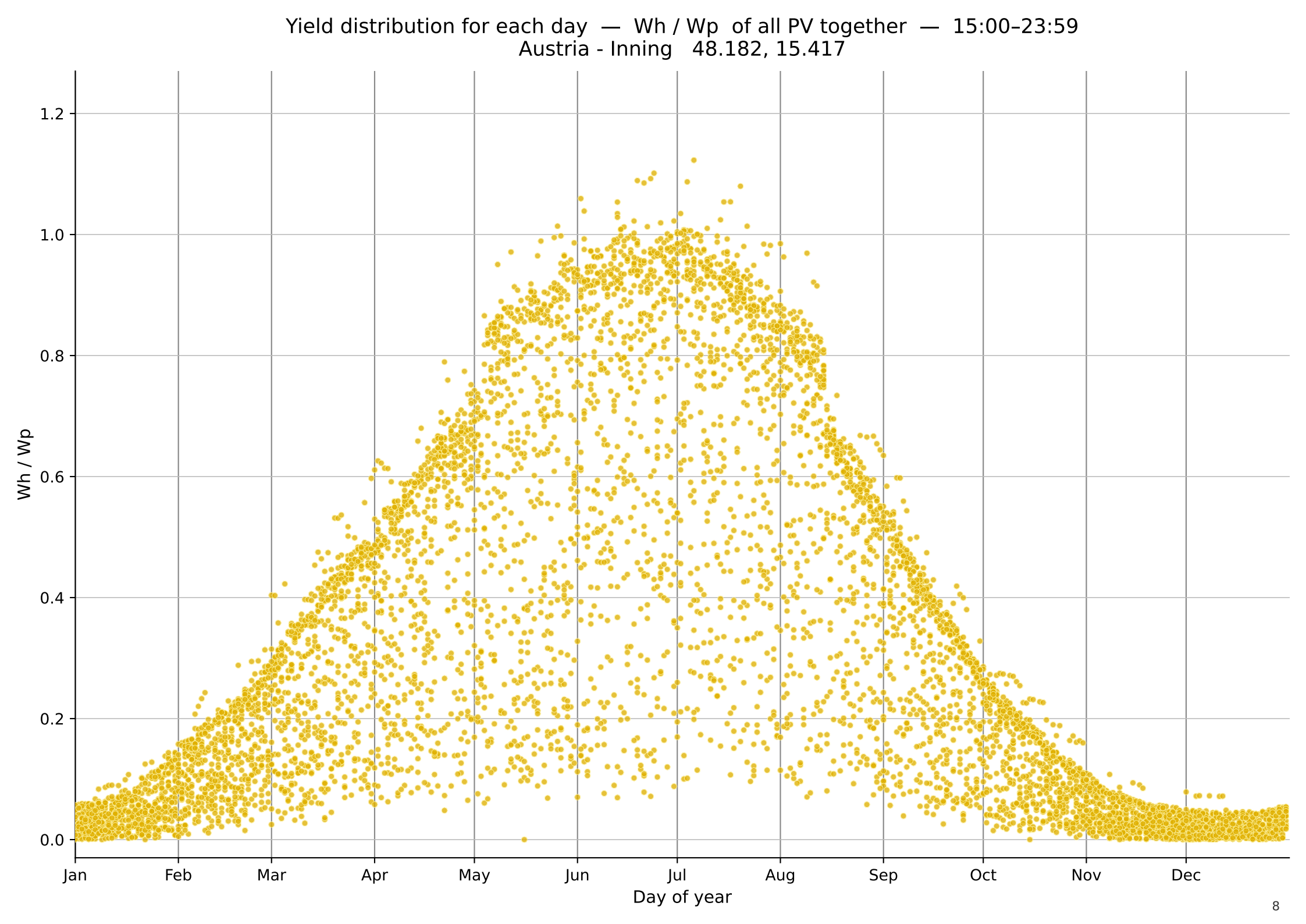
Records of each photovoltaic field
Austria - Inning 48.182, 15.417

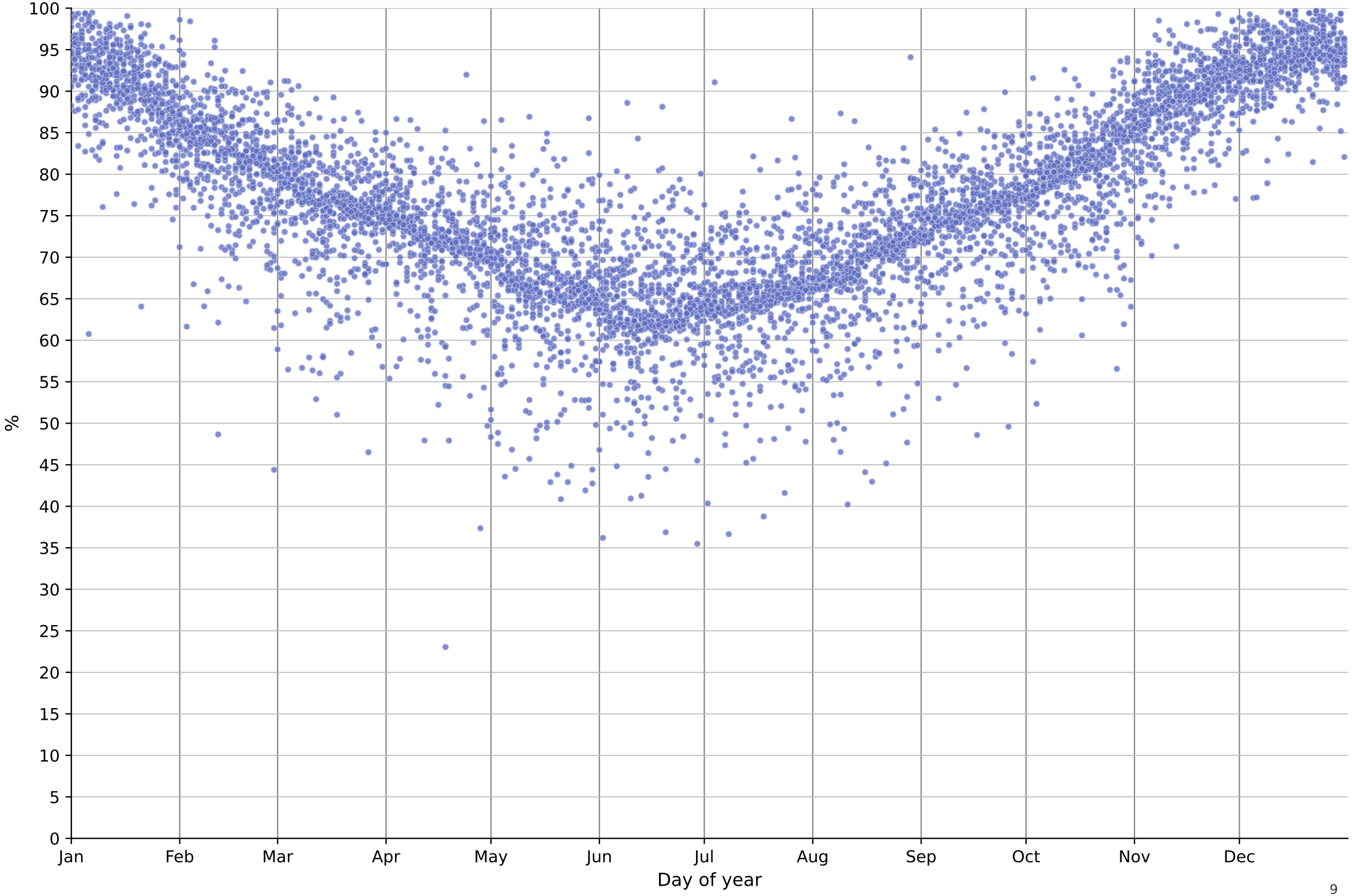
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Garage roof	2009-06-13 11:10	8,369	77.9	8	33	112	320	671
Garage side wall south	2009-03-22 11:10	2,638	75.9	8	17	26	45	75
Garage side wall north	2023-06-13 05:10	611	17.6	1	8	25	50	108
Garage door side	2005-05-08 14:10	473	67.6	1	3	5	16	49
Garage back side	2009-06-13 07:10	1,695	66.7	3	8	16	44	84
Garden fence east	2009-06-13 07:10	4,197	70.0	3	10	18	47	102
Roof south	2005-04-22 11:10	2,645	88.2	2	11	52	161	376
Roof east	2006-05-25 09:10	2,363	78.8	11	38	156	391	806
Roof west	2016-05-15 12:10	2,411	80.4	3	12	30	118	333
Roof north	2009-06-13 11:10	1,822	60.7	2	17	86	282	654

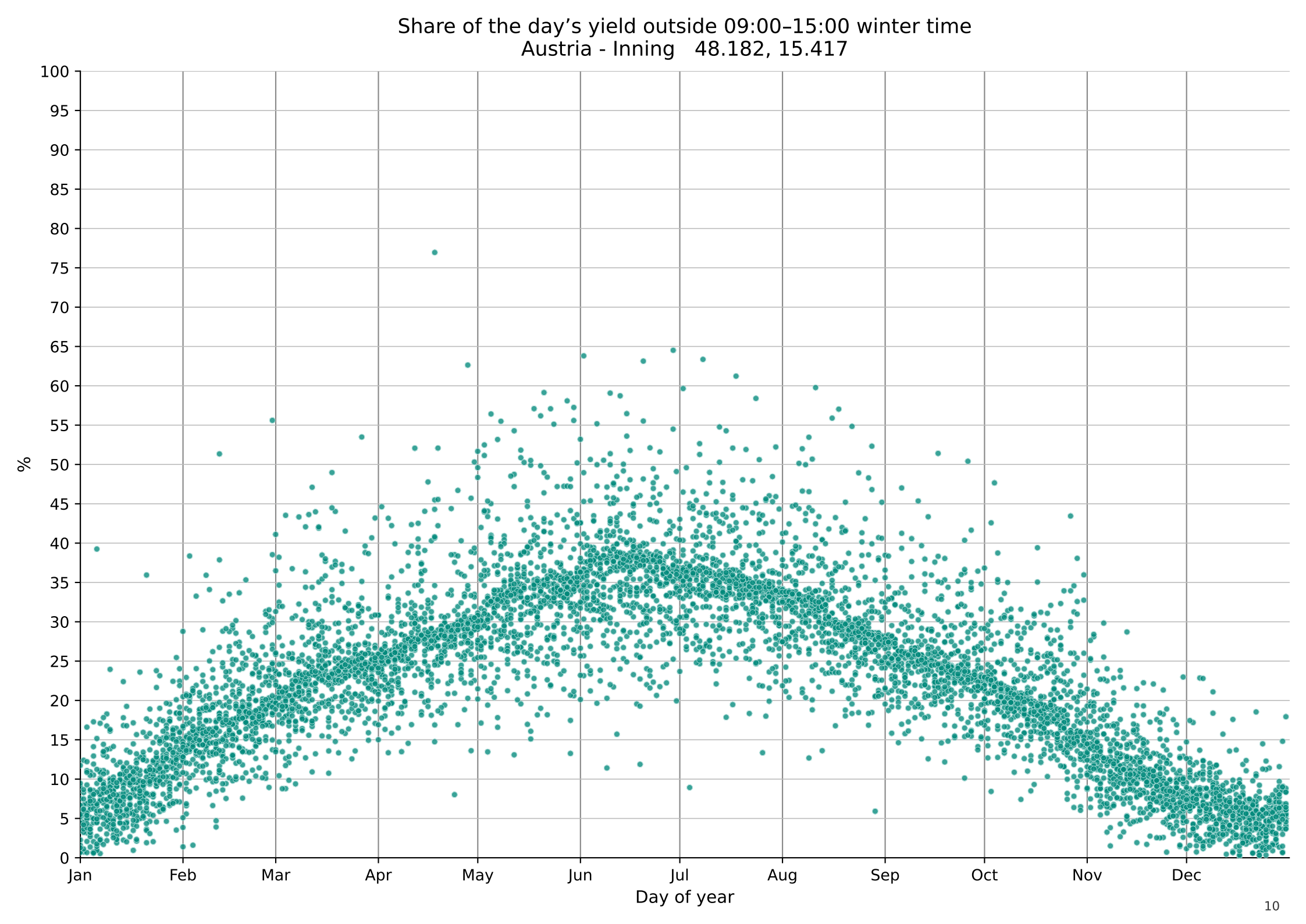
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

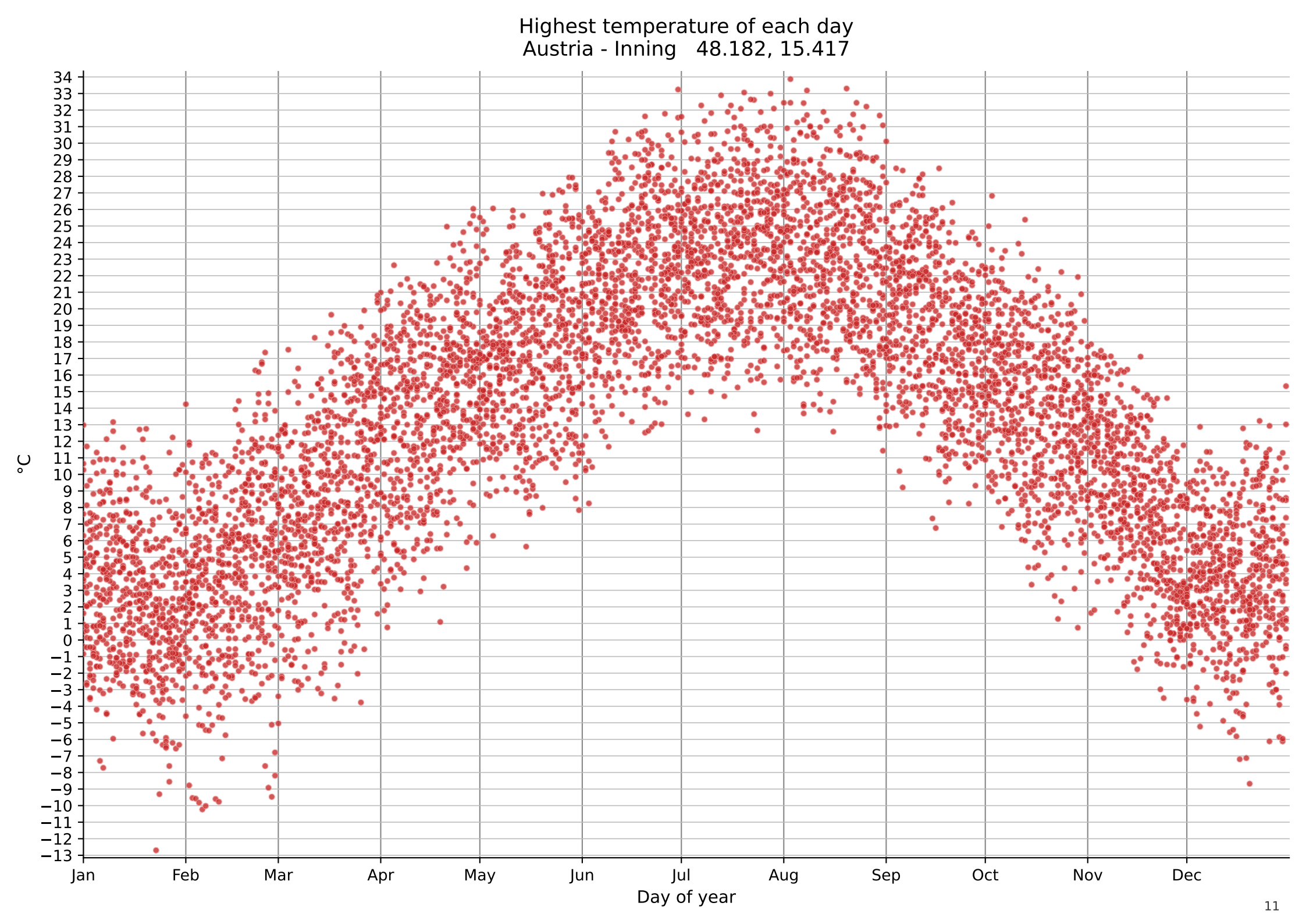

Yield distribution for each day — Wh / Wp of all PV together
Austria - Inning 48.182, 15.417
Wh / Wp
0
1
2
3
4
5
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

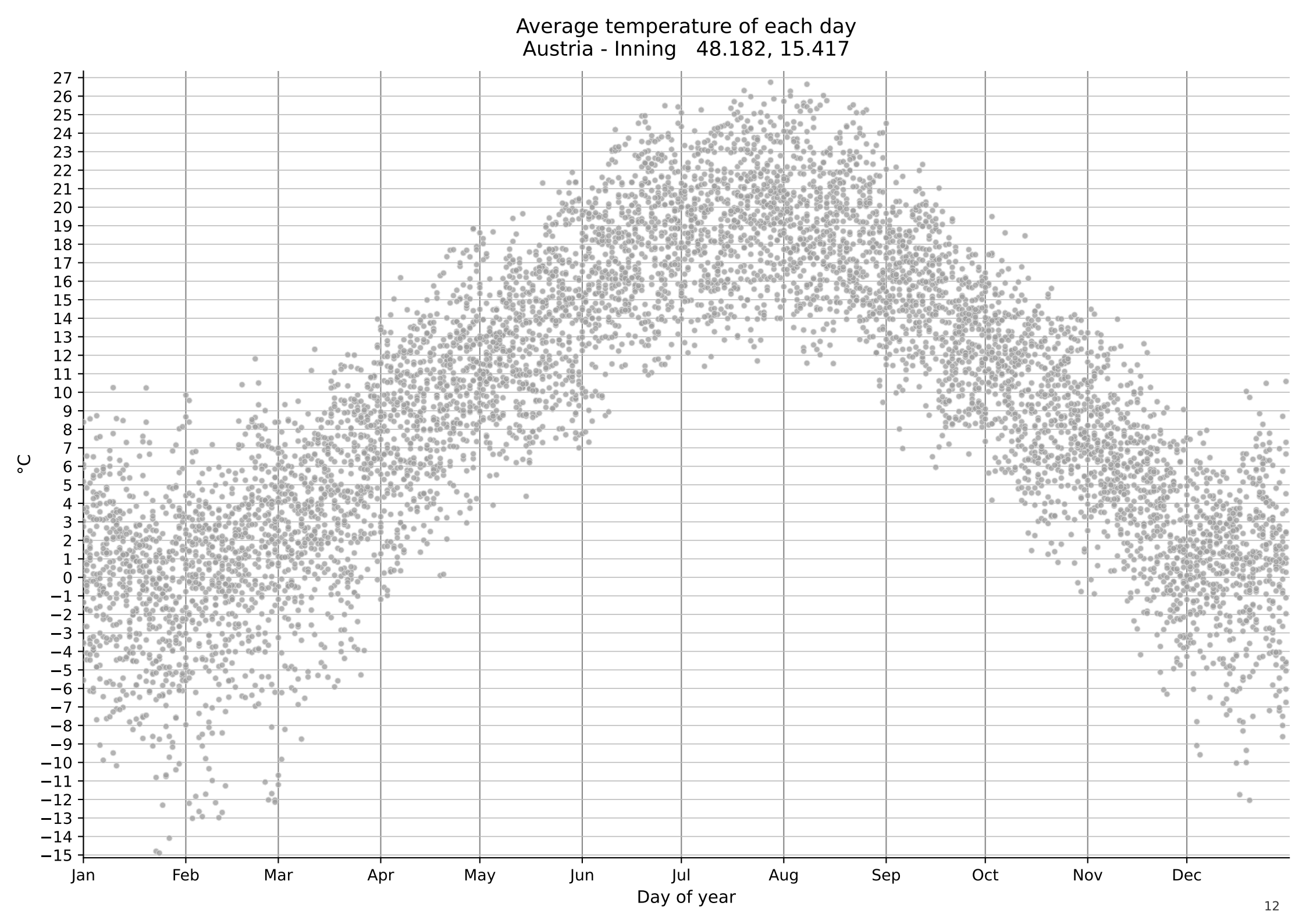

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
Austria - Inning 48.182, 15.417
1.0
0.8
0.6
0.4
0.2
0.0
Wh / Wp
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

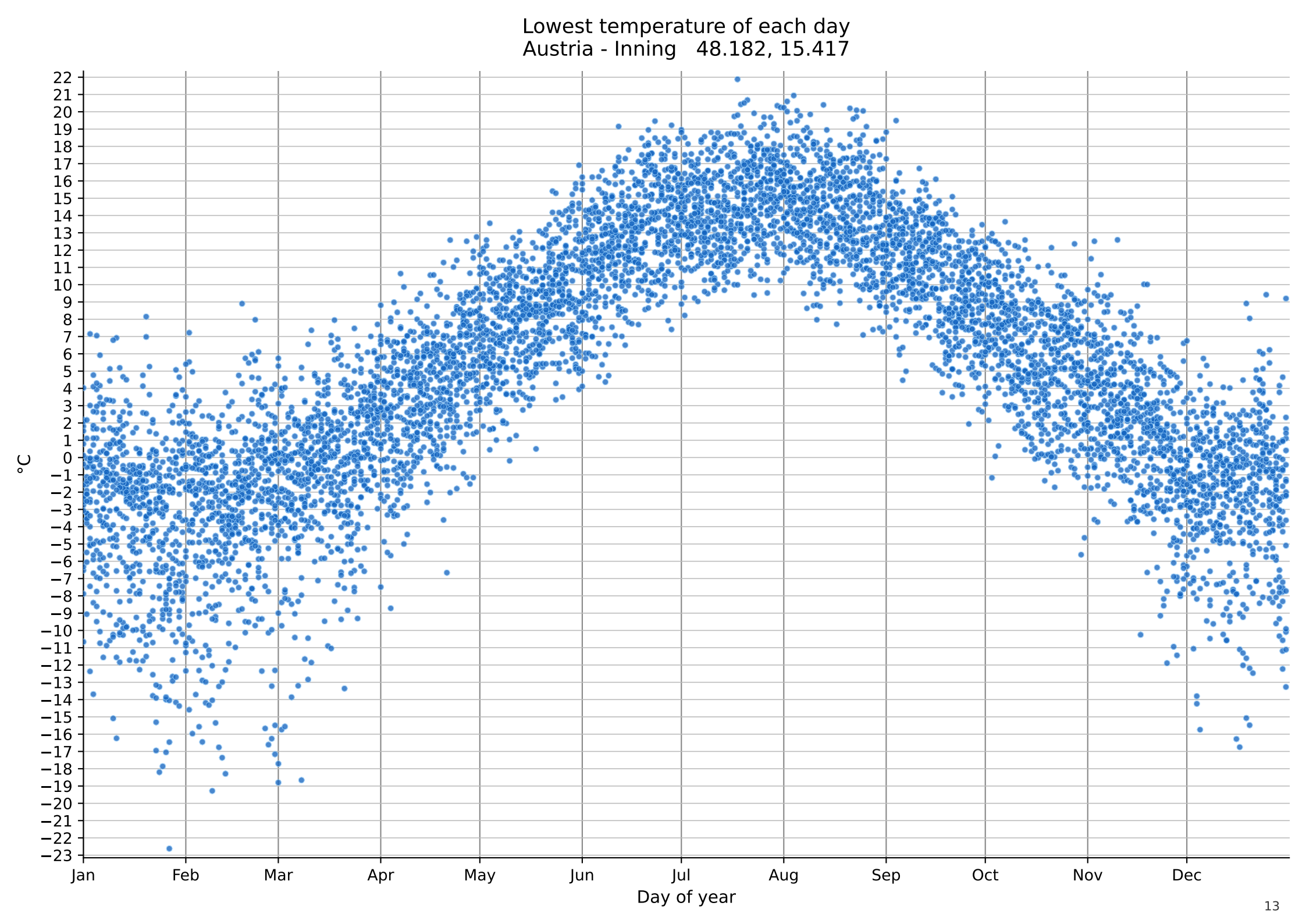

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
Austria - Inning 48.182, 15.417
Wh / Wp
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

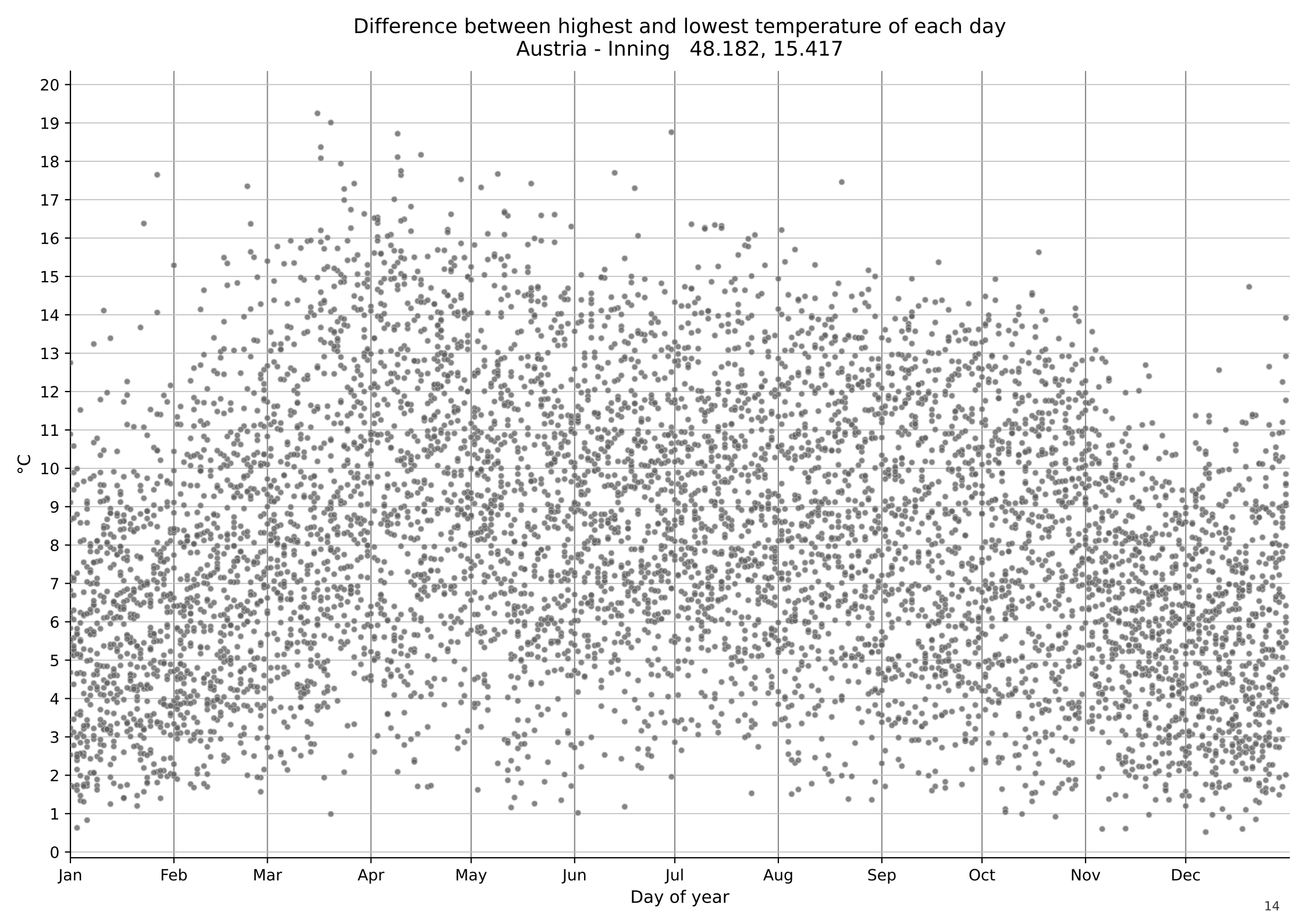

Share of the day’s yield in 09:00–15:00 winter time
Austria - Inning 48.182, 15.417
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Share of the day’s yield outside 09:00–15:00 winter time
Austria - Inning 48.182, 15.417
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Highest temperature of each day
Austria - Inning 48.182, 15.417
°C
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
−1
−2
−3
−4
−5
−6
−7
−8
−9
−10
−11
−12
−13
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Average temperature of each day
Austria - Inning 48.182, 15.417
°C
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
−1
−2
−3
−4
−5
−6
−7
−8
−9
−10
−11
−12
−13
−14
−15
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Lowest temperature of each day
Austria - Inning 48.182, 15.417
°C
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
−1
−2
−3
−4
−5
−6
−7
−8
−9
−10
−11
−12
−13
−14
−15
−16
−17
−18
−19
−20
−21
−22
−23
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Difference between highest and lowest temperature of each day
Austria - Inning 48.182, 15.417
°C
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

Monthly and yearly specific yield (kWh/kWp = Wh/Wp)
Austria - Inning 48.182, 15.417

Month / year		Garage roof 1°/0° 10,740 Wp	Garage side wall south 90°/0° 3,475 Wp	Garage side wall north 90°/180° 3,475 Wp	Garage door side 90°/90° 700 Wp	Garage back side 90°/-90° 2,540 Wp	Garden fence east 90°/-90° + 90°/90° 6000 Wp bifacial ×80%	All together
January	Maximum	32.84	7.26	7.26	8.02	9.10	15.51	23.32
	average	23.62	5.26	5.26	5.93	6.73	11.47	17.25
	minimum	17.95	4.09	4.09	4.60	5.29	8.97	13.47
February	Maximum	51.56	9.78	9.78	11.74	11.07	20.46	34.32
	average	41.81	8.23	8.23	10.69	9.69	18.25	28.99
	minimum	30.53	7.01	7.01	9.55	8.85	16.58	22.87
March	Maximum	103.67	40.02	16.17	20.69	20.57	37.09	69.86
	average	78.18	32.13	14.12	18.52	18.64	33.45	55.15
	minimum	60.95	23.96	12.21	16.23	16.11	29.09	44.76
April	Maximum	138.59	85.87	20.80	35.62	37.00	65.39	100.82
	average	110.61	68.54	18.98	32.57	33.18	59.23	82.45
	minimum	87.14	54.04	16.79	27.32	27.21	49.07	65.67
May	Maximum	144.59	75.98	26.21	49.99	44.67	82.61	107.44
	average	124.01	66.13	24.16	43.00	39.77	74.17	93.43
	minimum	91.48	48.94	22.30	34.42	32.92	60.46	70.69
June	Maximum	163.28	73.17	28.27	50.65	56.41	95.84	121.00
	average	135.71	62.75	26.40	45.09	48.98	85.06	102.32
	minimum	109.40	51.97	24.08	39.28	41.53	72.95	84.08
July	Maximum	158.88	77.19	27.83	49.85	48.86	88.73	117.29
	average	138.27	67.74	25.64	45.09	43.52	79.59	102.89
	minimum	102.76	50.02	23.06	36.77	33.52	62.94	77.63
August	Maximum	132.11	79.19	22.99	40.50	40.39	70.89	97.93
	average	117.75	70.61	19.99	36.73	36.67	66.05	88.18
	minimum	102.53	60.77	17.60	32.59	33.27	60.58	78.08
September	Maximum	104.79	59.73	16.42	24.07	22.91	41.44	74.12
	average	86.69	49.11	14.08	21.48	20.85	38.03	62.35
	minimum	69.95	40.19	11.80	18.89	18.24	33.35	51.36
October	Maximum	68.41	11.30	11.26	12.90	12.98	23.30	44.86
	average	54.55	9.83	9.80	11.44	11.69	20.84	36.89
	minimum	37.60	8.60	8.60	9.79	9.93	17.77	26.53
November	Maximum	33.54	6.47	6.47	7.53	7.71	13.74	23.18
	average	26.62	5.75	5.75	6.77	6.86	12.28	18.94
	minimum	20.26	5.33	5.33	6.04	6.01	10.83	14.95
December	Maximum	25.37	5.19	5.19	5.84	6.52	11.19	18.10
	average	19.18	4.19	4.19	4.82	5.42	9.28	14.17
	minimum	15.84	2.90	2.90	3.46	3.86	6.63	11.41
All years	Maximum	1,005.5	478.1	182.9	291.4	295.1	527.0	735.8
	average	957.0	450.3	176.6	282.1	282.0	507.7	703.0
	minimum	908.1	423.9	171.8	274.0	269.5	495.0	671.6

Highest combined yield hour: 2012-05-18 09:10 UTC 21,260.8 W (0.546 W/Wp) of 38,930 Wp installed. Use this hour to size battery charge power.

Monthly and yearly specific yield (kWh/kWp = Wh/Wp)
Austria - Inning 48.182, 15.417

Month / year		Roof south 22°/0° 3,000 Wp	Roof east 22°/-90° 3,000 Wp	Roof west 22°/90° 3,000 Wp	Roof north 22°/180° 3,000 Wp	All together
January	Maximum	59.27	36.85	30.08	17.71	23.32
	average	37.06	23.58	23.23	13.24	17.25
	minimum	23.55	16.80	18.03	10.69	13.47
February	Maximum	75.54	49.26	49.87	23.55	34.32
	average	58.38	40.22	41.12	20.50	28.99
	minimum	36.92	30.48	29.89	18.44	22.87
March	Maximum	133.58	99.75	99.70	54.35	69.86
	average	95.71	74.39	76.61	48.43	55.15
	minimum	71.29	59.28	58.23	42.81	44.76
April	Maximum	156.48	133.40	131.91	100.37	100.82
	average	122.70	105.31	106.56	83.78	82.45
	minimum	95.59	82.02	84.70	67.76	65.67
May	Maximum	150.08	137.57	139.02	122.48	107.44
	average	128.09	118.60	118.75	106.36	93.43
	minimum	93.07	87.34	88.28	81.07	70.69
June	Maximum	165.27	156.95	153.86	143.41	121.00
	average	136.66	128.94	130.27	120.75	102.32
	minimum	109.18	103.92	106.46	99.35	84.08
July	Maximum	162.55	152.09	151.66	137.84	117.29
	average	141.16	131.40	132.40	120.47	102.89
	minimum	103.60	97.26	99.10	91.58	77.63
August	Maximum	142.95	126.69	125.59	103.83	97.93
	average	126.99	111.62	113.81	93.60	88.18
	minimum	109.63	94.28	100.43	83.46	78.08
September	Maximum	126.49	98.66	103.01	65.83	74.12
	average	102.56	82.54	84.24	57.46	62.35
	minimum	81.14	67.58	67.69	48.81	51.36
October	Maximum	96.83	60.47	74.56	30.14	44.86
	average	72.60	50.79	54.92	28.08	36.89
	minimum	47.41	35.78	37.36	22.97	26.53
November	Maximum	53.94	32.08	33.83	15.44	23.18
	average	39.49	25.23	26.53	13.99	18.94
	minimum	27.00	19.79	20.38	12.86	14.95
December	Maximum	49.81	24.73	25.32	13.24	18.10
	average	32.24	18.98	19.08	10.90	14.17
	minimum	24.36	15.07	15.87	7.84	11.41
All years	Maximum	1,149.3	966.9	966.2	753.7	735.8
	average	1,093.6	911.6	927.5	717.6	703.0
	minimum	1,028.3	855.5	881.1	690.3	671.6

Highest combined yield hour: 2012-05-18 09:10 UTC 21,260.8 W (0.546 W/Wp) of 38,930 Wp installed. Use this hour to size battery charge power.

Monthly and yearly total yield (kWh)
Austria - Inning 48.182, 15.417

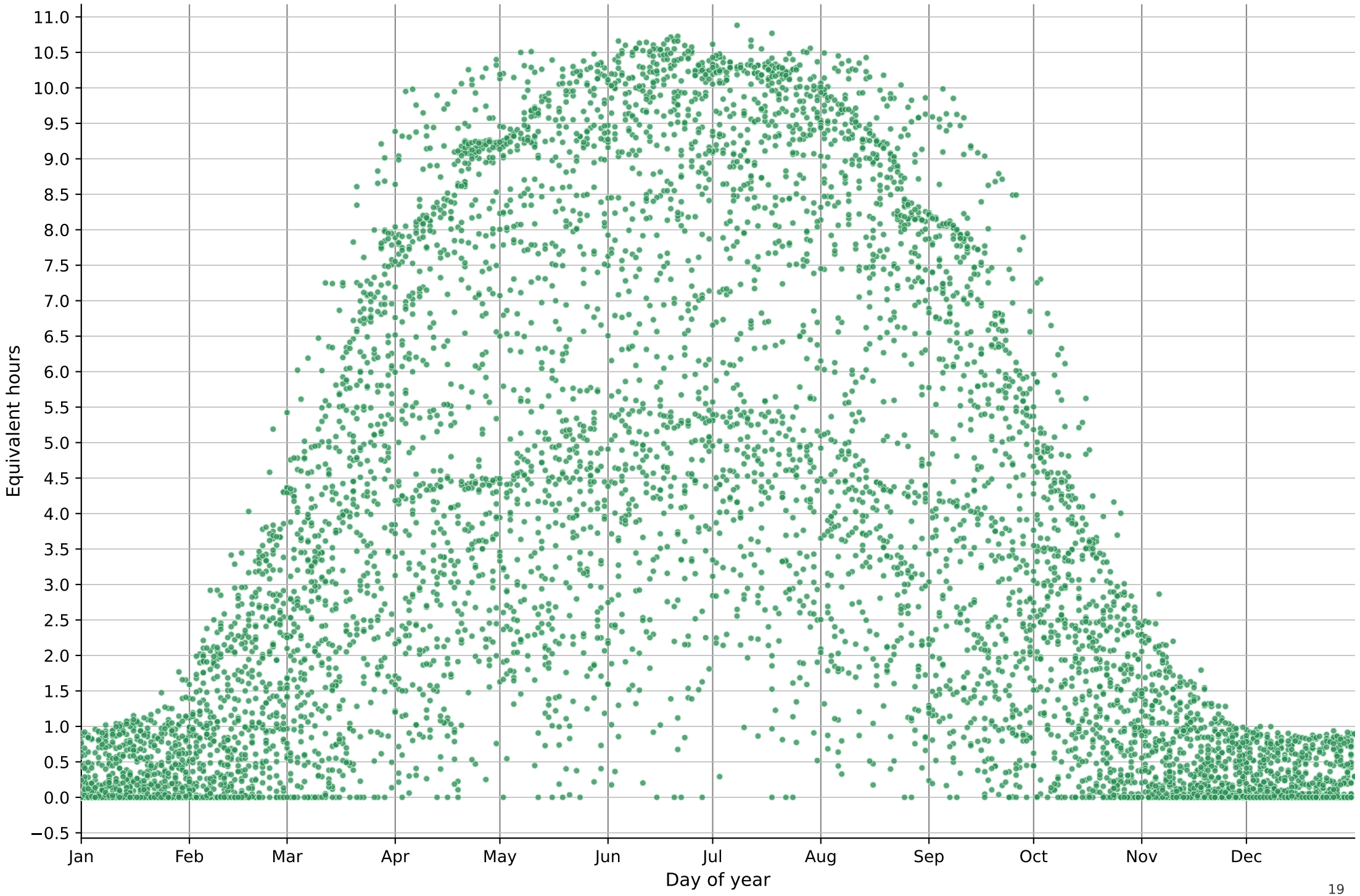
Month / year		Garage roof 1°/0° 10,740 Wp	Garage side wall south 90°/0° 3,475 Wp	Garage side wall north 90°/180° 3,475 Wp	Garage door side 90°/90° 700 Wp	Garage back side 90°/-90° 2,540 Wp	Garden fence east 90°/-90° + 90°/90° 6000 Wp bifacial ×80%	All together
January	Maximum	352.68	25.23	25.23	5.62	23.10	93.08	907.89
	average	253.64	18.29	18.29	4.15	17.08	68.84	671.60
	minimum	192.81	14.22	14.22	3.22	13.43	53.81	524.19
February	Maximum	553.71	34.00	34.00	8.22	28.11	122.77	1,336.20
	average	449.02	28.61	28.61	7.49	24.62	109.49	1,128.50
	minimum	327.93	24.35	24.35	6.69	22.49	99.50	890.40
March	Maximum	1,113.39	139.08	56.20	14.49	52.24	222.56	2,719.51
	average	839.69	111.66	49.08	12.97	47.33	200.73	2,146.88
	minimum	654.63	83.28	42.43	11.36	40.91	174.54	1,742.31
April	Maximum	1,488.40	298.38	72.30	24.93	93.97	392.34	3,924.89
	average	1,188.00	238.16	65.95	22.80	84.27	355.39	3,209.65
	minimum	935.83	187.80	58.33	19.13	69.12	294.43	2,556.63
May	Maximum	1,552.93	264.04	91.09	34.99	113.45	495.67	4,182.46
	average	1,331.89	229.81	83.95	30.10	101.03	445.05	3,637.20
	minimum	982.45	170.05	77.49	24.10	83.62	362.77	2,751.93
June	Maximum	1,753.66	254.25	98.25	35.46	143.28	575.03	4,710.50
	average	1,457.52	218.06	91.75	31.57	124.41	510.33	3,983.50
	minimum	1,174.96	180.59	83.68	27.49	105.48	437.68	3,273.32
July	Maximum	1,706.42	268.23	96.72	34.89	124.10	532.41	4,565.92
	average	1,485.03	235.41	89.09	31.56	110.53	477.52	4,005.45
	minimum	1,103.61	173.81	80.15	25.74	85.15	377.65	3,022.12
August	Maximum	1,418.83	275.17	79.90	28.35	102.58	425.37	3,812.54
	average	1,264.60	245.38	69.46	25.71	93.15	396.32	3,432.68
	minimum	1,101.14	211.18	61.15	22.81	84.50	363.46	3,039.52
September	Maximum	1,125.43	207.56	57.06	16.85	58.18	248.65	2,885.57
	average	931.05	170.64	48.91	15.04	52.95	228.18	2,427.16
	minimum	751.23	139.67	41.01	13.22	46.33	200.12	1,999.60
October	Maximum	734.70	39.26	39.13	9.03	32.97	139.81	1,746.53
	average	585.91	34.17	34.07	8.01	29.69	125.04	1,436.07
	minimum	403.85	29.90	29.87	6.86	25.23	106.61	1,032.89
November	Maximum	360.26	22.49	22.49	5.27	19.59	82.43	902.54
	average	285.88	19.98	19.98	4.74	17.43	73.67	737.43
	minimum	217.55	18.50	18.50	4.22	15.26	65.01	582.09
December	Maximum	272.47	18.04	18.04	4.09	16.56	67.15	704.63
	average	206.03	14.54	14.54	3.38	13.77	55.68	551.55
	minimum	170.14	10.09	10.09	2.42	9.80	39.77	444.33
All years	Maximum	10,798.9	1,661.5	635.6	204.0	749.6	3,161.9	28,643.7
	average	10,278.3	1,564.7	613.7	197.5	716.3	3,046.2	27,367.7
	minimum	9,753.0	1,472.9	597.2	191.8	684.5	2,969.9	26,147.1

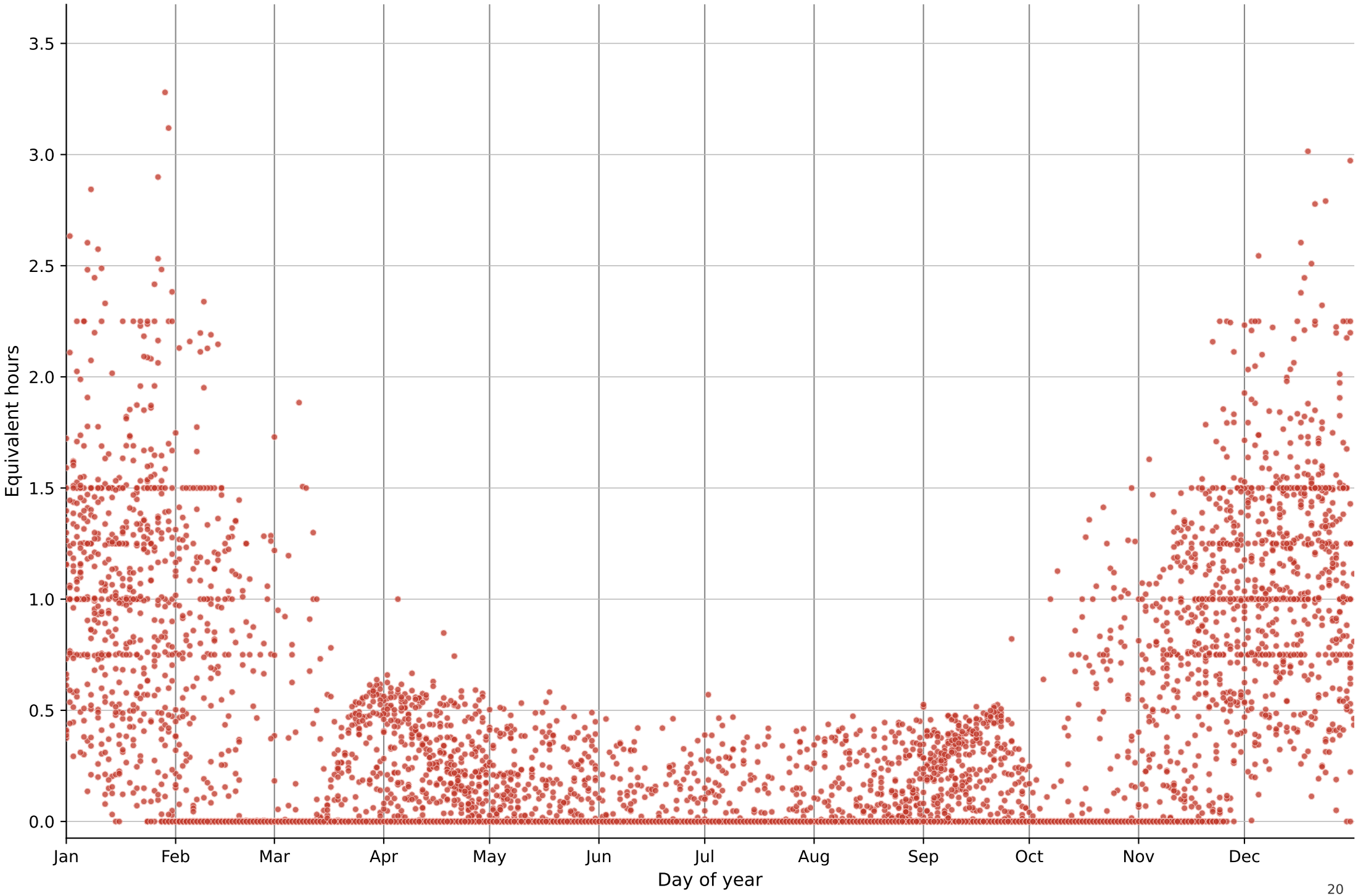
Highest combined yield hour: 2012-05-18 09:10 UTC 21,260.8 W (0.546 W/Wp) of 38,930 Wp installed. Use this hour to size battery charge power.

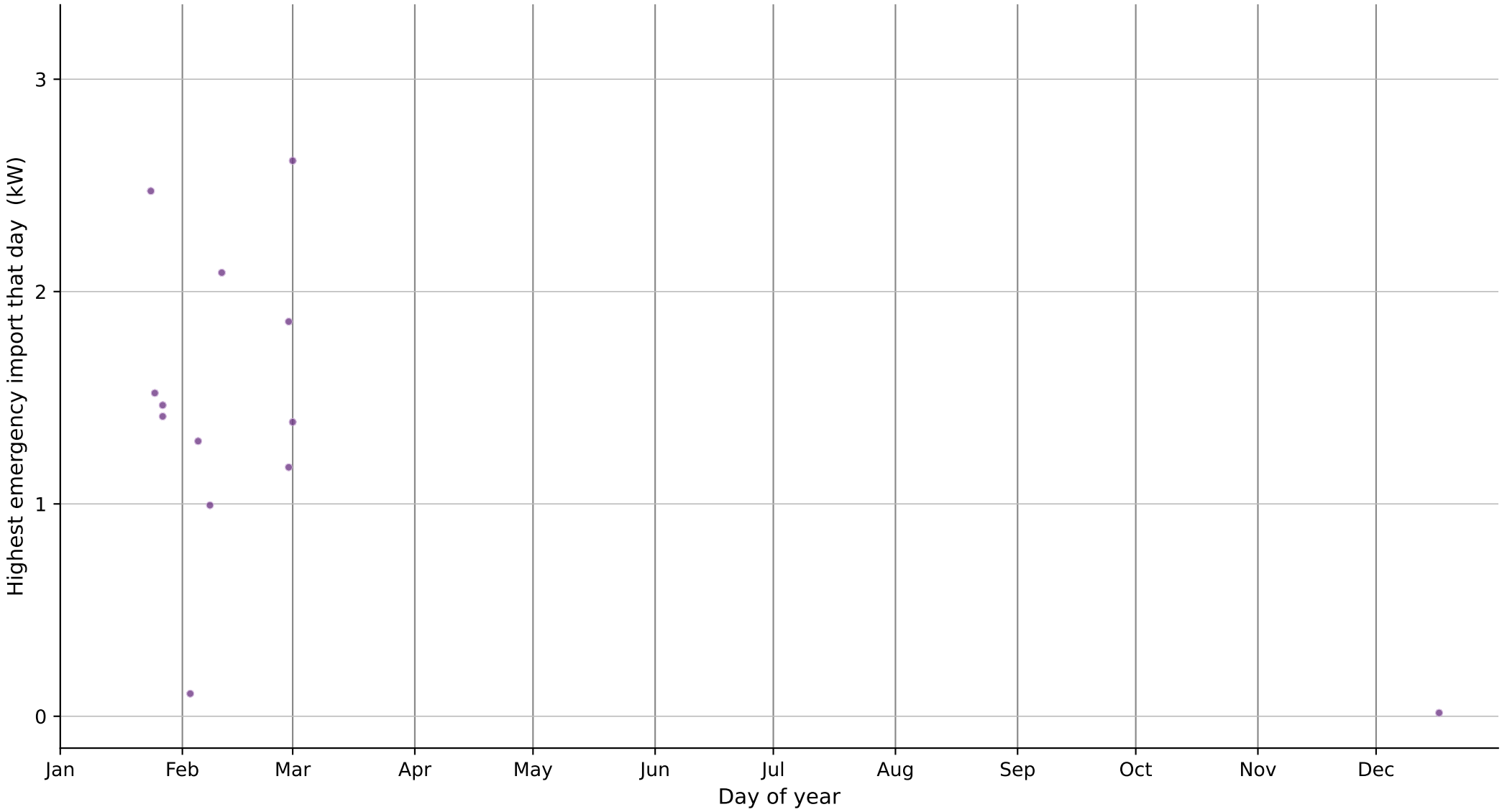
Monthly and yearly total yield (kWh)
Austria - Inning 48.182, 15.417

Month / year		Roof south 22°/0° 3,000 Wp	Roof east 22°/-90° 3,000 Wp	Roof west 22°/90° 3,000 Wp	Roof north 22°/180° 3,000 Wp	All together
January	Maximum	177.82	110.55	90.25	53.13	907.89
	average	111.17	70.75	69.68	39.71	671.60
	minimum	70.66	50.40	54.08	32.08	524.19
February	Maximum	226.61	147.77	149.62	70.65	1,336.20
	average	175.15	120.67	123.36	61.49	1,128.50
	minimum	110.76	91.43	89.68	55.32	890.40
March	Maximum	400.74	299.26	299.11	163.04	2,719.51
	average	287.14	223.18	229.84	145.28	2,146.88
	minimum	213.87	177.84	174.70	128.44	1,742.31
April	Maximum	469.45	400.19	395.74	301.12	3,924.89
	average	368.11	315.94	319.68	251.35	3,209.65
	minimum	286.78	246.06	254.11	203.29	2,556.63
May	Maximum	450.23	412.71	417.05	367.45	4,182.46
	average	384.27	355.79	356.24	319.08	3,637.20
	minimum	279.21	262.03	264.85	243.22	2,751.93
June	Maximum	495.80	470.86	461.57	430.23	4,710.50
	average	409.98	386.82	390.81	362.26	3,983.50
	minimum	327.54	311.75	319.38	298.04	3,273.32
July	Maximum	487.65	456.28	454.99	413.52	4,565.92
	average	423.49	394.21	397.19	361.40	4,005.45
	minimum	310.80	291.78	297.31	274.73	3,022.12
August	Maximum	428.84	380.06	376.76	311.48	3,812.54
	average	380.96	334.85	341.44	280.81	3,432.68
	minimum	328.90	282.83	301.28	250.38	3,039.52
September	Maximum	379.46	295.97	309.04	197.48	2,885.57
	average	307.69	247.61	252.71	172.38	2,427.16
	minimum	243.42	202.75	203.08	146.43	1,999.60
October	Maximum	290.50	181.40	223.67	90.43	1,746.53
	average	217.80	152.38	164.77	84.24	1,436.07
	minimum	142.24	107.35	112.07	68.91	1,032.89
November	Maximum	161.81	96.25	101.48	46.32	902.54
	average	118.48	75.70	79.60	41.98	737.43
	minimum	81.01	59.37	61.15	38.57	582.09
December	Maximum	149.42	74.19	75.95	39.73	704.63
	average	96.72	56.94	57.24	32.71	551.55
	minimum	73.07	45.20	47.60	23.51	444.33
All years	Maximum	3,447.9	2,900.7	2,898.7	2,261.2	28,643.7
	average	3,280.9	2,734.8	2,782.6	2,152.7	27,367.7
	minimum	3,084.8	2,566.5	2,643.2	2,071.0	26,147.1

Highest combined yield hour: 2012-05-18 09:10 UTC 21,260.8 W (0.546 W/Wp) of 38,930 Wp installed. Use this hour to size battery charge power.


Export energy as equivalent hours (kWh / grid kW)
Austria - Inning 48.182, 15.417
Equivalent hours
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Import energy as equivalent hours (kWh / grid kW)
Austria - Inning 48.182, 15.417
Equivalent hours
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year



Emergency = this hour’s grid import is above the month’s max import kW. 2 kW means up to 48 kWh in 24 hours. More than 2 kW in an hour is the higher grid fee.
Import inside that cap is not an emergency. Preferred cheap hours are 00:00–06:00 and 09:00–15:00 winter time.

Energy in kWh
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export to grid													
month Maximum	206	621	1,818	2,489	2,662	3,002	3,032	2,595	1,983	1,054	326	189	17,014
month average	134	427	1,316	1,952	2,218	2,515	2,604	2,276	1,572	788	212	101	16,115
month minimum	65	231	901	1,355	1,639	2,064	1,826	1,900	1,213	397	139	39	14,897
day Maximum	21.2	62.3	110.5	124.8	126.1	128.7	130.6	125.9	119.8	87.6	34.4	12.0	130.6
day average	4.3	15.1	42.4	65.1	71.5	83.8	84.0	73.4	52.4	25.4	7.1	3.3	44.1
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0
Import from grid													
month Maximum	541	284	115	95	39	17	26	37	73	109	367	566	1,892
month average	388	112	39	65	26	9	12	22	52	33	214	421	1,393
month minimum	271	14	6	44	14	3	4	7	19	0	110	257	1,071
day Maximum	39.4	28.1	22.6	12.0	7.0	5.5	6.8	5.7	9.9	18.0	27.0	36.2	39.4
day average	12.5	4.0	1.3	2.2	0.8	0.3	0.4	0.7	1.7	1.1	7.1	13.6	3.8
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total energy used for house													
month Maximum	1,101	1,067	839	646	582	473	458	480	534	658	746	1,032	7,939
month average	849	751	727	592	533	436	417	428	485	600	678	797	7,293
month minimum	732	650	657	509	474	389	390	387	427	534	635	711	6,947
day Maximum	60.2	54.6	49.5	27.7	23.5	21.0	19.6	19.7	21.7	26.2	36.0	51.7	60.2
day average	27.4	26.6	23.5	19.7	17.2	14.5	13.5	13.8	16.2	19.3	22.6	25.7	20.0
day minimum	18.4	18.1	16.7	11.0	11.0	11.0	10.9	10.9	10.9	13.4	16.2	19.0	10.9

Month rows: kWh in that month. Day rows: best / average / worst day.
Total energy used for house = household + car + heating + cooling + DHW + direct electric.
PV not exported and not marked wasted is still in the battery, or could not leave because the grid was already full. It is not house use.

Energy by price
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export													
month Maximum	12	54	192	262	283	303	320	278	232	120	20	11	1,849
month average	8	33	145	213	246	272	288	255	188	83	13	6	1,748
month minimum	4	13	94	145	186	232	238	228	142	26	9	2	1,618
day Maximum	1.4	8.2	16.0	15.8	16.0	15.5	16.7	15.9	16.3	14.5	3.8	0.8	16.7
day average	0.3	1.2	4.7	7.1	7.9	9.1	9.3	8.2	6.3	2.7	0.4	0.2	4.8
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0
Import													
month Maximum	128	71	30	24	10	4	7	9	18	25	86	133	453
month average	91	26	11	16	7	2	3	6	13	8	50	98	330
month minimum	63	3	2	11	4	1	1	2	5	0	25	60	254
day Maximum	8.9	7.3	6.6	2.2	1.7	1.5	1.6	1.4	1.8	4.3	6.8	8.5	8.9
day average	2.9	0.9	0.3	0.5	0.2	0.1	0.1	0.2	0.4	0.2	1.7	3.2	0.9
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peak grid fee													
month Maximum	35	33	36	19	19	10	9	10	19	19	19	19	187
month average	20	21	17	14	11	8	8	8	11	15	19	19	171
month minimum	19	19	11	11	9	6	5	7	8	0	19	19	145
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Import incl. peak fee													
month Maximum	147	104	66	39	24	12	16	17	31	44	105	152	638
month average	111	47	28	30	17	10	11	14	24	23	69	117	501
month minimum	82	22	14	24	13	8	6	10	14	0	44	79	408
day Maximum	8.9	7.3	6.6	2.2	1.7	1.5	1.6	1.4	1.8	4.3	6.8	8.5	8.9
day average	2.9	0.9	0.3	0.5	0.2	0.1	0.1	0.2	0.4	0.2	1.7	3.2	0.9
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Balance													
month Maximum	-70	32	166	225	264	294	310	266	207	118	-25	-68	1,441
month average	-103	-14	117	183	228	261	277	241	164	61	-56	-112	1,247
month minimum	-142	-86	65	114	171	221	222	212	111	-7	-96	-148	1,046
day Maximum	1.4	8.2	16.0	15.8	16.0	15.5	16.7	15.9	16.3	14.5	3.8	0.4	16.7
day average	-2.7	0.2	4.3	6.6	7.7	9.0	9.2	8.0	5.8	2.4	-1.2	-3.0	3.9
day minimum	-8.9	-7.0	-5.6	-2.0	-0.7	0.0	0.0	0.0	-1.7	-4.3	-6.8	-8.5	-8.9

Currency in Your units. Import and export use the cent/kWh of that hour. Peak fee 6.33 / kW / month is the highest import hour of the month (hourly stand-in for the 15-minute peak) and is added to that month's
Sell only when export is above 0. At 0 cent, export PV yield only, not the battery. Do not sell when the earning is negative.

Export in kWh during price hours
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export total													
month Maximum	206	621	1,818	2,489	2,662	3,002	3,032	2,595	1,983	1,054	326	189	17,014
month average	134	427	1,316	1,952	2,218	2,515	2,604	2,276	1,572	788	212	101	16,115
month minimum	65	231	901	1,355	1,639	2,064	1,826	1,900	1,213	397	139	39	14,897
day Maximum	21.2	62.3	110.5	124.8	126.1	128.7	130.6	125.9	119.8	87.6	34.4	12.0	130.6
day average	4.3	15.1	42.4	65.1	71.5	83.8	84.0	73.4	52.4	25.4	7.1	3.3	44.1
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0
Export during high price hours													
month Maximum	0	128	600	1,017	1,129	1,193	1,268	1,106	963	395	37	0	7,158
month average	0	53	453	850	1,003	1,092	1,168	1,025	772	257	7	0	6,680
month minimum	0	0	275	637	785	947	1,020	962	529	35	0	0	6,143
day Maximum	0.0	27.3	57.0	62.4	62.1	62.7	64.1	65.2	65.3	56.5	12.5	0.0	65.3
day average	0.0	1.9	14.6	28.3	32.3	36.4	37.7	33.0	25.7	8.3	0.2	0.0	18.3
day minimum	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0
Export during medium price hours													
month Maximum	41	131	315	459	529	571	603	490	330	191	41	25	3,213
month average	28	99	237	363	412	484	500	423	258	115	25	11	2,956
month minimum	14	51	174	264	275	360	354	361	168	59	9	0	2,694
day Maximum	3.9	9.6	16.9	21.1	23.4	26.5	25.6	21.7	17.9	9.5	3.6	2.8	26.5
day average	0.9	3.5	7.7	12.1	13.3	16.1	16.1	13.6	8.6	3.7	0.8	0.4	8.1
day minimum	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0
Export during low price hours													
month Maximum	182	410	918	1,017	1,029	1,238	1,165	1,068	709	500	273	165	6,881
month average	105	275	625	739	803	940	935	829	543	416	180	90	6,479
month minimum	43	147	451	426	580	694	452	547	405	286	107	39	5,762
day Maximum	17.7	42.5	57.5	58.5	65.8	65.3	61.3	58.7	51.8	51.2	26.8	10.9	65.8
day average	3.4	9.7	20.2	24.6	25.9	31.3	30.2	26.7	18.1	13.4	6.0	2.9	17.7
day minimum	-0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0

kWh exported while that price band was active. Not the money. Winter time. High 06:00–09:00 and 17:00–20:00, sold first. Low 09:00–15:00, sold last. Medium is the rest.

Heat pump
Austria - Inning 48.182, 15.417

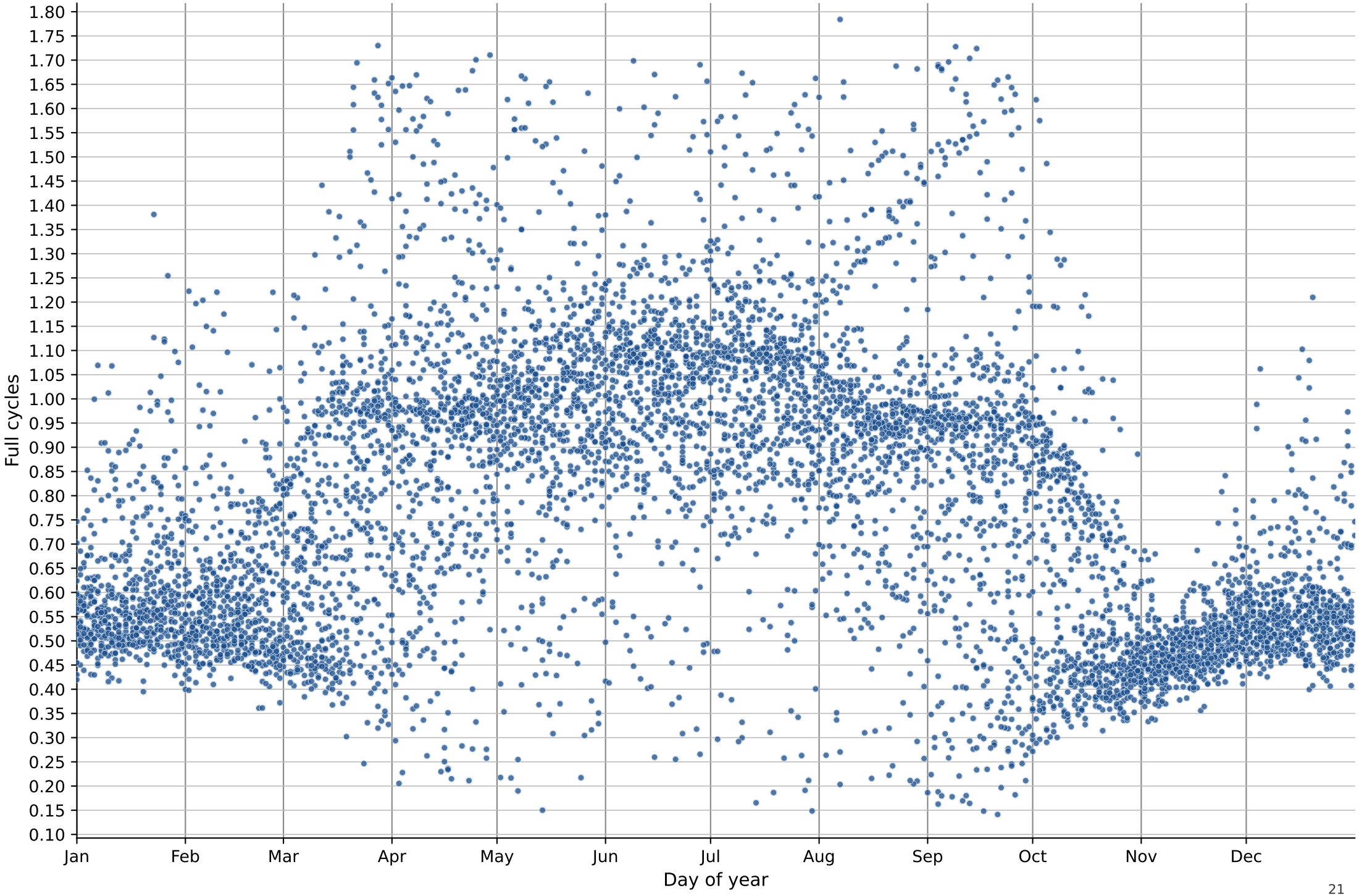
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	749	738	488	309	235	140	116	138	202	310	408	682	3,855
month average	497	431	376	256	188	104	77	88	154	252	340	448	3,212
month minimum	380	332	306	176	131	59	51	48	98	189	298	362	2,872
day Maximum	48.8	43.3	38.1	16.4	12.2	9.8	8.5	8.5	10.5	14.9	24.7	40.5	48.8
day average	16.0	15.3	12.1	8.5	6.1	3.5	2.5	2.8	5.1	8.1	11.3	14.5	8.8
day minimum	7.0	6.9	5.6	0.0	0.0	0.0	0.0	0.0	0.0	2.4	5.1	7.7	0.0
Cooling													
month Maximum	0	0	0	0	0	0	1	2	0	0	0	0	3
month average	0	0	0	0	0	0	0	0	0	0	0	0	0
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.4	1.0	0.7	0.0	0.0	0.0	0.0	1.0
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DHW													
month Maximum	42	39	42	37	37	33	31	32	32	38	38	39	433
month average	42	38	41	36	35	32	30	30	31	37	38	39	429
month minimum	42	37	41	33	33	30	29	29	29	35	37	39	421
day Maximum	1.7	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.3	1.3	1.3	1.7
day average	1.4	1.4	1.3	1.2	1.1	1.1	1.0	1.0	1.0	1.2	1.3	1.3	1.2
day minimum	1.3	1.2	1.1	1.0	1.0	1.0	0.9	0.9	0.9	1.0	1.1	1.2	0.9
Direct electric													
month Maximum	272	314	97	4	0	0	0	0	0	1	34	208	525
month average	66	53	17	0	0	0	0	0	0	0	5	34	176
month minimum	1	0	0	0	0	0	0	0	0	0	0	0	6
day Maximum	32.5	27.1	22.0	3.2	0.0	0.0	0.0	0.0	0.0	0.5	8.8	24.3	32.5
day average	2.1	1.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1	0.5
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

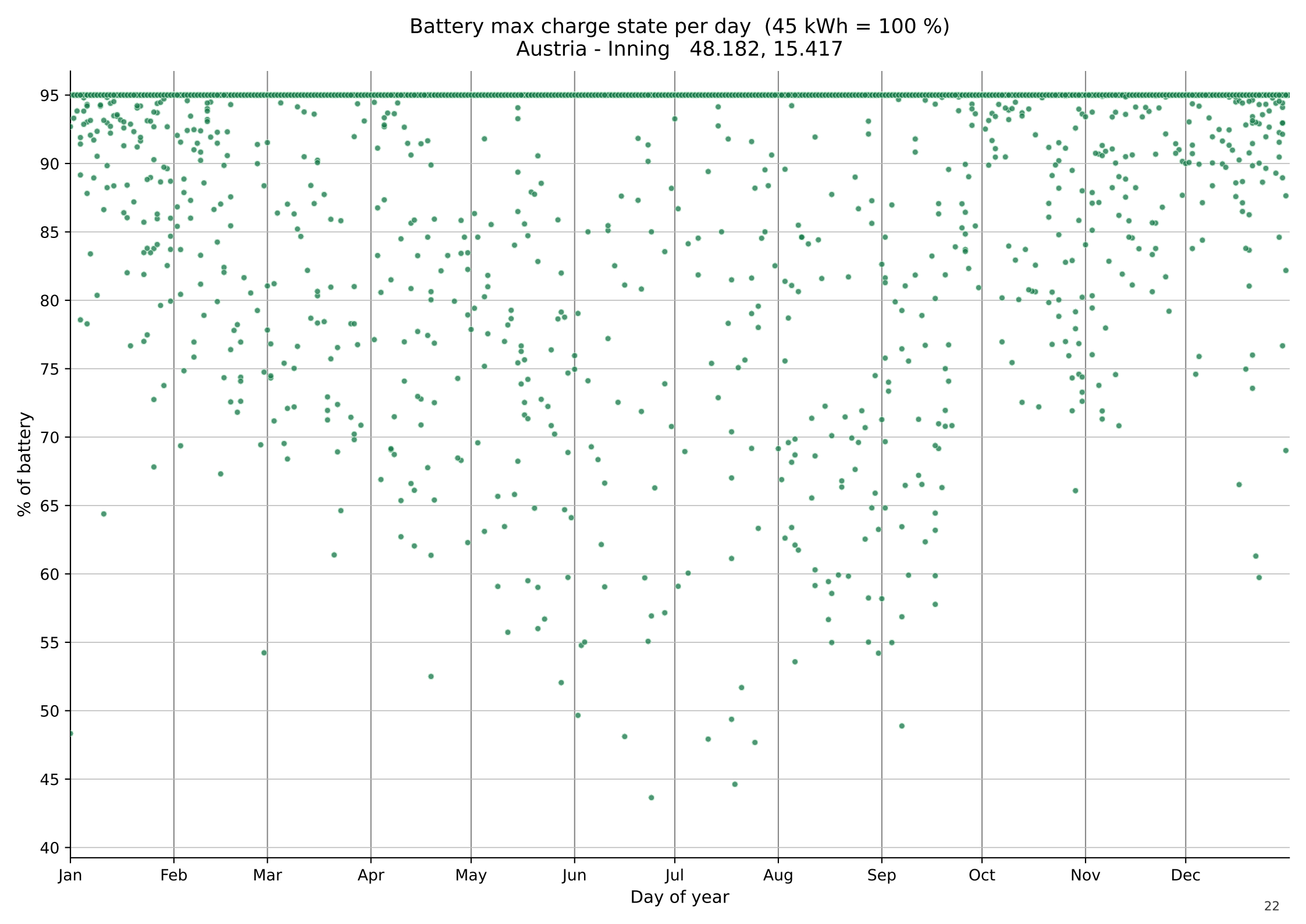
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

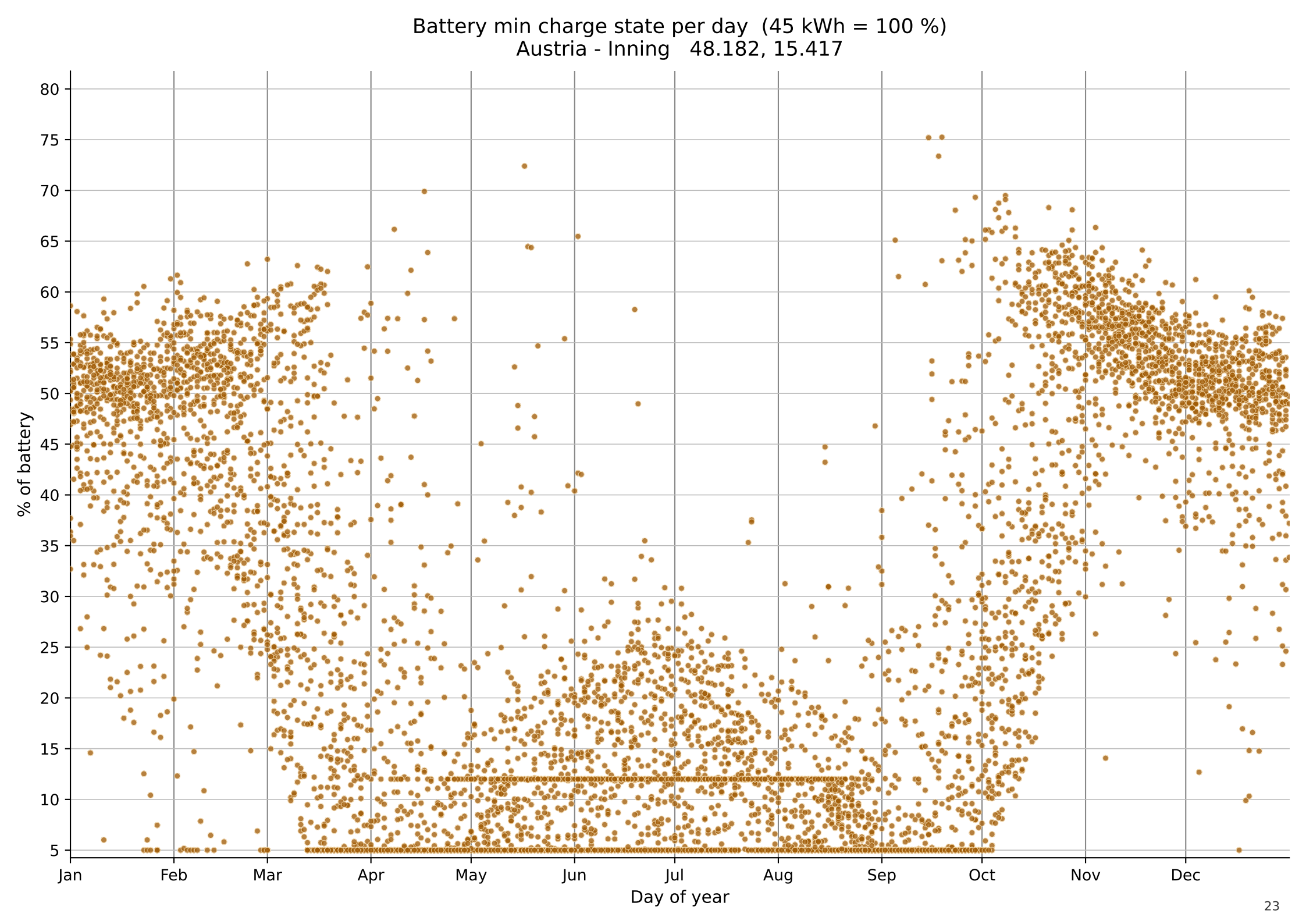
Battery
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	0	1	121	952	1,013	1,195	1,078	852	435	3	0	0	5,000
month average	0	0	67	628	796	927	877	646	315	0	0	0	4,257
month minimum	0	0	19	419	475	647	622	466	173	0	0	0	3,816
day Maximum	0.0	0.7	16.9	88.7	98.0	103.1	95.3	85.9	62.3	1.4	0.0	0.0	103.1
day average	0.0	0.0	2.2	20.9	25.7	30.9	28.3	20.8	10.5	0.0	0.0	0.0	11.7
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Full cycles													
month Maximum	24	23	26	30	32	32	33	31	28	21	17	23	294
month average	19	17	24	28	30	31	31	29	25	19	15	18	285
month minimum	16	14	21	24	27	28	29	28	21	14	14	15	275
day Maximum	1.4	1.2	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.6	0.8	1.2	1.8
day average	0.6	0.6	0.8	0.9	1.0	1.0	1.0	0.9	0.8	0.6	0.5	0.6	0.8
day minimum	0.4	0.4	0.2	0.2	0.2	0.3	0.1	0.2	0.1	0.3	0.3	0.4	0.1
Charge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	4
month average	0	0	0	0	0	0	0	0	0	0	0	0	4
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	4
day Maximum	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.4
day average	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.2
day minimum	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Discharge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	3
month average	0	0	0	0	0	0	0	0	0	0	0	0	3
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	3
day Maximum	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.3
day average	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.0	0.0	0.2
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Wasted = PV left when the export price is negative and the battery is full. Full cycles = discharge kWh / 45 kWh. Battery export only into hours whose export price is above 0, highest price first. At 0 cent only P


Battery cycles per day (discharge / 45 kWh)
Austria - Inning 48.182, 15.417
Full cycles
1.80
1.75
1.70
1.65
1.60
1.55
1.50
1.45
1.40
1.35
1.30
1.25
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery max charge state per day (45 kWh = 100 %)
Austria - Inning 48.182, 15.417
% of battery
95
90
85
80
75
70
65
60
55
50
45
40
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery min charge state per day (45 kWh = 100 %)
Austria - Inning 48.182, 15.417
% of battery
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year