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+4-side-roof+add+north+PV&lat=48.182&lon=15.417&startyear=2005&endyear=2023&loss=14.0&raddatabase=auto&usehorizon=1&outdir=%2Fhome%2Ffounder%2Finternet%2Fgemini-next-ger

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	60.0 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 2 Feb 2 Mar 2 Apr 2 May 2 Jun 2
	Import cap Jul–Dec kW	Jul 2 Aug 2 Sep 2 Oct 2 Nov 2 Dec 2
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

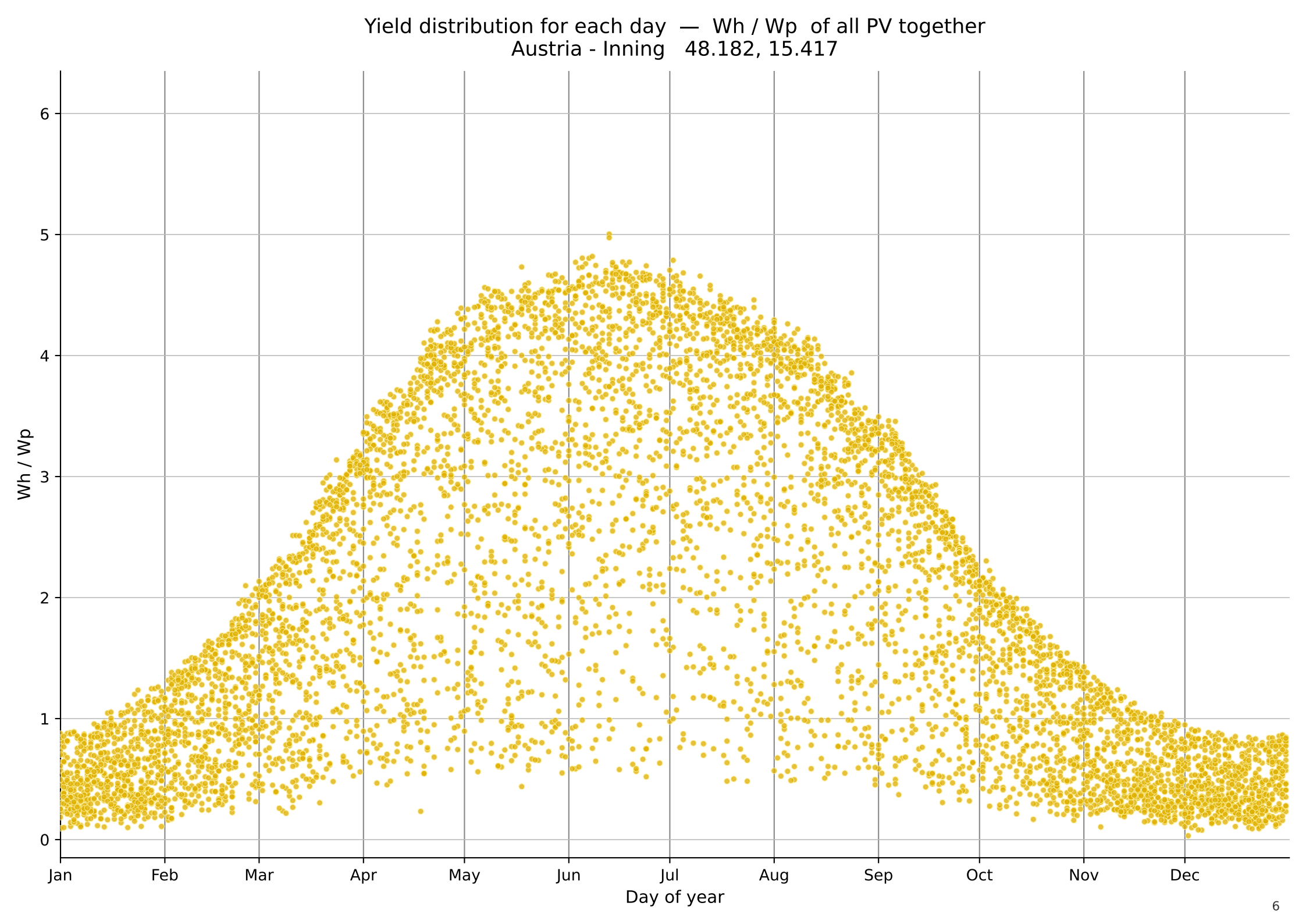
Of the record	Hours	Watts
98 %	14	20,836 W
96 %	78	20,410 W
94 %	255	19,985 W
92 %	654	19,560 W
90 %	1,338	19,135 W

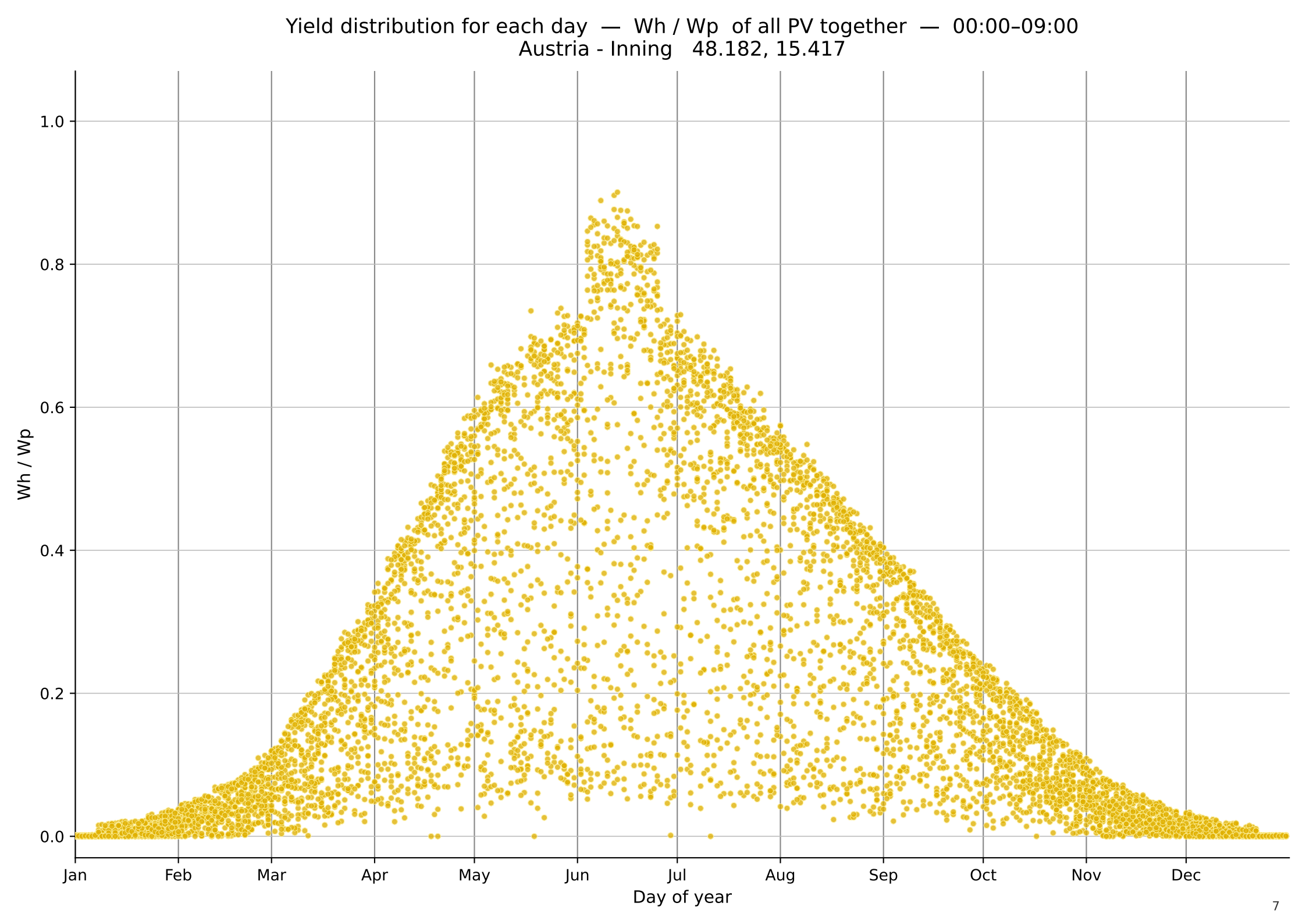
Record hour = 21,261 W combined.

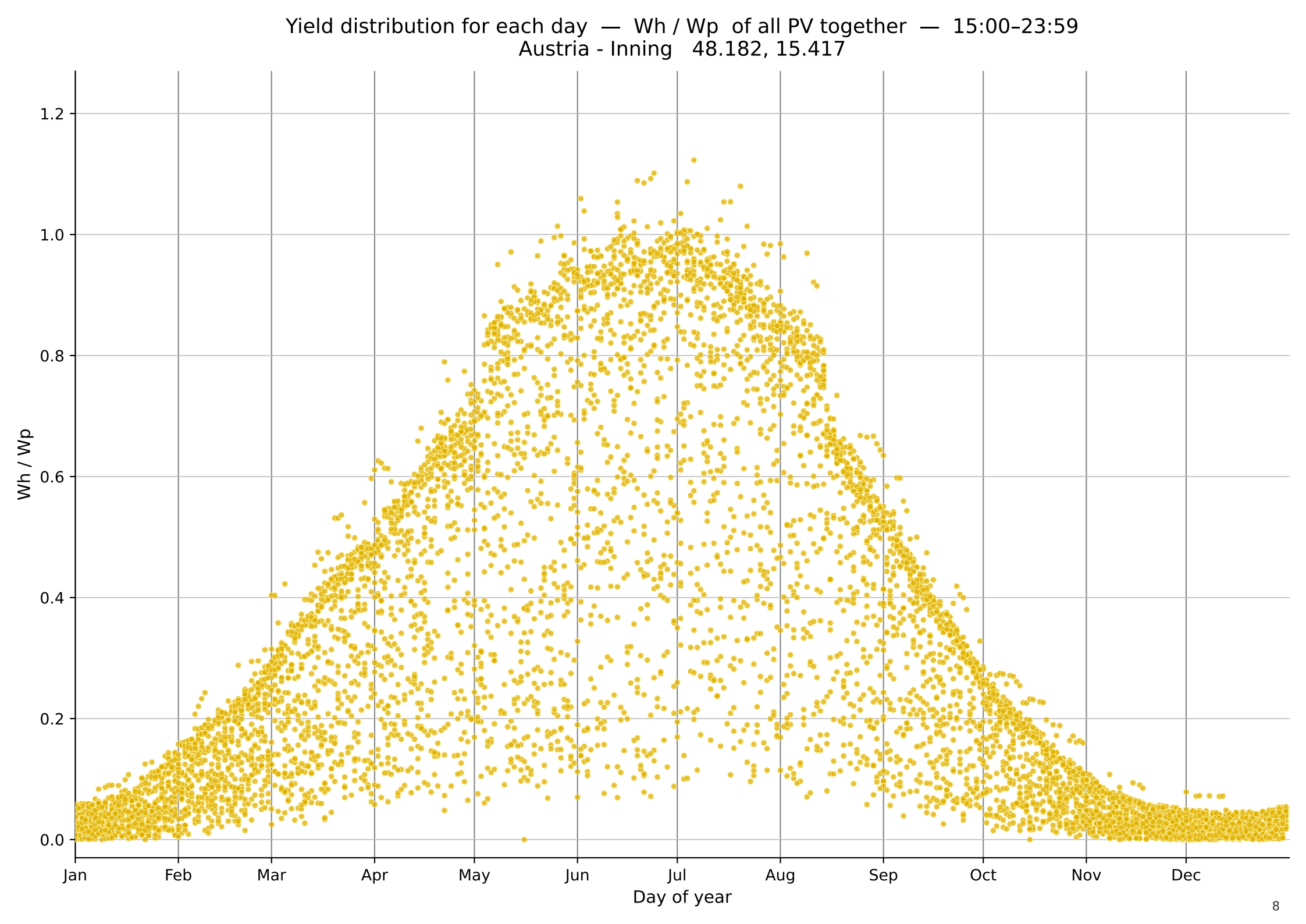
Records of each photovoltaic field
Austria - Inning 48.182, 15.417

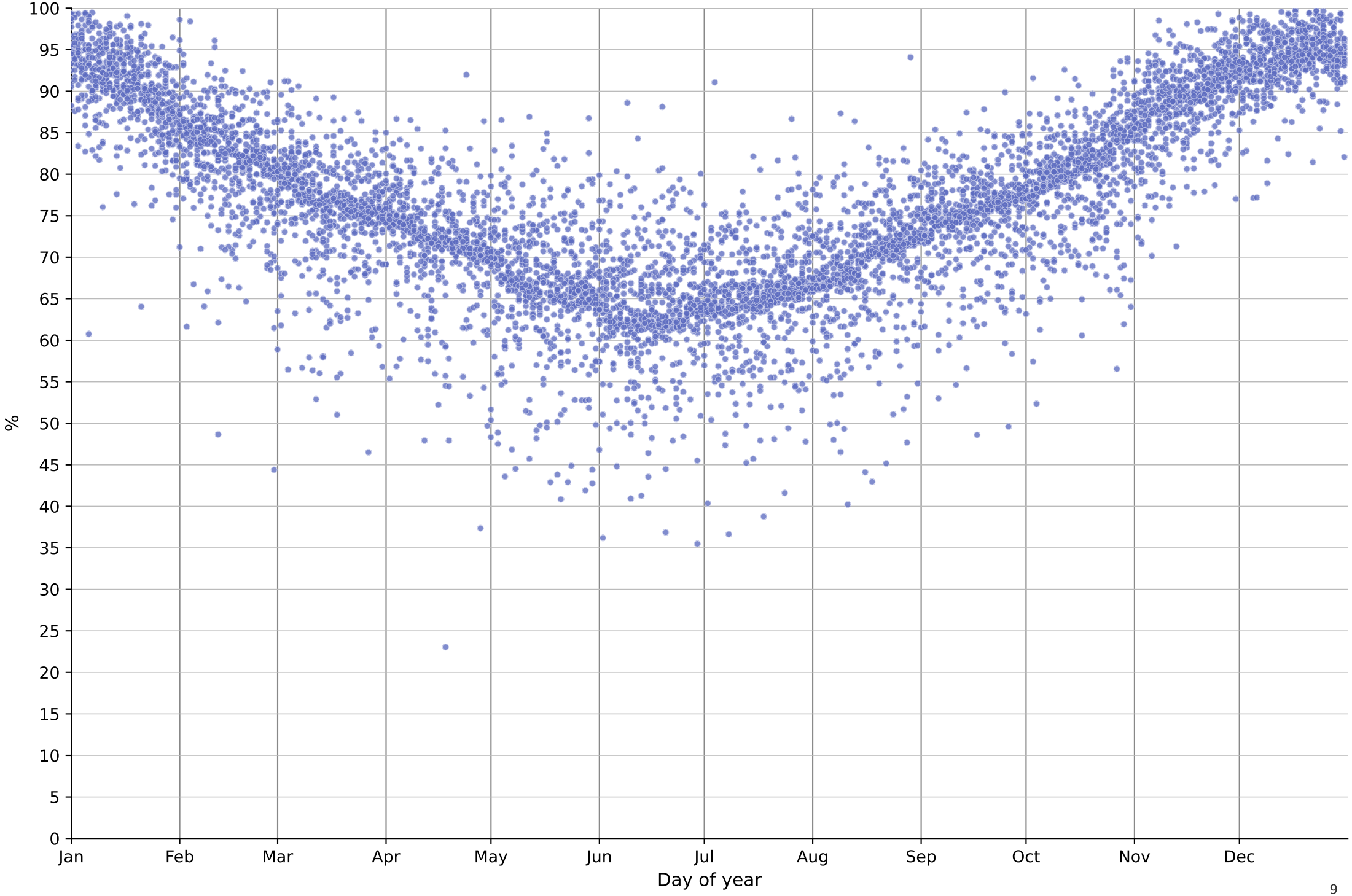
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Garage roof	2009-06-13 11:10	8,369	77.9	8	33	112	320	671
Garage side wall south	2009-03-22 11:10	2,638	75.9	8	17	26	45	75
Garage side wall north	2023-06-13 05:10	611	17.6	1	8	25	50	108
Garage door side	2005-05-08 14:10	473	67.6	1	3	5	16	49
Garage back 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

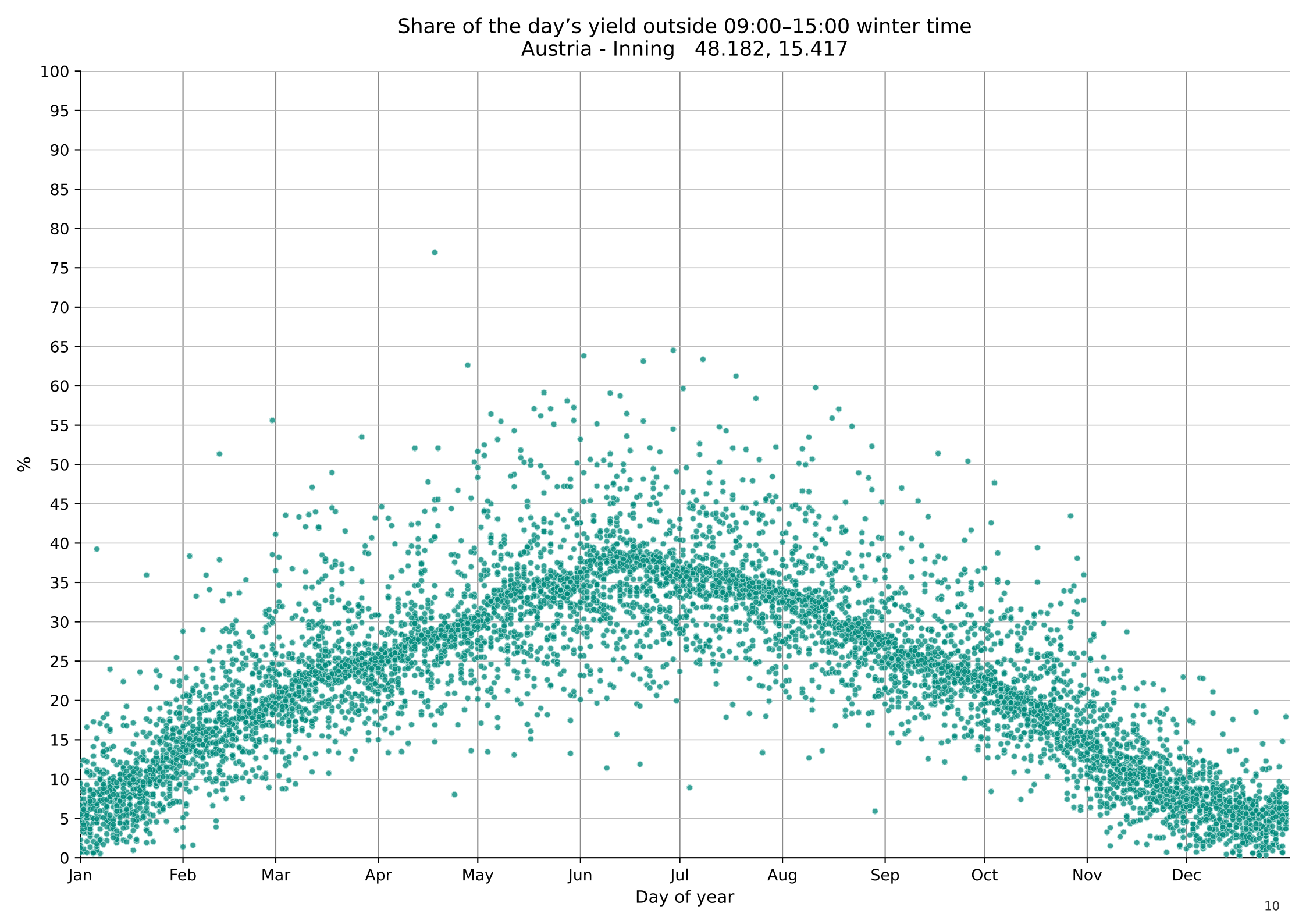
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

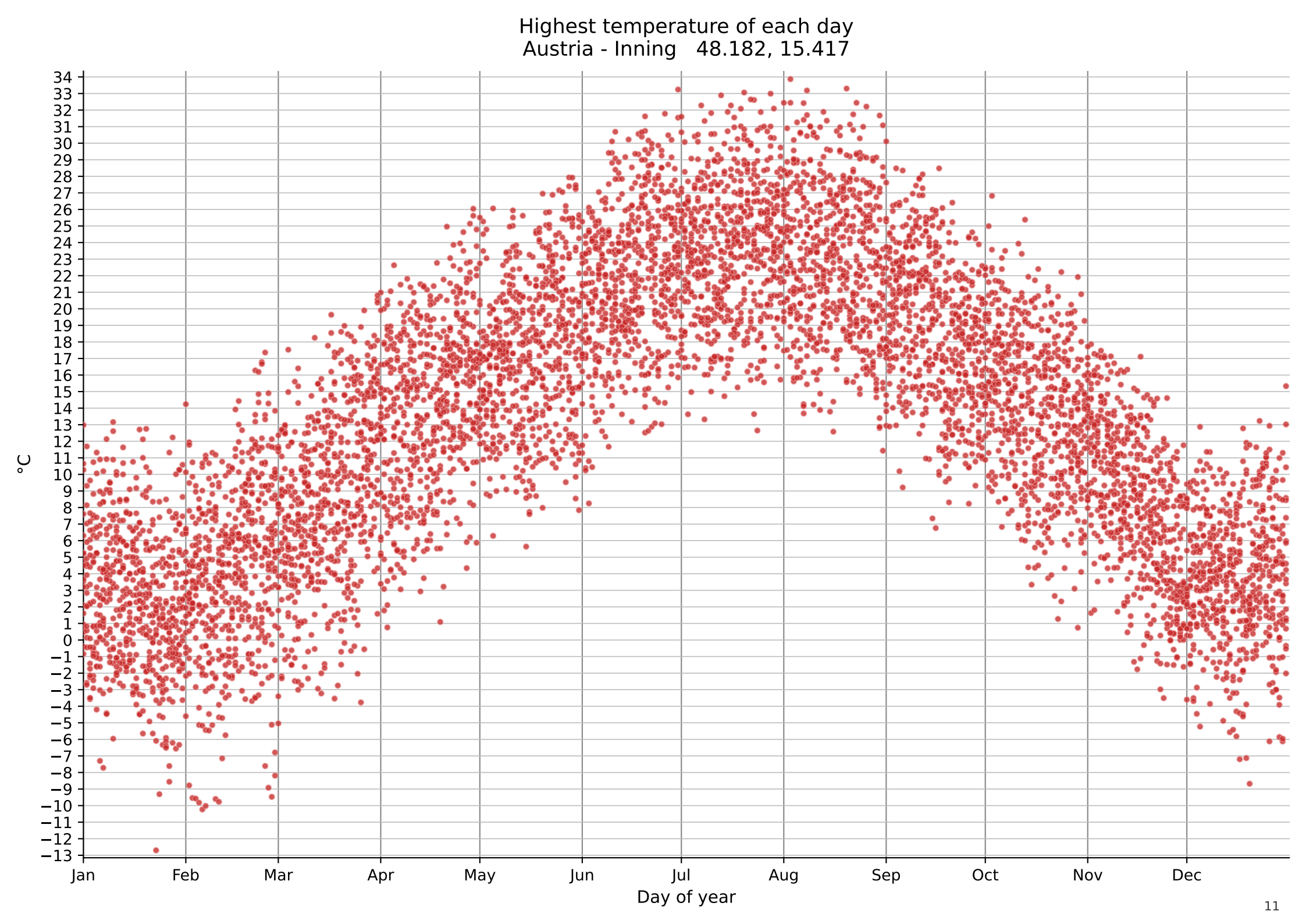

Yield distribution for each day — Wh / Wp of all PV together
Austria - Inning 48.182, 15.417
Wh / Wp
0
1
2
3
4
5
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

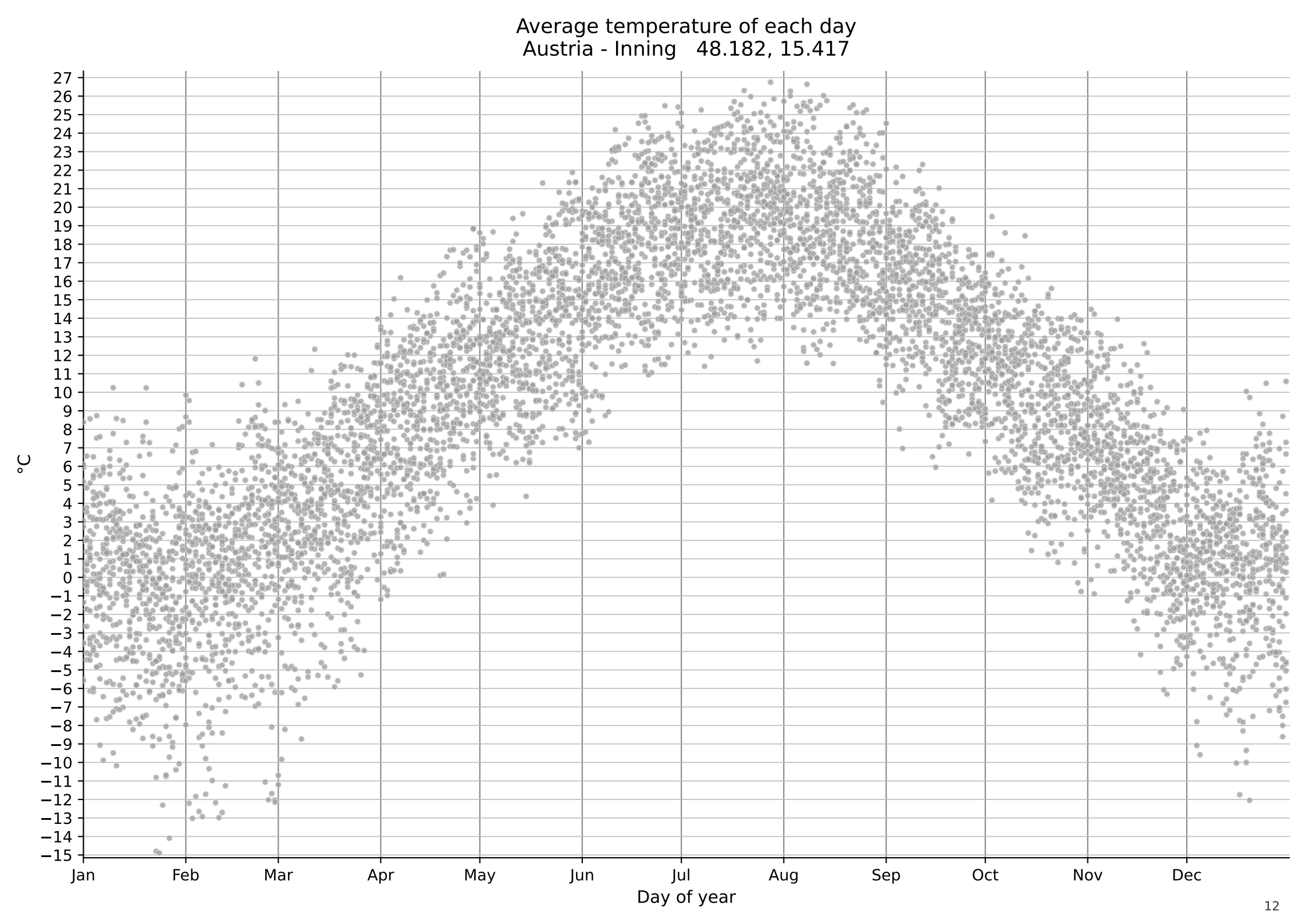

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
Austria - Inning 48.182, 15.417
1.0
0.8
0.6
0.4
0.2
0.0
Wh / Wp
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

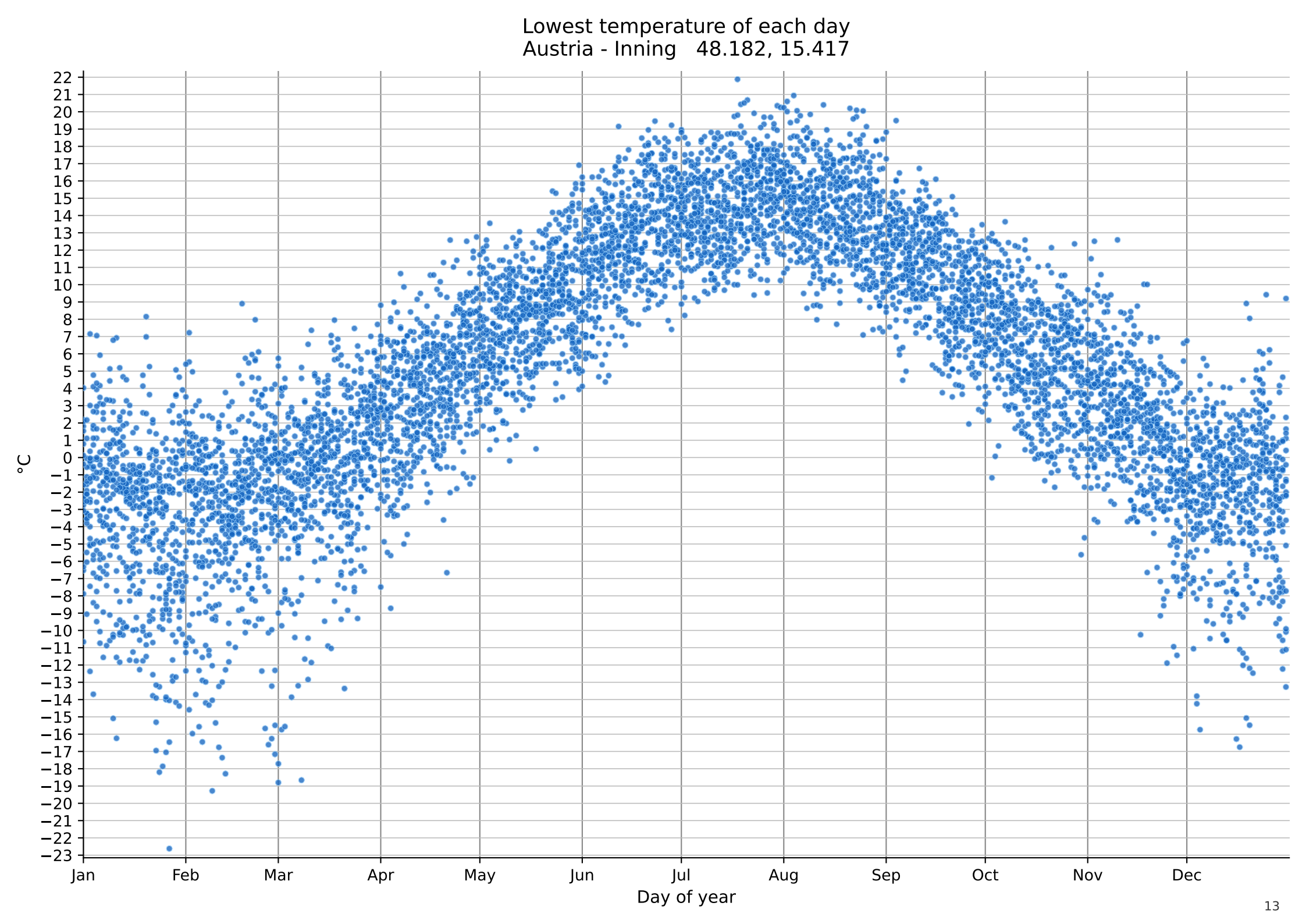

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
Austria - Inning 48.182, 15.417
Wh / Wp
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

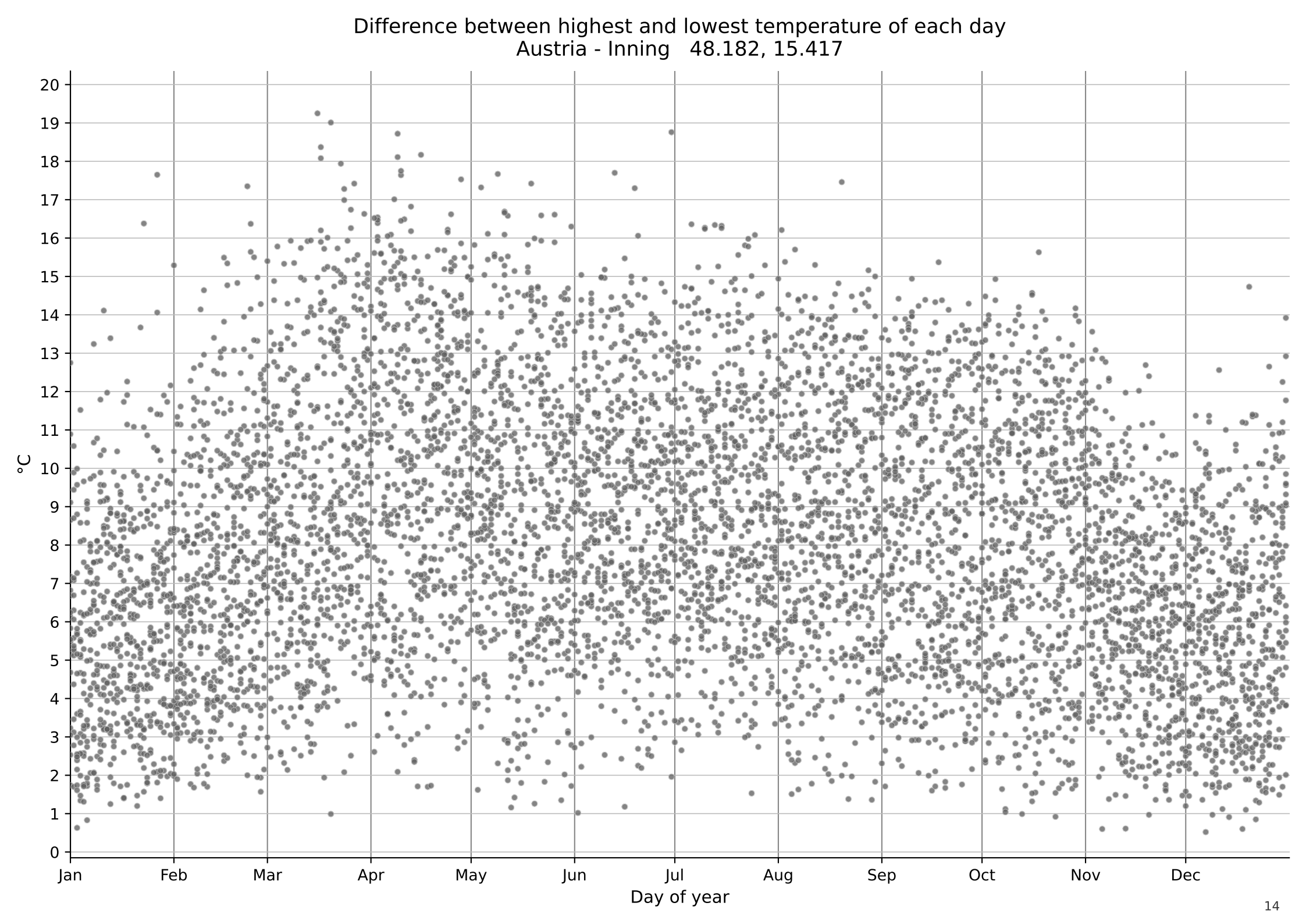

Share of the day’s yield in 09:00–15:00 winter time
Austria - Inning 48.182, 15.417
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


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

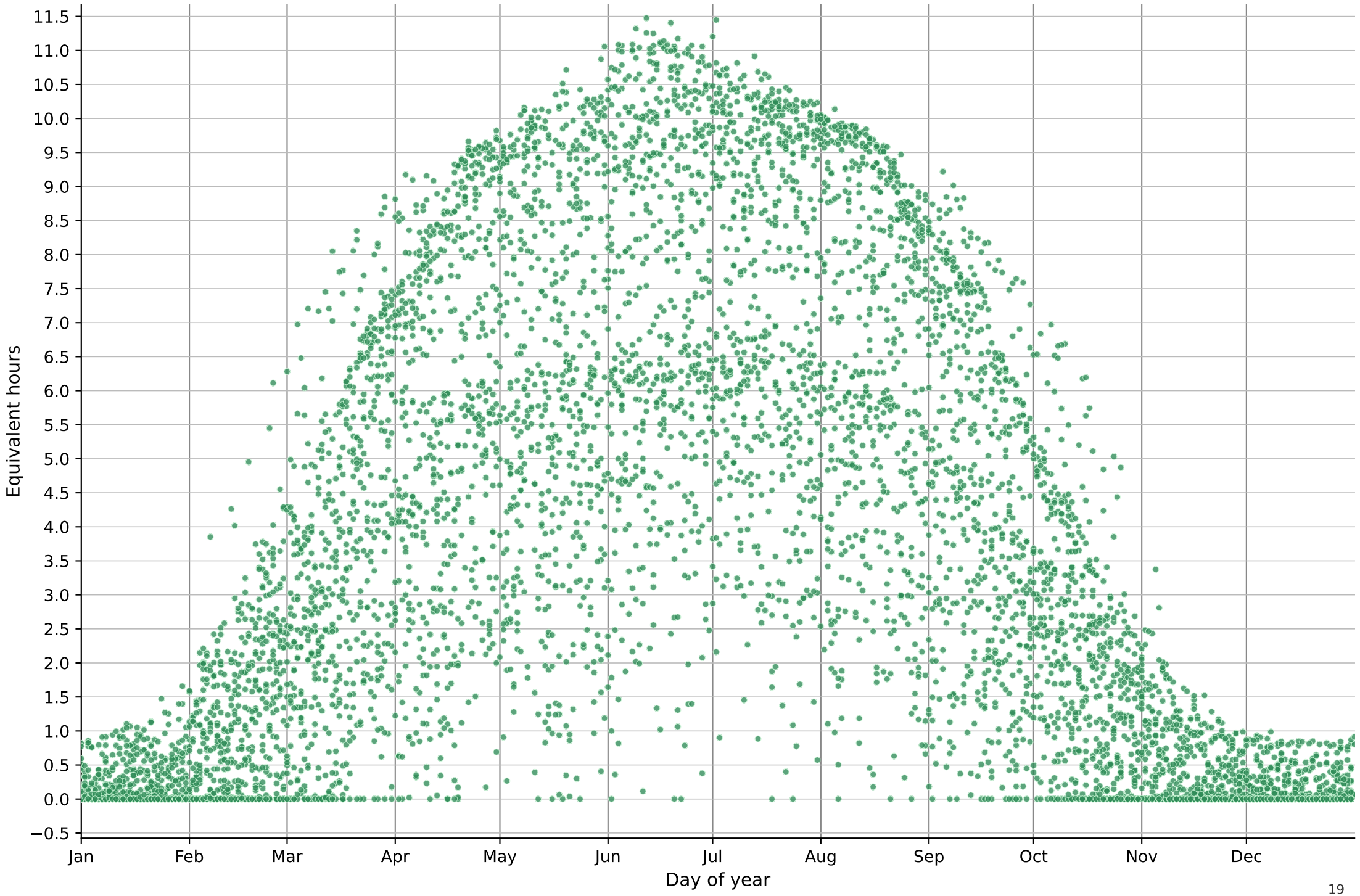
Month / year		Garage roof 1°/0° 10,740 Wp	Garage side wall south 90°/0° 3,475 Wp	Garage side wall north 90°/180° 3,475 Wp	Garage door side 90°/90° 700 Wp	Garage back side 90°/-90° 2,540 Wp	Garden fence east 90°/-90° + 90°/90° 6000 Wp bifacial ×80%	All together
January	Maximum	352.68	25.23	25.23	5.62	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

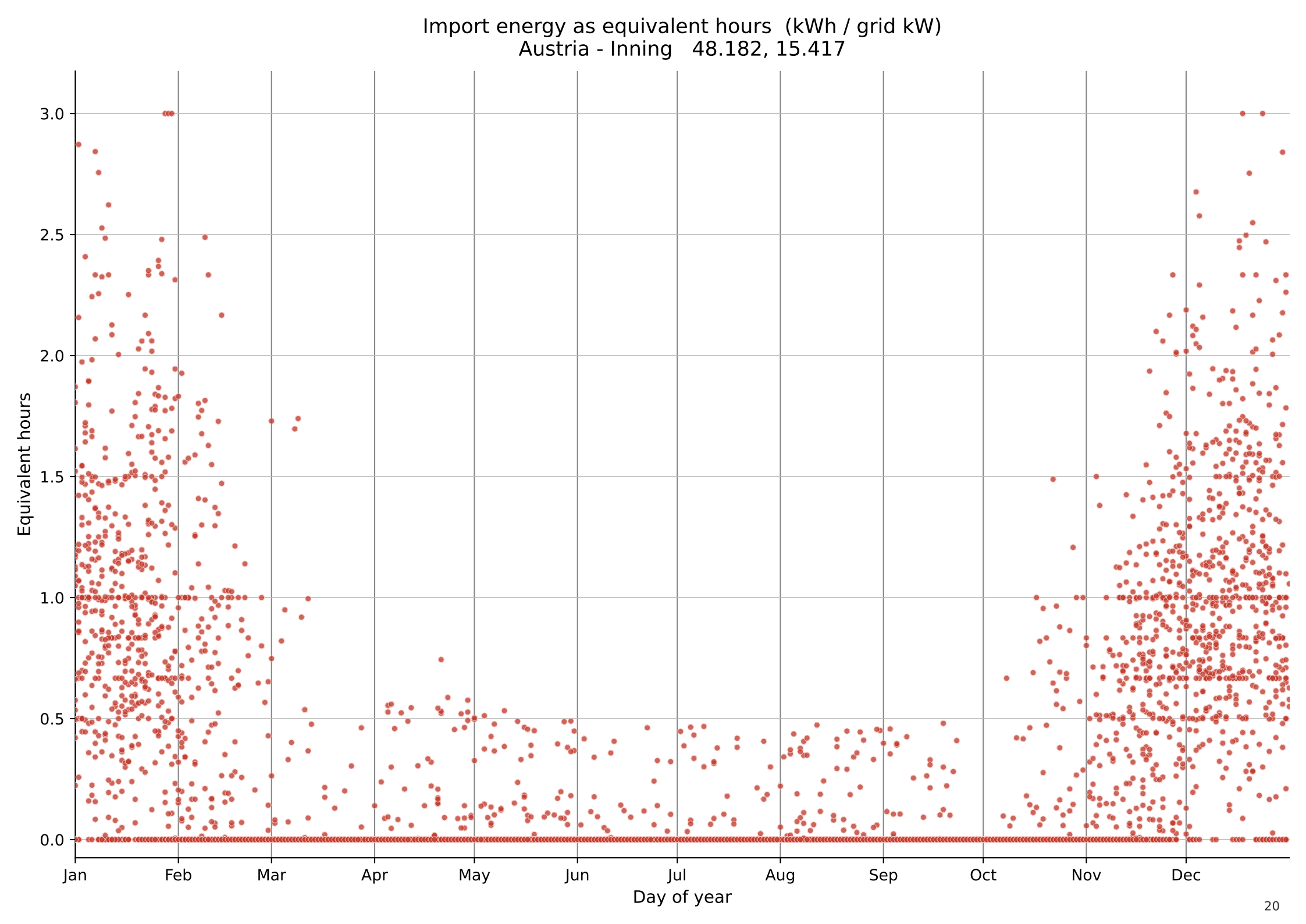
Highest combined yield hour: 2012-05-18 09:10 UTC 21,260.8 W (0.546 W/Wp) of 38,930 Wp installed. Use this hour to size battery charge power.

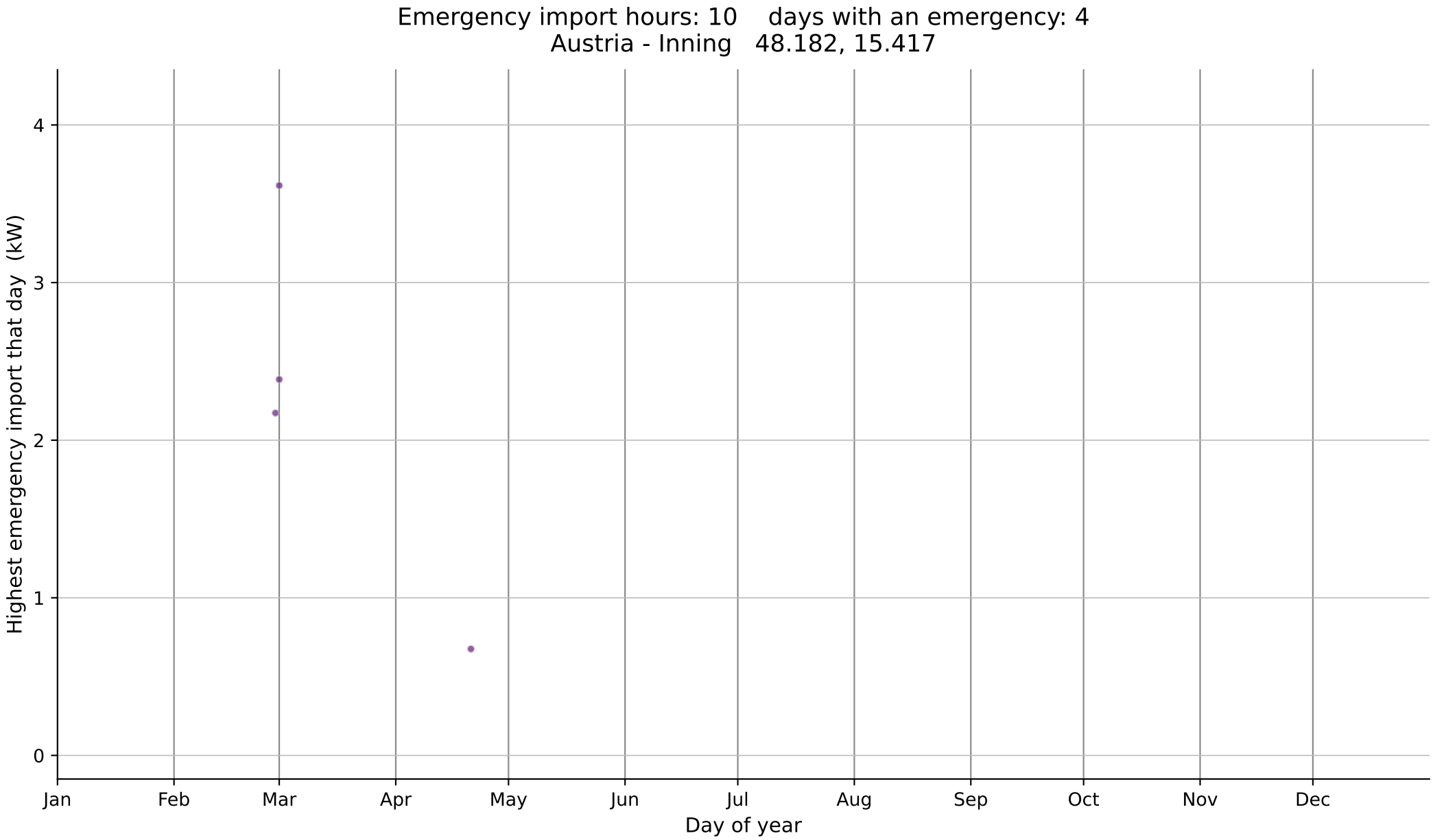
Monthly and yearly total yield (kWh)
Austria - Inning 48.182, 15.417

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
11.5
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
3.0
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	126	598	1,796	2,563	2,778	3,165	3,148	2,748	2,019	1,021	278	110	17,368
month average	79	384	1,293	2,025	2,331	2,661	2,721	2,404	1,605	747	154	59	16,464
month minimum	25	167	878	1,454	1,737	2,157	1,923	2,004	1,226	351	80	24	15,186
day Maximum	19.9	73.4	106.2	117.8	132.7	137.7	137.4	121.7	110.6	83.7	40.5	11.9	137.7
day average	2.5	13.6	41.7	67.5	75.2	88.7	87.8	77.5	53.5	24.1	5.1	1.9	45.1
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	506	250	91	33	16	8	22	17	13	74	311	550	1,580
month average	332	72	9	9	8	3	4	7	4	15	161	377	1,001
month minimum	163	2	0	0	2	0	0	0	0	0	58	180	652
day Maximum	36.0	29.9	20.9	8.9	6.4	5.5	5.6	5.7	5.8	17.9	28.0	36.0	36.0
day average	10.7	2.6	0.3	0.3	0.3	0.1	0.1	0.2	0.1	0.5	5.4	12.2	2.7
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
Total energy used for house													
month Maximum	1,101	1,068	839	646	582	472	458	480	534	658	746	1,031	7,939
month average	848	751	727	591	533	436	417	428	485	600	678	797	7,291
month minimum	732	650	657	509	474	388	390	386	426	534	635	711	6,945
day Maximum	60.3	54.8	49.5	27.7	23.0	21.0	19.6	19.6	21.8	26.2	36.6	51.2	60.3
day average	27.4	26.6	23.5	19.7	17.2	14.5	13.4	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	7	83	226	304	328	331	348	339	269	157	32	6	2,165
month average	5	44	176	253	284	304	323	308	222	110	13	3	2,045
month minimum	2	11	118	180	222	258	269	271	173	33	5	2	1,889
day Maximum	1.1	13.1	16.8	15.9	17.0	16.9	16.5	15.5	16.1	15.2	8.3	0.8	17.0
day average	0.2	1.6	5.7	8.4	9.2	10.1	10.4	9.9	7.4	3.5	0.4	0.1	5.6
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	124	61	24	8	4	2	5	4	3	17	75	133	386
month average	79	17	2	2	2	1	1	2	1	3	38	90	239
month minimum	38	1	0	0	1	0	0	0	0	0	13	42	154
day Maximum	9.3	7.7	6.6	2.2	1.6	1.5	1.4	1.5	1.5	4.5	6.4	9.3	9.3
day average	2.6	0.6	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	1.3	2.9	0.7
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
Peak grid fee													
month Maximum	13	27	36	17	12	9	9	9	9	13	13	13	157
month average	13	13	8	10	10	5	4	7	6	9	13	13	111
month minimum	13	13	0	1	5	0	0	0	0	0	13	13	86
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	137	73	60	25	14	11	14	13	13	30	87	146	515
month average	92	31	10	13	12	6	5	9	7	12	51	103	350
month minimum	51	13	0	1	6	0	0	0	0	0	26	55	255
day Maximum	9.3	7.7	6.6	2.2	1.6	1.5	1.4	1.5	1.5	4.5	6.4	9.3	9.3
day average	2.6	0.6	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	1.3	2.9	0.7
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
Balance													
month Maximum	-45	69	226	294	314	331	348	336	269	157	-2	-49	1,879
month average	-87	14	165	240	272	298	318	299	214	98	-37	-100	1,695
month minimum	-133	-55	96	155	211	249	257	260	166	12	-82	-143	1,468
day Maximum	1.1	13.1	16.8	15.9	17.0	16.9	16.5	15.5	16.1	15.2	8.3	0.5	17.0
day average	-2.4	1.0	5.6	8.4	9.1	10.1	10.4	9.9	7.4	3.4	-0.8	-2.8	4.9
day minimum	-9.3	-7.7	-5.3	-0.0	0.0	0.0	0.0	0.0	0.0	-4.5	-6.4	-9.3	-9.3

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	126	598	1,796	2,563	2,778	3,165	3,148	2,748	2,019	1,021	278	110	17,368
month average	79	384	1,293	2,025	2,331	2,661	2,721	2,404	1,605	747	154	59	16,464
month minimum	25	167	878	1,454	1,737	2,157	1,923	2,004	1,226	351	80	24	15,186
day Maximum	19.9	73.4	106.2	117.8	132.7	137.7	137.4	121.7	110.6	83.7	40.5	11.9	137.7
day average	2.5	13.6	41.7	67.5	75.2	88.7	87.8	77.5	53.5	24.1	5.1	1.9	45.1
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	3	319	863	1,292	1,352	1,319	1,437	1,461	1,205	655	99	0	9,054
month average	0	146	673	1,099	1,215	1,244	1,359	1,348	985	448	31	0	8,547
month minimum	0	1	433	847	1,000	1,079	1,221	1,251	726	97	0	0	7,841
day Maximum	3.1	52.9	64.9	65.2	68.2	65.1	67.5	67.3	67.7	64.3	36.3	0.0	68.2
day average	0.0	5.2	21.7	36.6	39.2	41.5	43.8	43.5	32.8	14.4	1.0	0.0	23.4
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	29	118	311	482	630	816	824	508	321	184	38	21	3,549
month average	19	85	221	365	491	641	625	430	243	107	18	7	3,250
month minimum	6	43	125	252	304	461	361	328	151	53	8	0	2,905
day Maximum	3.9	9.6	16.9	28.3	36.0	40.5	41.6	29.4	17.9	9.5	3.4	1.8	41.6
day average	0.6	3.0	7.1	12.2	15.8	21.4	20.2	13.9	8.1	3.4	0.6	0.2	8.9
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
Export during low price hours													
month Maximum	107	236	649	811	849	1,082	952	822	505	288	152	89	4,981
month average	60	153	399	561	625	777	738	626	378	193	105	52	4,667
month minimum	20	99	274	300	398	565	336	382	263	103	65	14	4,079
day Maximum	16.5	42.0	48.6	55.4	58.2	58.7	58.7	47.0	42.8	43.7	26.7	10.6	58.7
day average	1.9	5.4	12.9	18.7	20.2	25.9	23.8	20.2	12.6	6.2	3.5	1.7	12.8
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

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

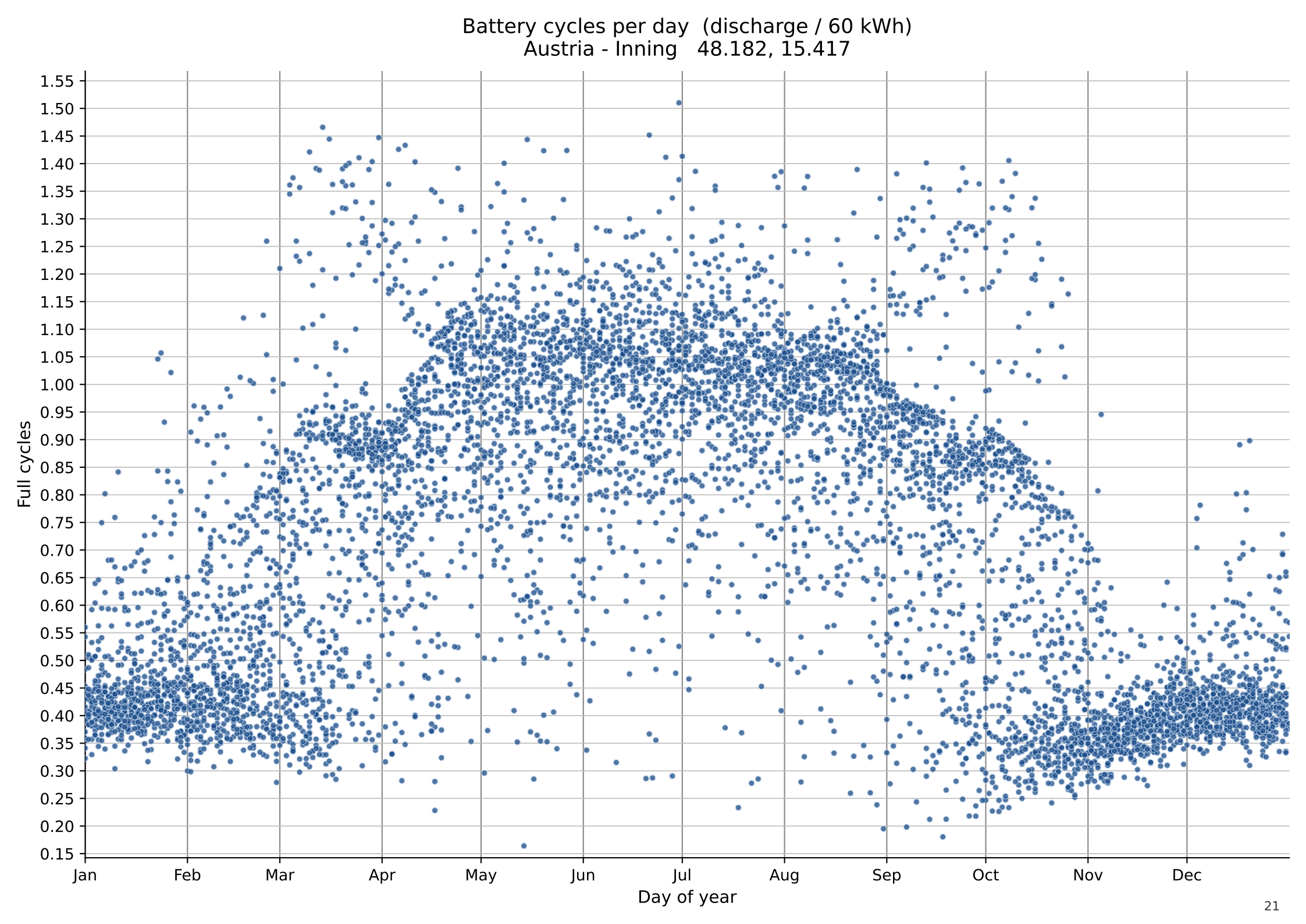
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	749	739	488	309	235	139	117	138	202	310	408	682	3,855
month average	497	431	376	256	188	104	77	88	154	253	340	448	3,210
month minimum	380	332	306	176	131	58	51	47	97	189	298	362	2,870
day Maximum	48.8	43.4	38.1	16.4	11.7	9.7	8.5	8.5	10.6	14.9	25.3	39.9	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	1	0	0	0	0	2
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	0.5	1.0	0.5	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	315	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	32.6	27.2	22.0	3.2	0.0	0.0	0.0	0.0	0.0	0.6	9.4	23.7	32.6
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

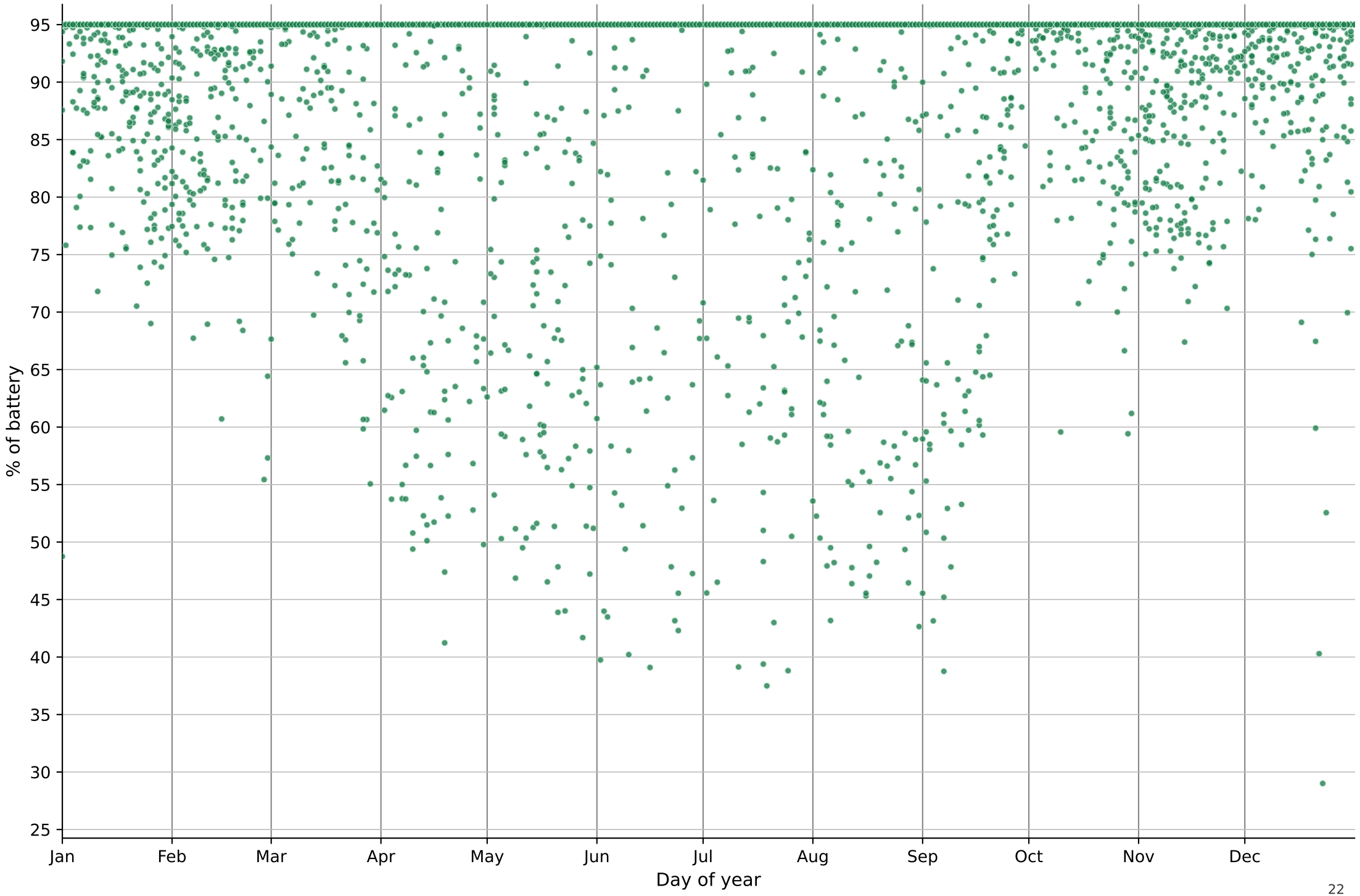
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

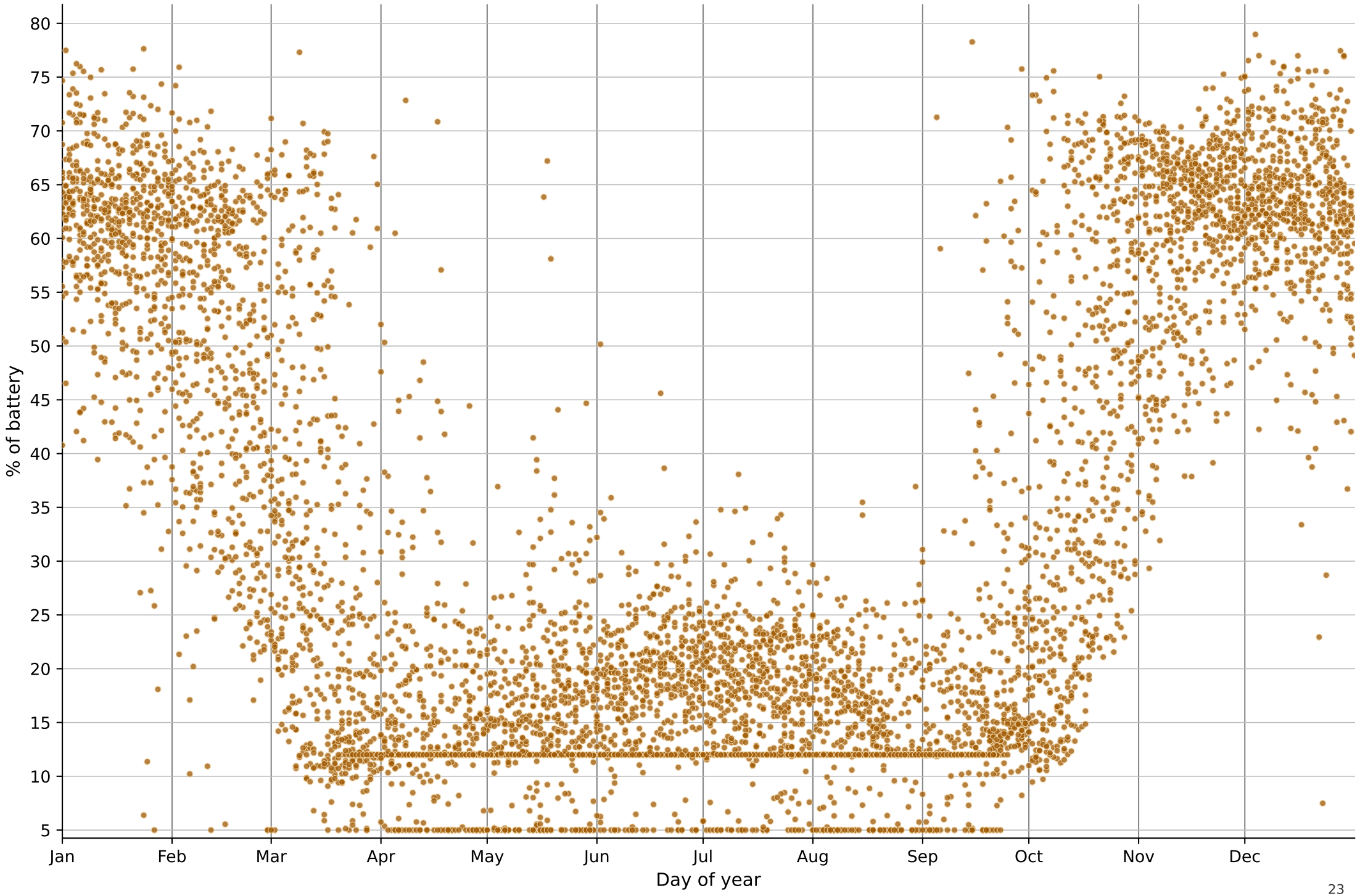
Battery
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	0	1	60	733	819	989	885	618	304	1	0	0	3,973
month average	0	0	38	468	635	742	717	469	214	0	0	0	3,284
month minimum	0	0	11	287	347	523	500	310	96	0	0	0	2,896
day Maximum	0.0	0.7	15.1	72.2	86.1	97.0	84.1	76.4	48.9	0.6	0.0	0.0	97.0
day average	0.0	0.0	1.2	15.6	20.5	24.7	23.1	15.1	7.1	0.0	0.0	0.0	9.0
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
Full cycles													
month Maximum	19	19	25	30	32	31	32	30	27	21	13	18	271
month average	14	15	23	27	30	30	31	29	24	18	12	13	265
month minimum	12	12	20	23	26	27	28	28	20	12	11	12	256
day Maximum	1.1	1.3	1.5	1.4	1.4	1.5	1.4	1.4	1.4	1.4	0.9	0.9	1.5
day average	0.5	0.5	0.7	0.9	1.0	1.0	1.0	0.9	0.8	0.6	0.4	0.4	0.7
day minimum	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2
Charge 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	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.3
day average	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	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
Discharge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	2
month average	0	0	0	0	0	0	0	0	0	0	0	0	2
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	2
day Maximum	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2
day average	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.1
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

Wasted = PV left when the export price is negative and the battery is full. Full cycles = discharge kWh / 60 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 / 60 kWh)
Austria - Inning 48.182, 15.417
Full cycles
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
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery max charge state per day (60 kWh = 100 %)
Austria - Inning 48.182, 15.417
% of battery
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery min charge state per day (60 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