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=EM+EWG+max+PV+-+airbased+wall+heating+system&lat=48.182&lon=15.417&startyear=2005&endyear=2023&loss=14.0&raddatabase=auto&usehorizon=1&outdir=%2Fhome%2Ffounder%2Finterr

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 / 4,000 W
	Heat on / cool on / ground	18.0 °C / 27.0 °C / 10.0 °C
	Curve / flow min / max	0.4 / 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	80 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 5 Feb 5 Mar 4 Apr 3 May 3 Jun 3
	Import cap Jul–Dec kW	Jul 3 Aug 3 Sep 3 Oct 4 Nov 4 Dec 5
Cars	Lunch DC / night AC	0.0 kWh @ 30.0 kW night 4.0 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

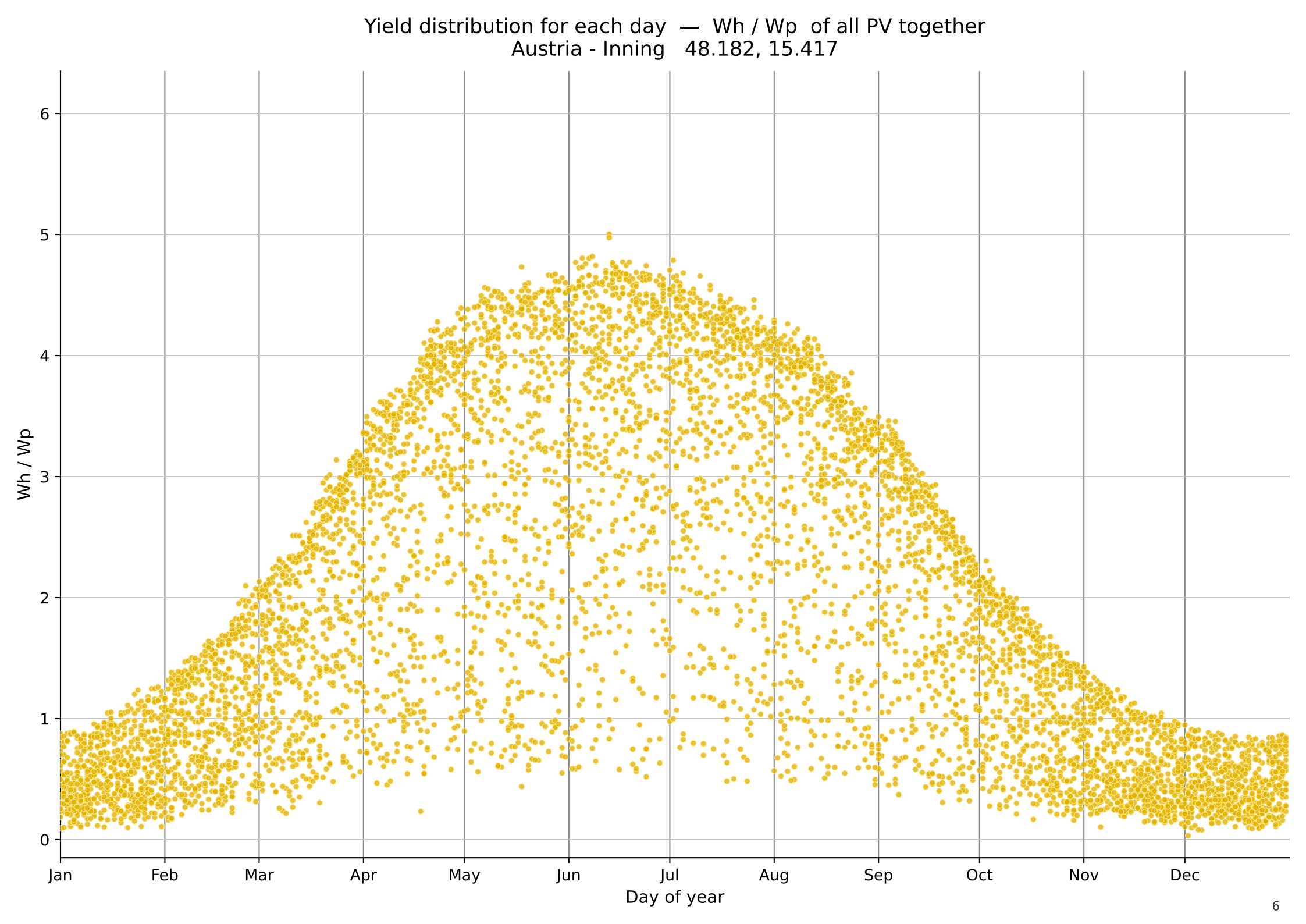
Of the record	Hours	Watts
98 %	14	20,836 W
96 %	78	20,410 W
94 %	255	19,985 W
92 %	654	19,560 W
90 %	1,338	19,135 W

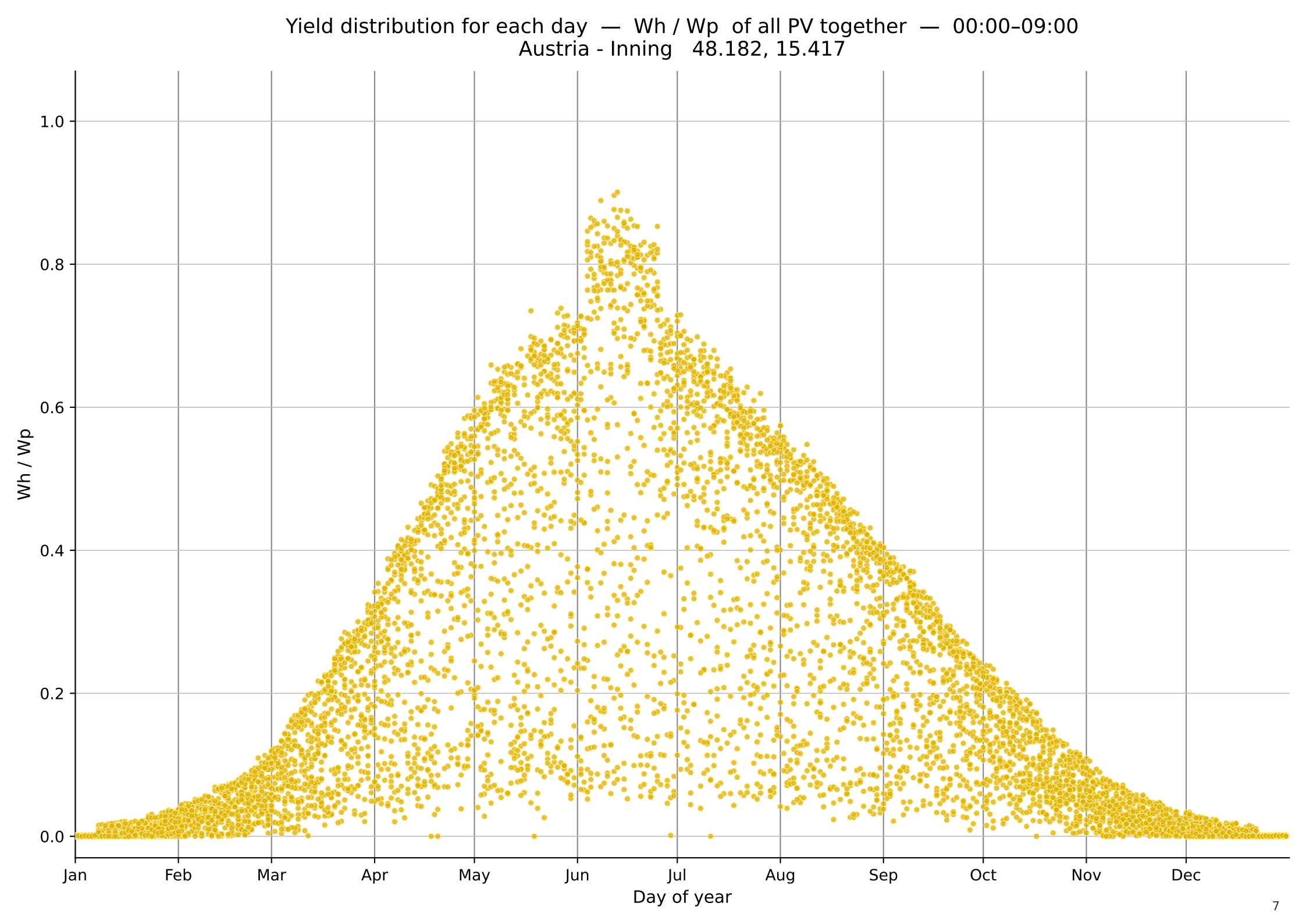
Record hour = 21,261 W combined.

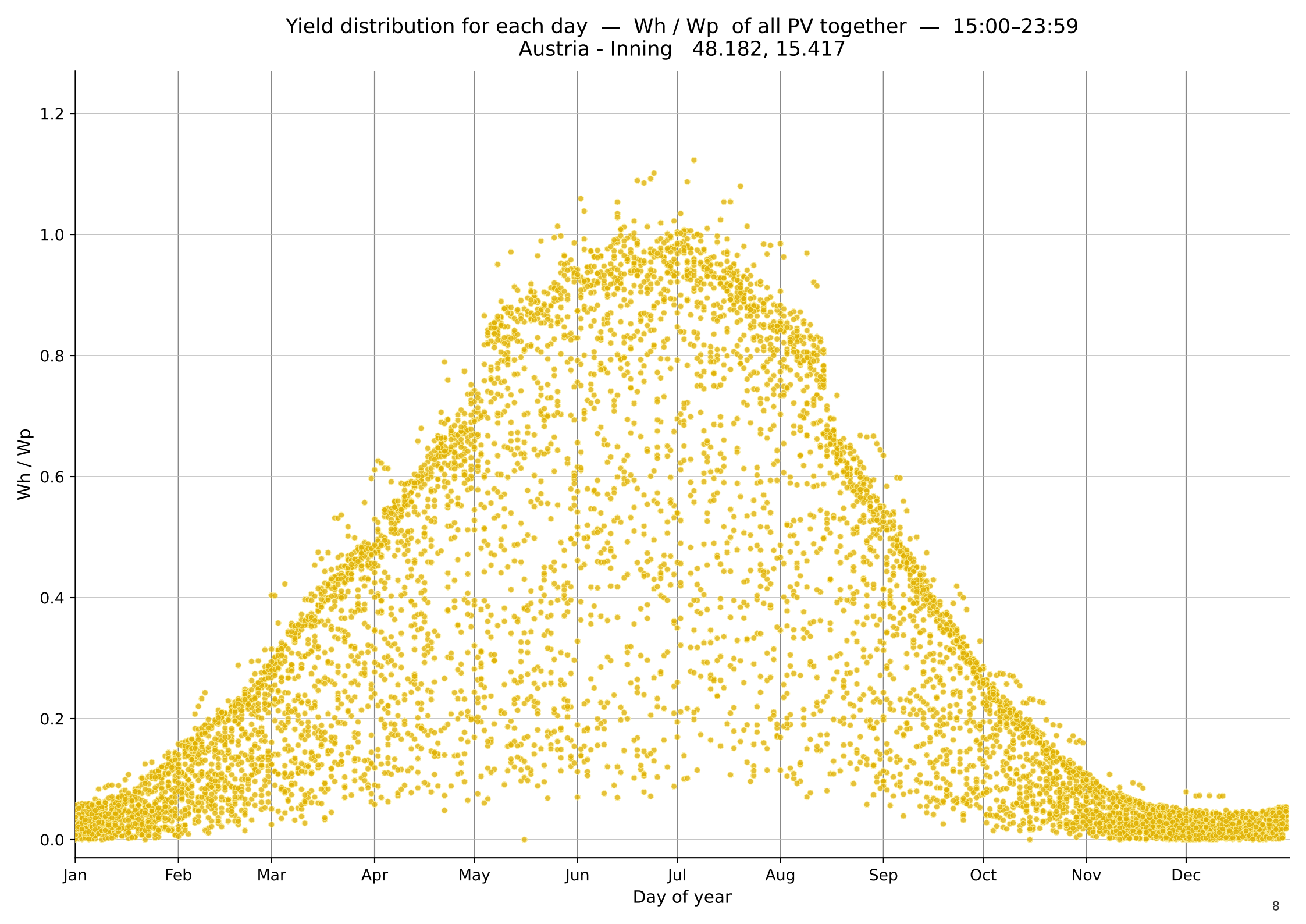
Records of each photovoltaic field
Austria - Inning 48.182, 15.417

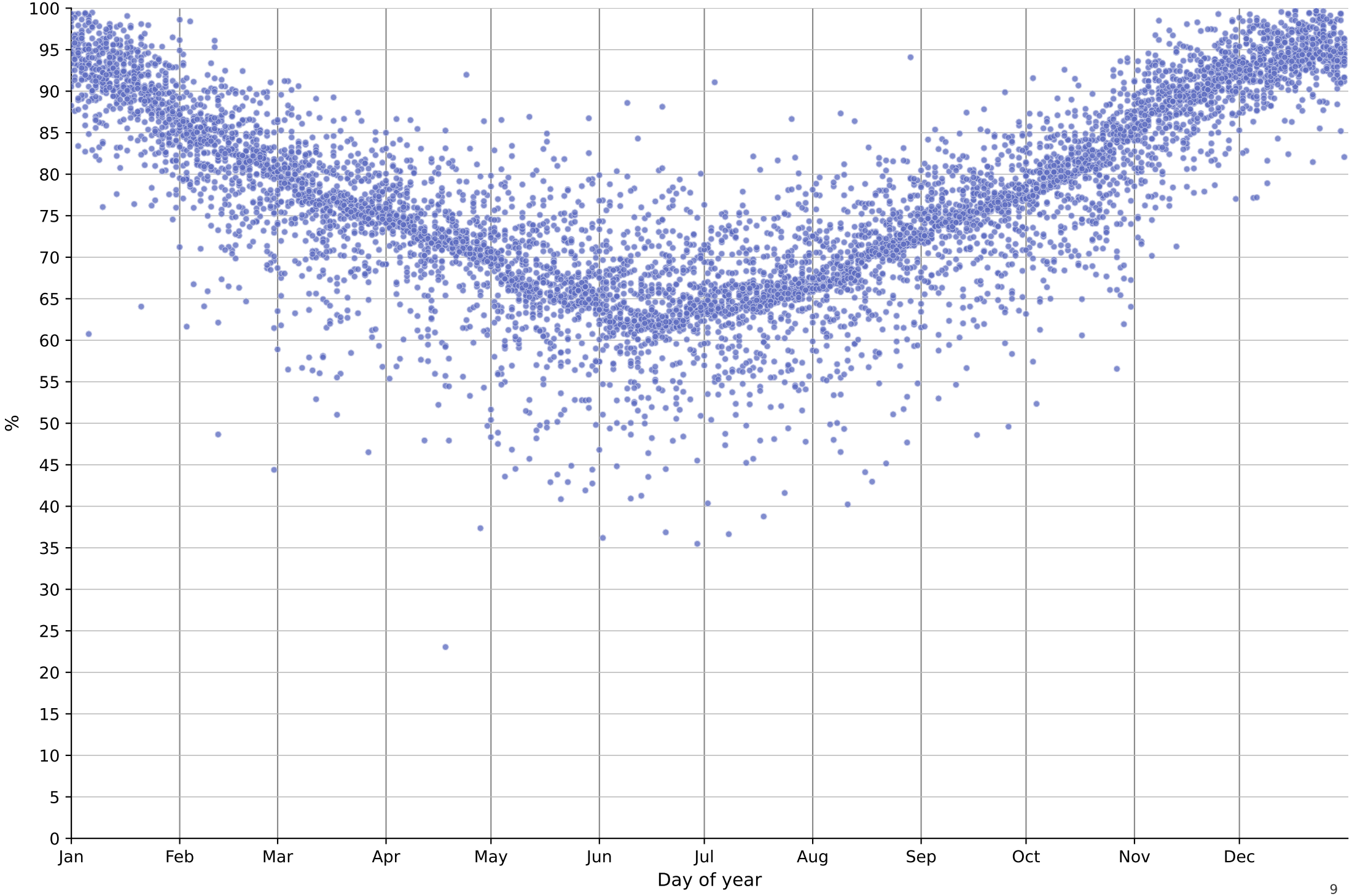
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Garage roof	2009-06-13 11:10	8,369	77.9	8	33	112	320	671
Garage side wall south	2009-03-22 11:10	2,638	75.9	8	17	26	45	75
Garage side wall north	2023-06-13 05:10	611	17.6	1	8	25	50	108
Garage door side	2005-05-08 14:10	473	67.6	1	3	5	16	49
Garage back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

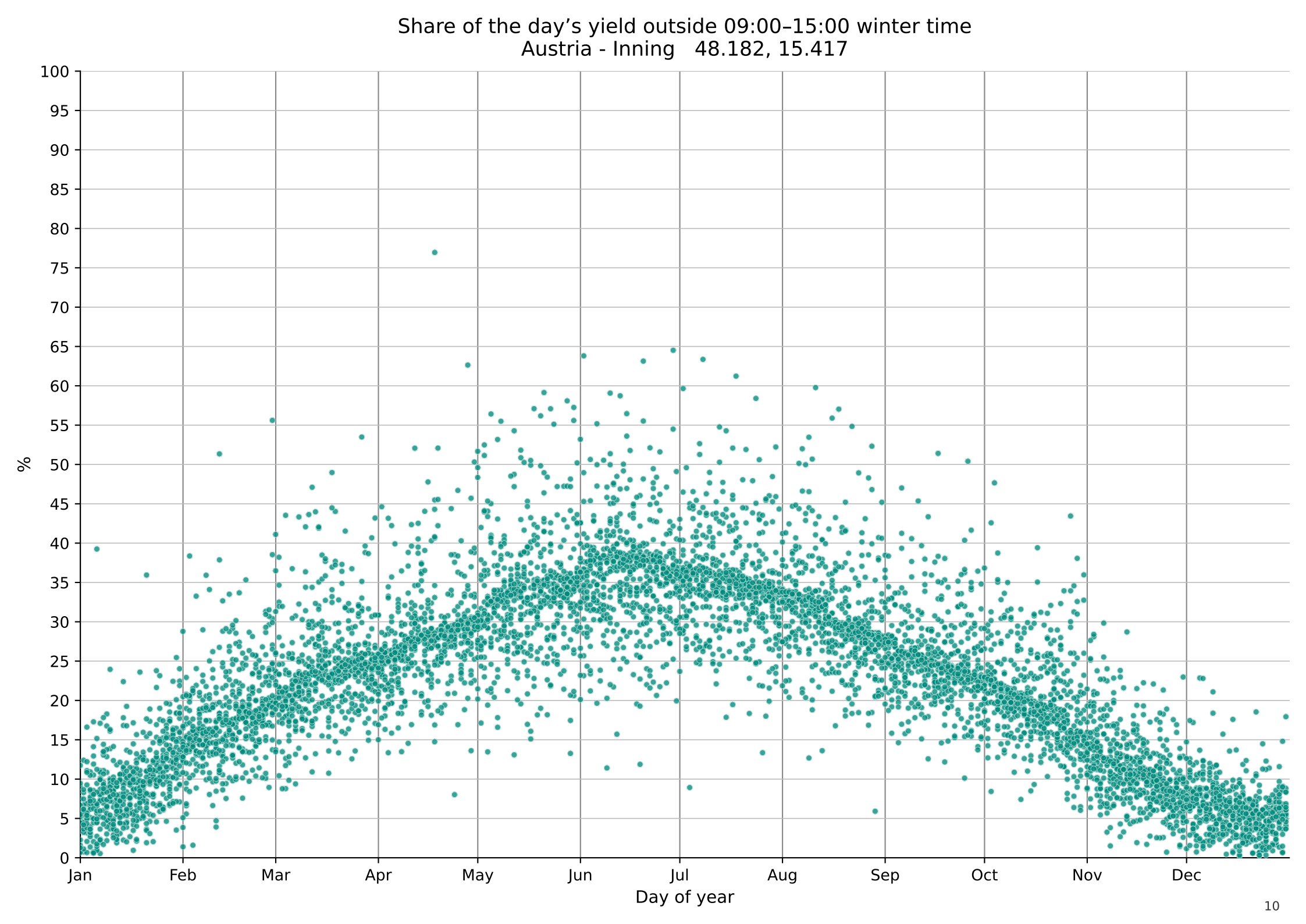
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

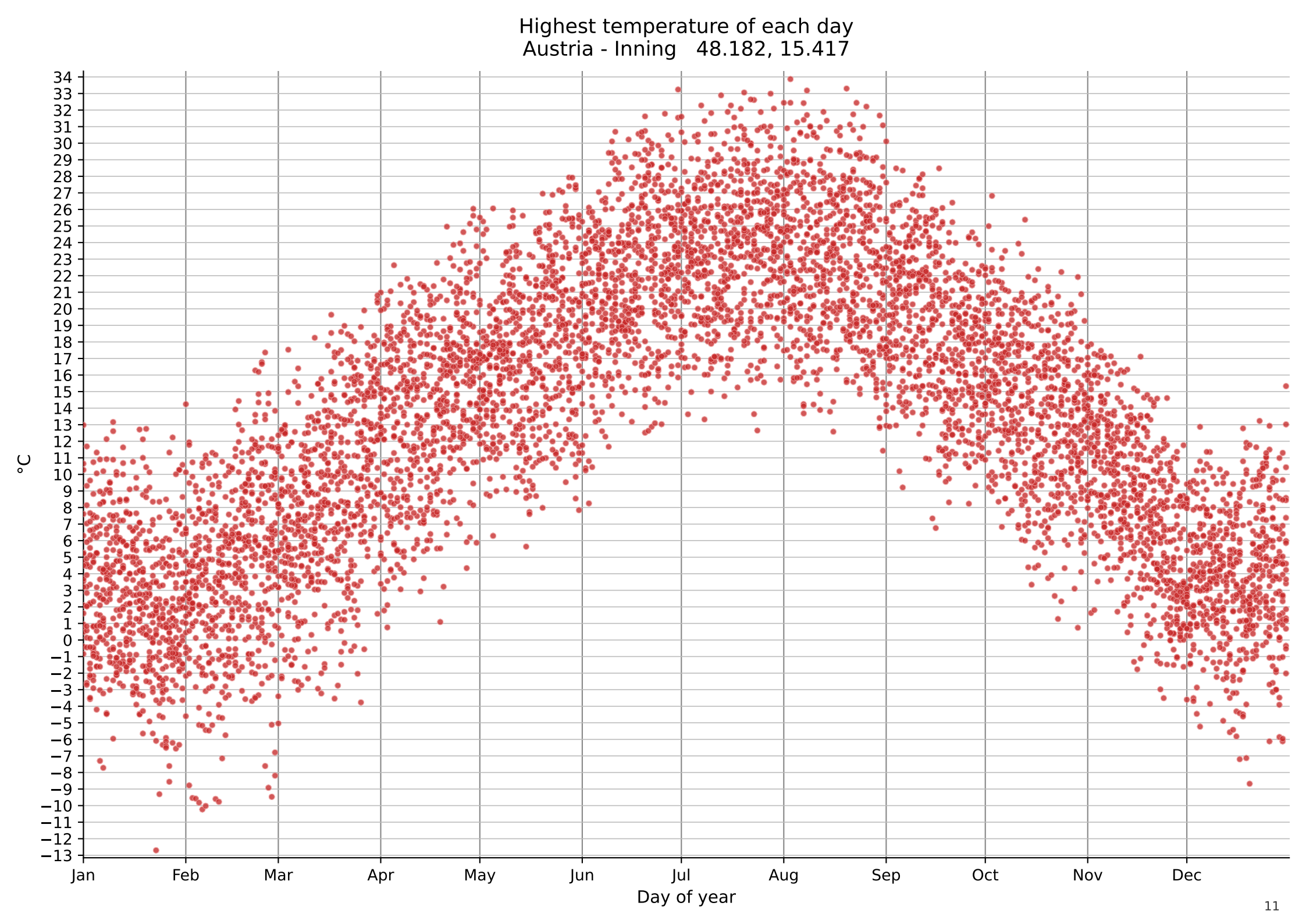

Yield distribution for each day — Wh / Wp of all PV together
Austria - Inning 48.182, 15.417
Wh / Wp
0
1
2
3
4
5
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

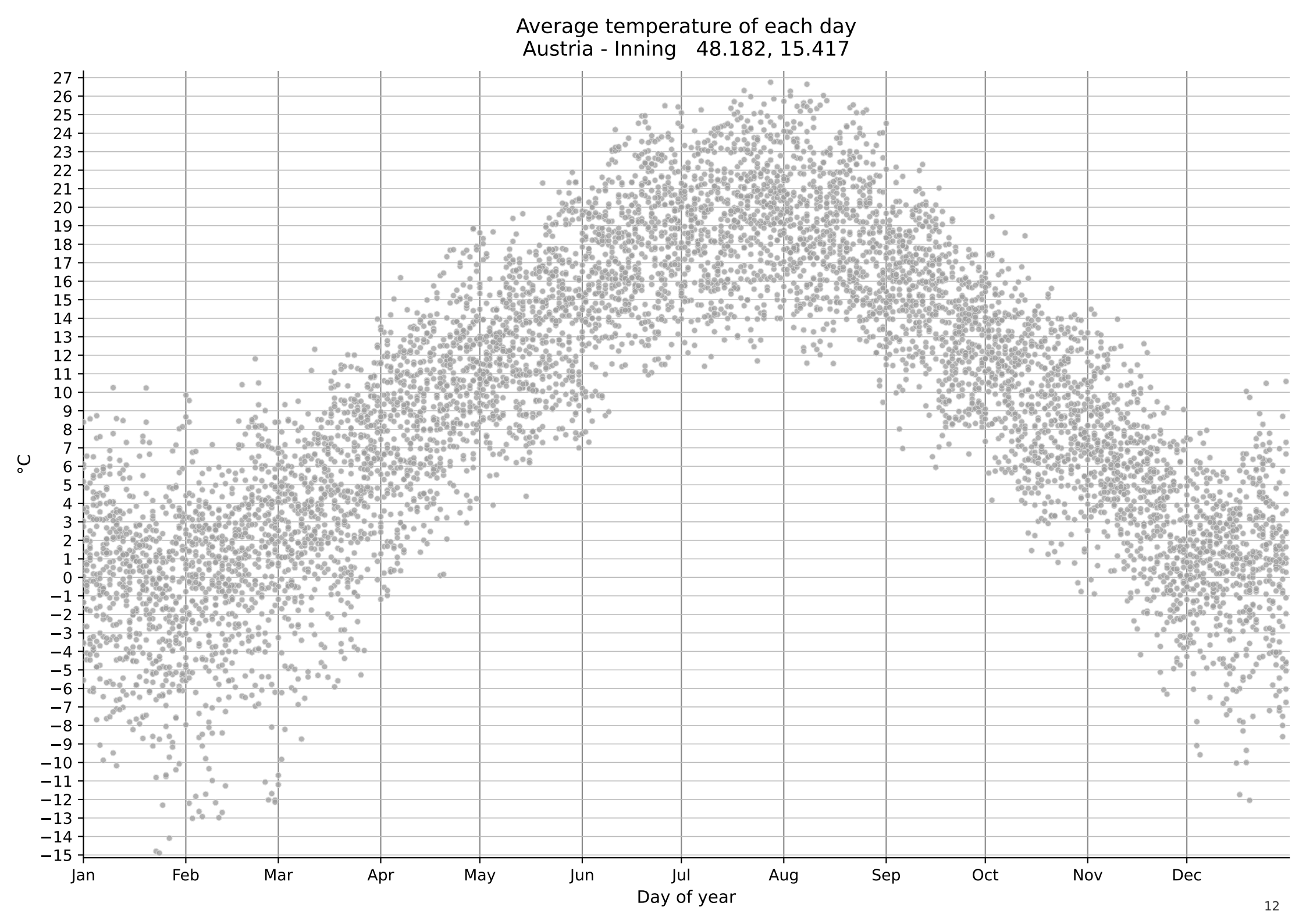

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
Austria - Inning 48.182, 15.417
1.0
0.8
0.6
0.4
0.2
0.0
Wh / Wp
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

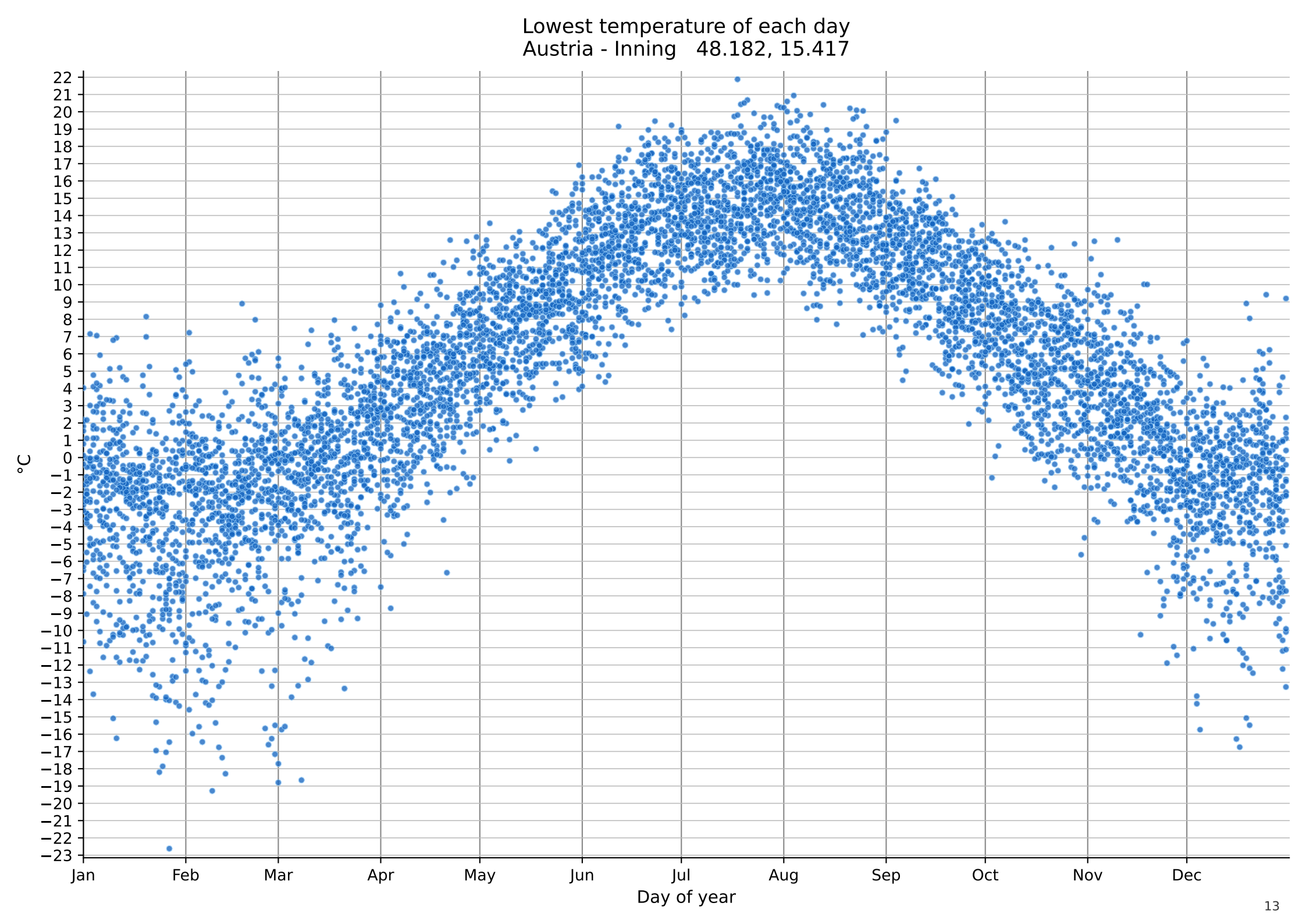

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
Austria - Inning 48.182, 15.417
Wh / Wp
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

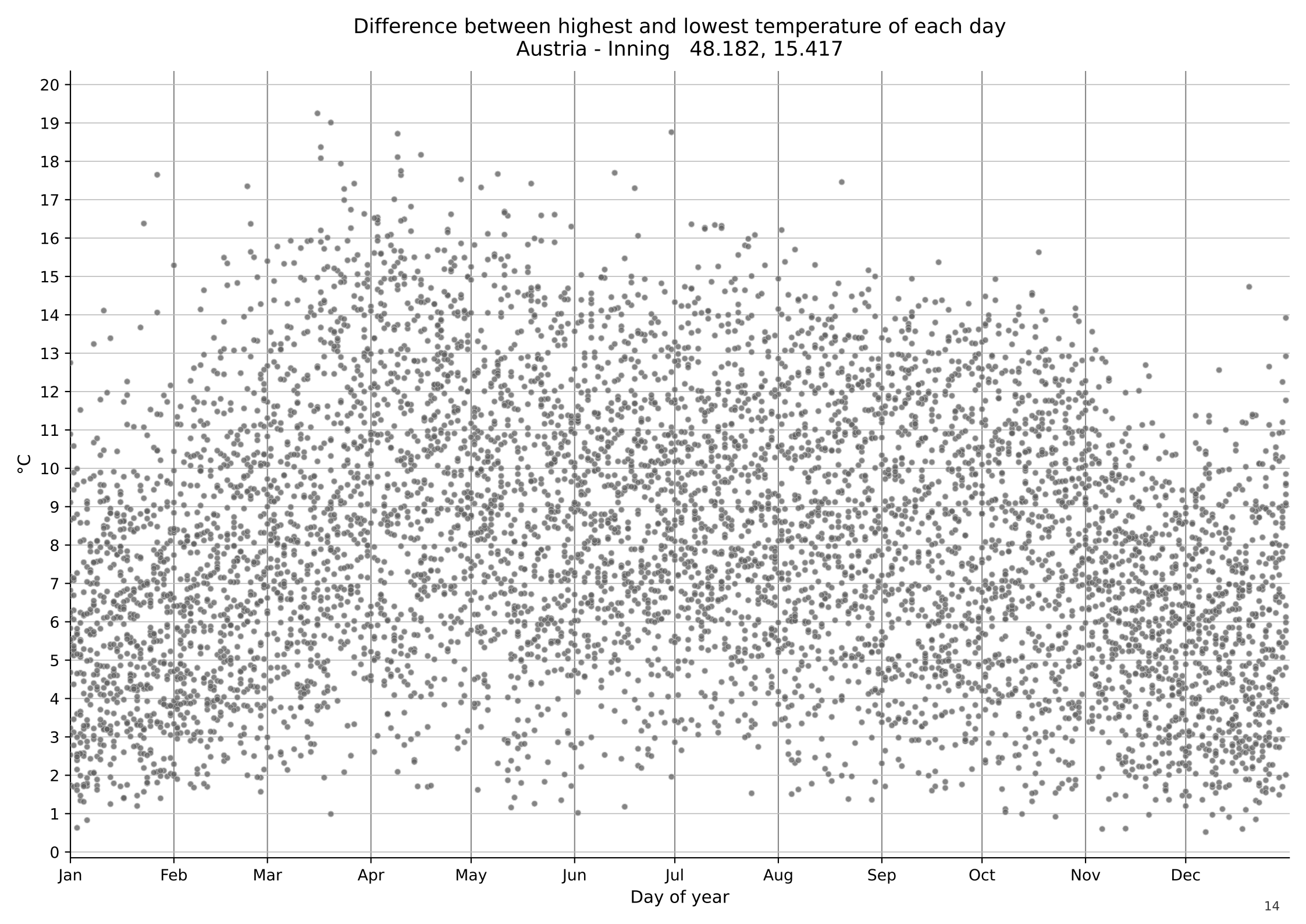

Share of the day’s yield in 09:00–15:00 winter time
Austria - Inning 48.182, 15.417
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


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

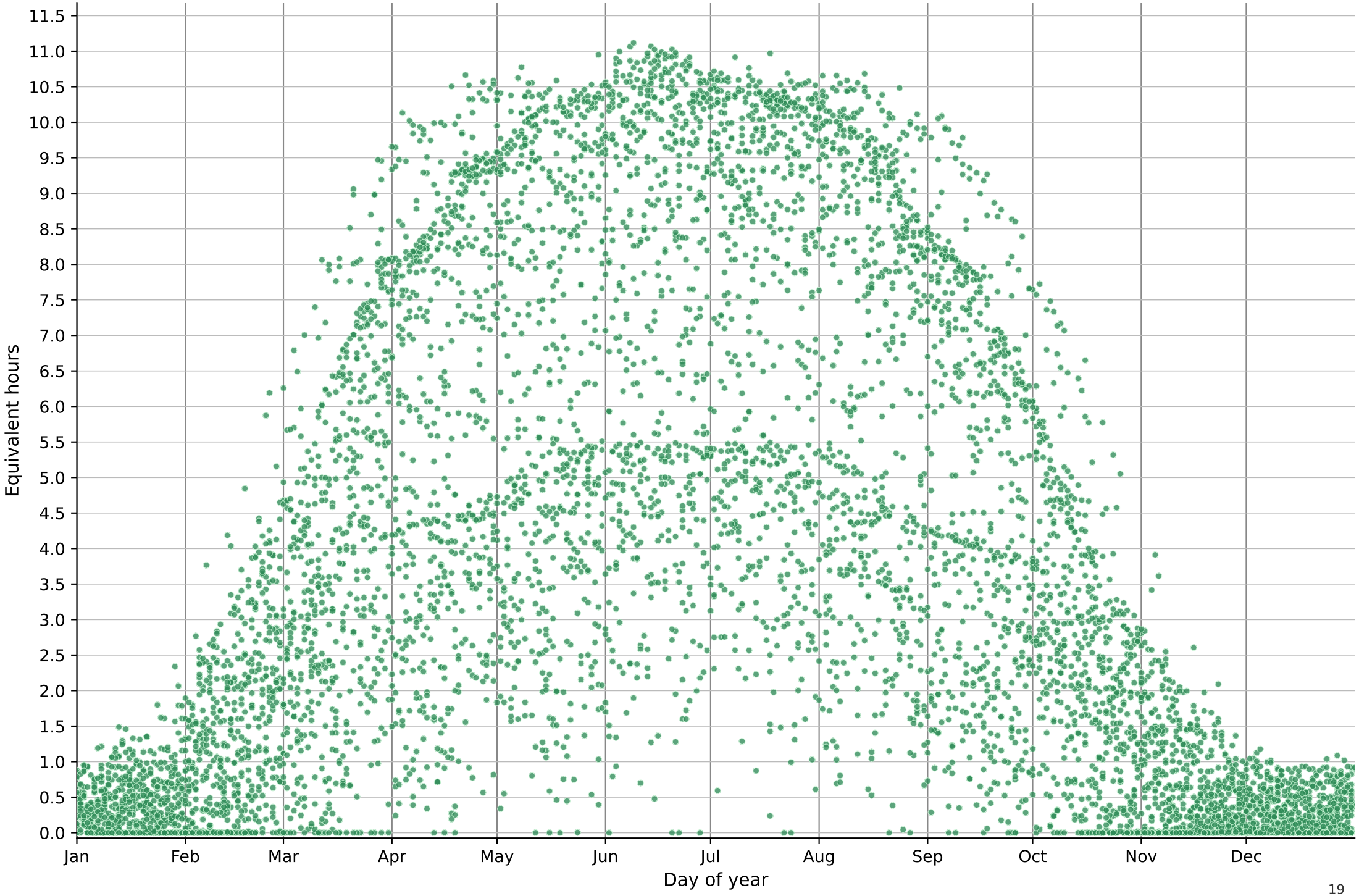
Month / year		Garage roof 1°/0° 10,740 Wp	Garage side wall south 90°/0° 3,475 Wp	Garage side wall north 90°/180° 3,475 Wp	Garage door side 90°/90° 700 Wp	Garage back side 90°/-90° 2,540 Wp	Garden fence east 90°/-90° + 90°/90° 6000 Wp bifacial ×80%	All together
January	Maximum	352.68	25.23	25.23	5.62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

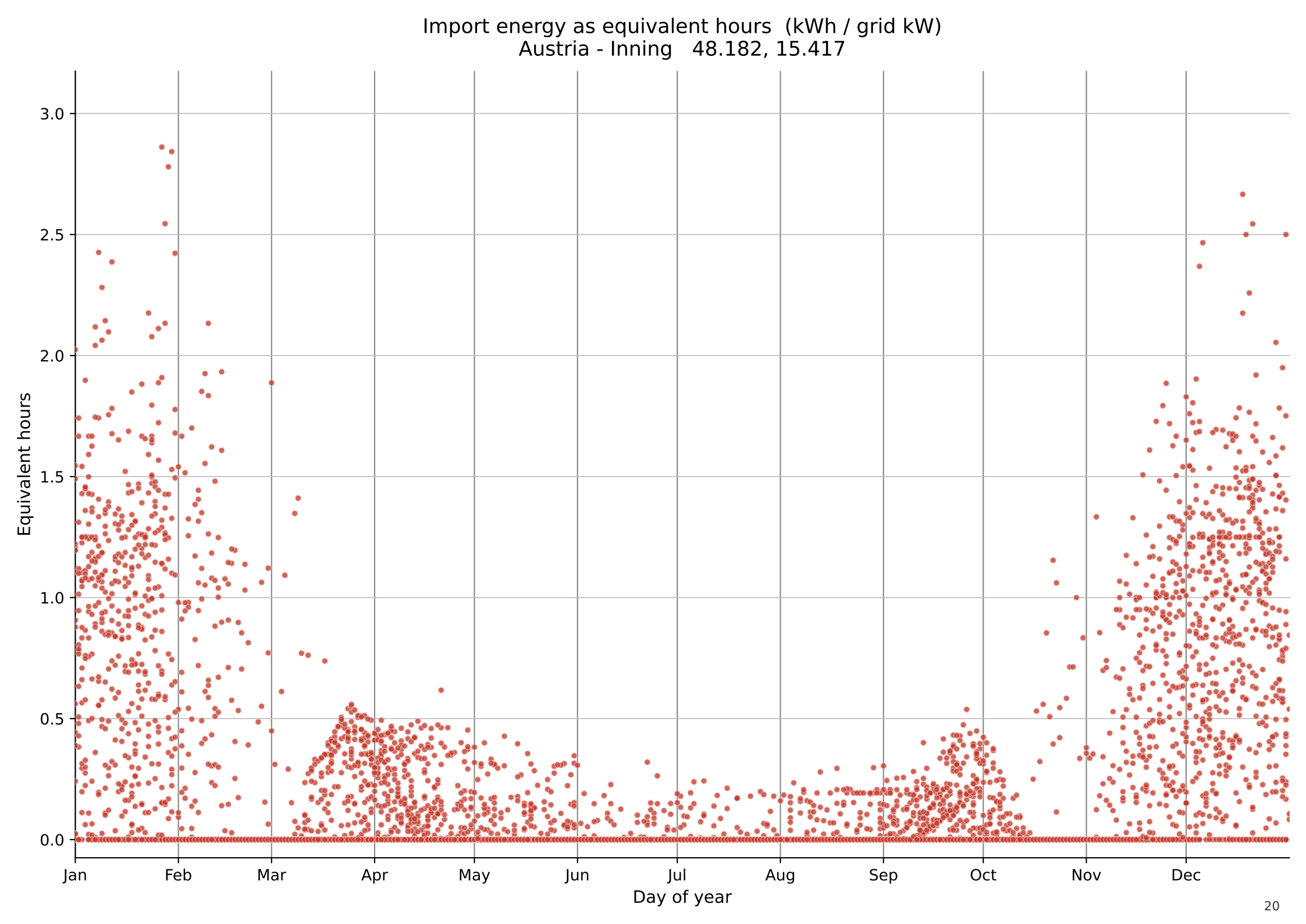
Highest combined yield hour: 2012-05-18 09:10 UTC 21,260.8 W (0.546 W/Wp) of 38,930 Wp installed. Use this hour to size battery charge power.

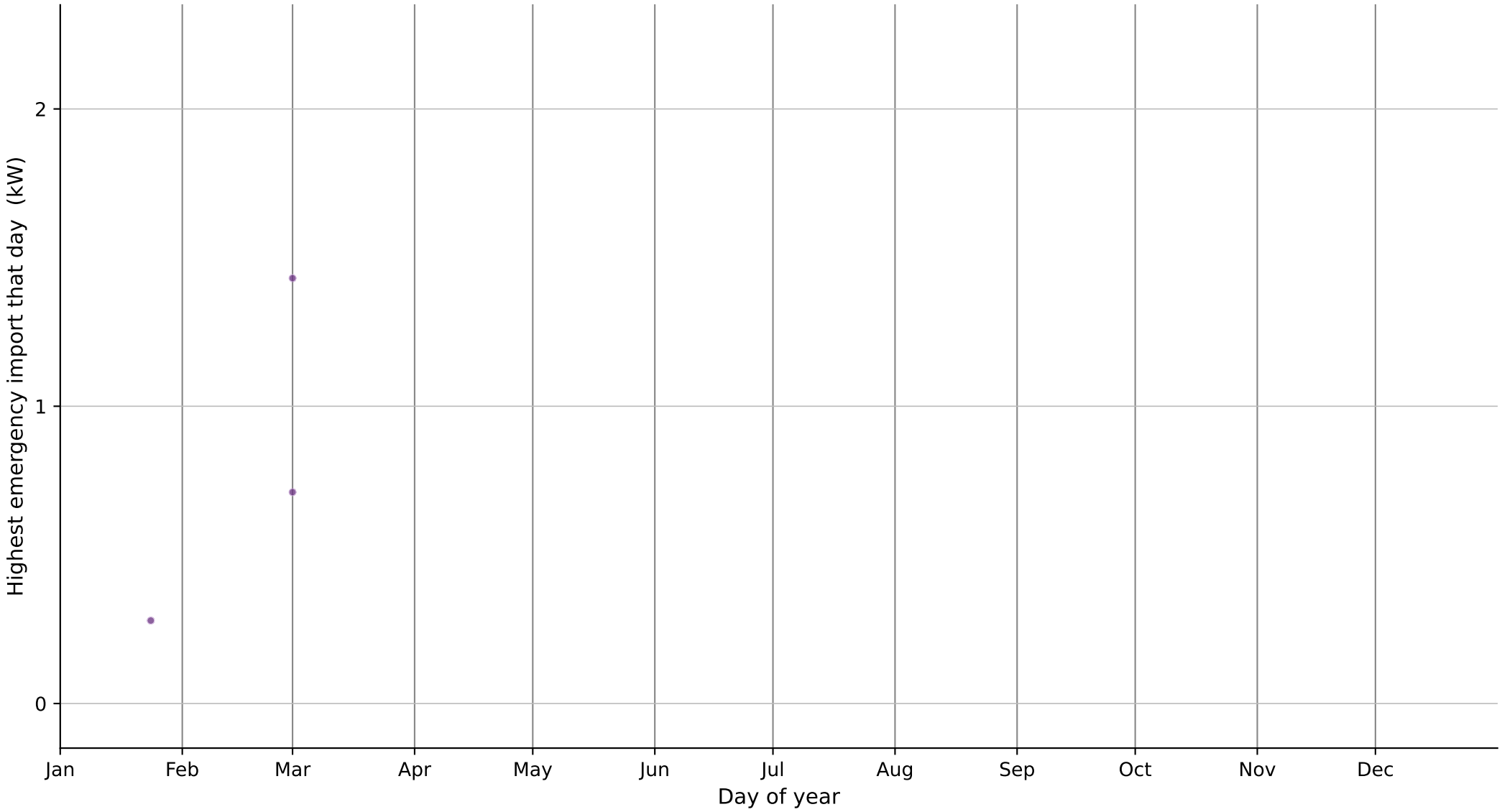
Monthly and yearly total yield (kWh)
Austria - Inning 48.182, 15.417

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
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	213	715	1,945	2,556	2,762	3,085	3,092	2,711	2,077	1,191	387	182	18,103
month average	154	492	1,447	2,052	2,338	2,621	2,688	2,386	1,702	907	242	123	17,151
month minimum	108	259	1,014	1,467	1,784	2,194	1,944	2,022	1,375	485	138	78	15,984
day Maximum	28.1	74.3	113.6	128.0	131.4	133.4	131.6	128.2	121.1	92.7	46.9	14.1	133.4
day average	5.0	17.4	46.7	68.4	75.4	87.4	86.7	77.0	56.7	29.3	8.1	4.0	47.0
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 from grid													
month Maximum	426	197	97	50	19	7	10	14	44	50	235	455	1,337
month average	270	57	37	36	11	3	3	6	28	13	109	304	876
month minimum	122	0	5	25	2	0	0	1	13	1	21	105	546
day Maximum	34.3	25.6	22.7	7.4	5.1	3.8	2.9	3.6	6.5	13.8	22.6	32.0	34.3
day average	8.7	2.0	1.2	1.2	0.3	0.1	0.1	0.2	0.9	0.4	3.6	9.8	2.4
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
Total energy used for house													
month Maximum	986	964	711	514	434	345	314	320	384	518	622	908	6,358
month average	723	637	594	455	385	316	302	302	336	451	549	673	5,722
month minimum	598	532	516	375	329	298	287	282	291	377	501	581	5,396
day Maximum	58.0	52.0	46.8	23.7	19.5	18.6	16.3	16.3	17.3	22.2	32.9	48.8	58.0
day average	23.3	22.6	19.2	15.2	12.4	10.5	9.7	9.7	11.2	14.5	18.3	21.7	15.7
day minimum	8.9	13.1	11.3	8.7	8.6	8.6	8.6	8.6	8.6	8.7	11.0	13.9	8.6

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	14	88	223	269	297	310	326	292	249	167	48	10	2,090
month average	9	51	178	231	266	285	300	272	216	122	21	7	1,957
month minimum	5	15	124	172	218	246	257	246	174	52	10	4	1,821
day Maximum	2.4	11.4	16.8	16.2	16.6	15.8	16.8	15.9	16.3	15.7	8.3	1.3	16.8
day average	0.3	1.8	5.7	7.7	8.6	9.5	9.7	8.8	7.2	3.9	0.7	0.2	5.4
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
Import													
month Maximum	99	48	26	13	5	2	3	4	11	11	54	105	317
month average	63	13	11	9	3	1	1	2	7	3	25	70	207
month minimum	28	0	2	6	0	0	0	0	3	0	5	24	130
day Maximum	7.9	6.1	6.9	1.9	1.3	1.0	0.7	0.9	1.8	3.3	5.4	7.8	7.9
day average	2.0	0.5	0.3	0.3	0.1	0.0	0.0	0.1	0.2	0.1	0.8	2.3	0.6
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
Peak grid fee													
month Maximum	34	32	35	19	10	8	6	6	9	25	25	32	210
month average	32	26	15	11	8	4	3	4	7	13	25	32	180
month minimum	32	0	9	9	3	0	0	3	4	3	25	32	138
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	130	80	61	25	13	10	8	9	21	37	79	137	528
month average	94	40	26	20	11	4	4	5	15	16	51	102	387
month minimum	60	0	11	15	4	0	0	4	8	3	30	56	299
day Maximum	7.9	6.1	6.9	1.9	1.3	1.0	0.7	0.9	1.8	3.3	5.4	7.8	7.9
day average	2.0	0.5	0.3	0.3	0.1	0.0	0.0	0.1	0.2	0.1	0.8	2.3	0.6
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
Balance													
month Maximum	-46	88	200	248	292	310	326	288	237	155	9	-46	1,791
month average	-85	11	153	211	255	281	296	266	201	106	-29	-95	1,570
month minimum	-124	-53	89	148	208	237	249	241	162	22	-70	-131	1,374
day Maximum	2.4	11.4	16.6	16.2	16.6	15.8	16.8	15.9	16.3	15.7	8.3	1.3	16.8
day average	-1.7	1.3	5.4	7.4	8.5	9.5	9.6	8.7	7.0	3.8	-0.1	-2.1	4.8
day minimum	-7.9	-6.1	-4.0	-0.1	0.0	0.0	0.0	-0.2	-0.4	-3.3	-5.4	-7.8	-7.9

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	213	715	1,945	2,556	2,762	3,085	3,092	2,711	2,077	1,191	387	182	18,103
month average	154	492	1,447	2,052	2,338	2,621	2,688	2,386	1,702	907	242	123	17,151
month minimum	108	259	1,014	1,467	1,784	2,194	1,944	2,022	1,375	485	138	78	15,984
day Maximum	28.1	74.3	113.6	128.0	131.4	133.4	131.6	128.2	121.1	92.7	46.9	14.1	133.4
day average	5.0	17.4	46.7	68.4	75.4	87.4	86.7	77.0	56.7	29.3	8.1	4.0	47.0
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
Export during high price hours													
month Maximum	16	312	790	1,064	1,211	1,220	1,296	1,173	1,047	648	169	3	8,253
month average	3	147	626	939	1,099	1,155	1,228	1,106	909	467	52	0	7,731
month minimum	0	2	411	767	939	1,025	1,121	1,050	693	178	2	0	7,159
day Maximum	9.1	41.7	62.6	64.7	65.6	64.1	66.4	65.7	66.7	62.4	36.1	3.1	66.7
day average	0.1	5.2	20.2	31.3	35.4	38.5	39.6	35.7	30.3	15.1	1.7	0.0	21.2
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
Export during medium price hours													
month Maximum	42	133	324	467	535	574	606	493	334	194	33	24	3,218
month average	25	101	242	367	419	488	504	427	258	119	25	10	2,987
month minimum	13	52	163	268	279	372	357	376	163	59	14	1	2,708
day Maximum	4.1	9.9	17.2	21.2	23.5	26.6	25.8	21.9	18.0	9.8	3.5	1.8	26.6
day average	0.8	3.6	7.8	12.2	13.5	16.3	16.3	13.8	8.6	3.8	0.8	0.3	8.2
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
Export during low price hours													
month Maximum	191	377	877	1,043	1,055	1,291	1,198	1,101	717	419	218	169	6,879
month average	127	244	579	746	820	978	956	853	534	321	165	112	6,434
month minimum	72	131	362	404	567	724	466	571	382	200	108	76	5,806
day Maximum	21.1	42.5	51.6	58.8	63.6	70.3	64.2	58.9	50.0	43.9	29.1	13.2	70.3
day average	4.1	8.7	18.7	24.9	26.5	32.6	30.8	27.5	17.8	10.4	5.5	3.6	17.6
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

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

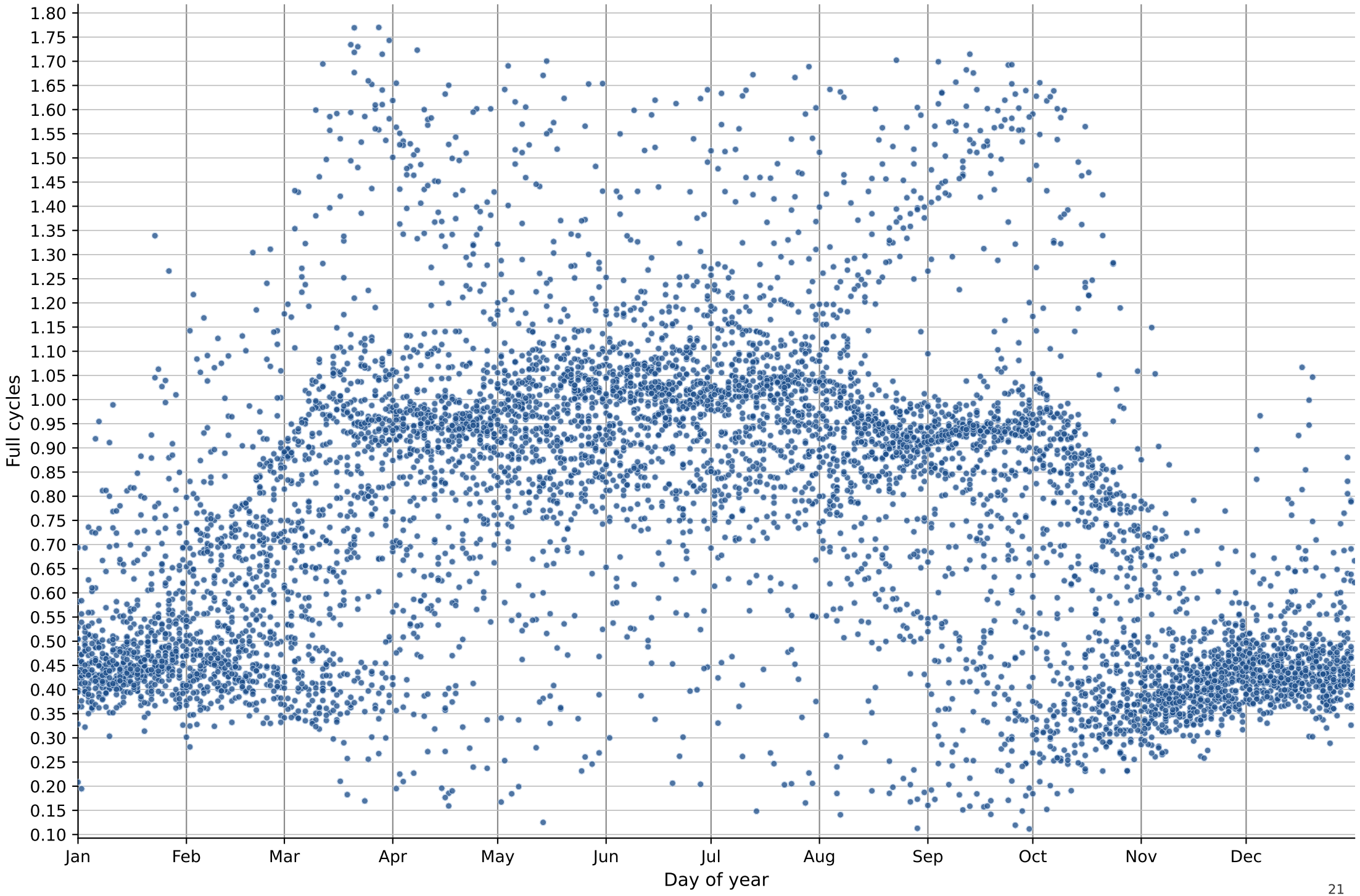
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	710	705	435	250	162	83	45	51	122	245	357	634	3,144
month average	447	386	318	191	114	54	33	31	75	178	284	399	2,510
month minimum	322	282	241	113	59	37	17	7	32	105	237	307	2,182
day Maximum	49.0	43.1	37.9	14.8	10.7	9.8	7.6	7.7	8.5	13.3	24.0	39.9	49.0
day average	14.4	13.7	10.3	6.4	3.7	1.8	1.1	1.0	2.5	5.7	9.5	12.9	6.9
day minimum	0.0	4.3	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	5.1	0.0
Cooling													
month Maximum	0	0	0	0	0	2	7	11	0	0	0	0	17
month average	0	0	0	0	0	0	2	2	0	0	0	0	4
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	1.0	7.1	5.9	0.0	0.0	0.0	0.0	7.1
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	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	28	26	28	25	24	22	21	21	22	26	25	26	289
month average	28	25	28	24	23	21	20	20	21	25	25	26	286
month minimum	28	25	27	22	22	20	19	19	19	23	25	26	280
day Maximum	1.1	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.1
day average	0.9	0.9	0.9	0.8	0.8	0.7	0.6	0.6	0.7	0.8	0.8	0.8	0.8
day minimum	0.9	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.6
Direct electric													
month Maximum	252	305	87	3	0	0	0	0	0	0	24	177	428
month average	53	45	13	0	0	0	0	0	0	0	3	26	140
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	1
day Maximum	33.0	27.1	21.9	2.6	0.0	0.0	0.0	0.0	0.0	0.0	8.6	23.9	33.0
day average	1.7	1.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.4
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

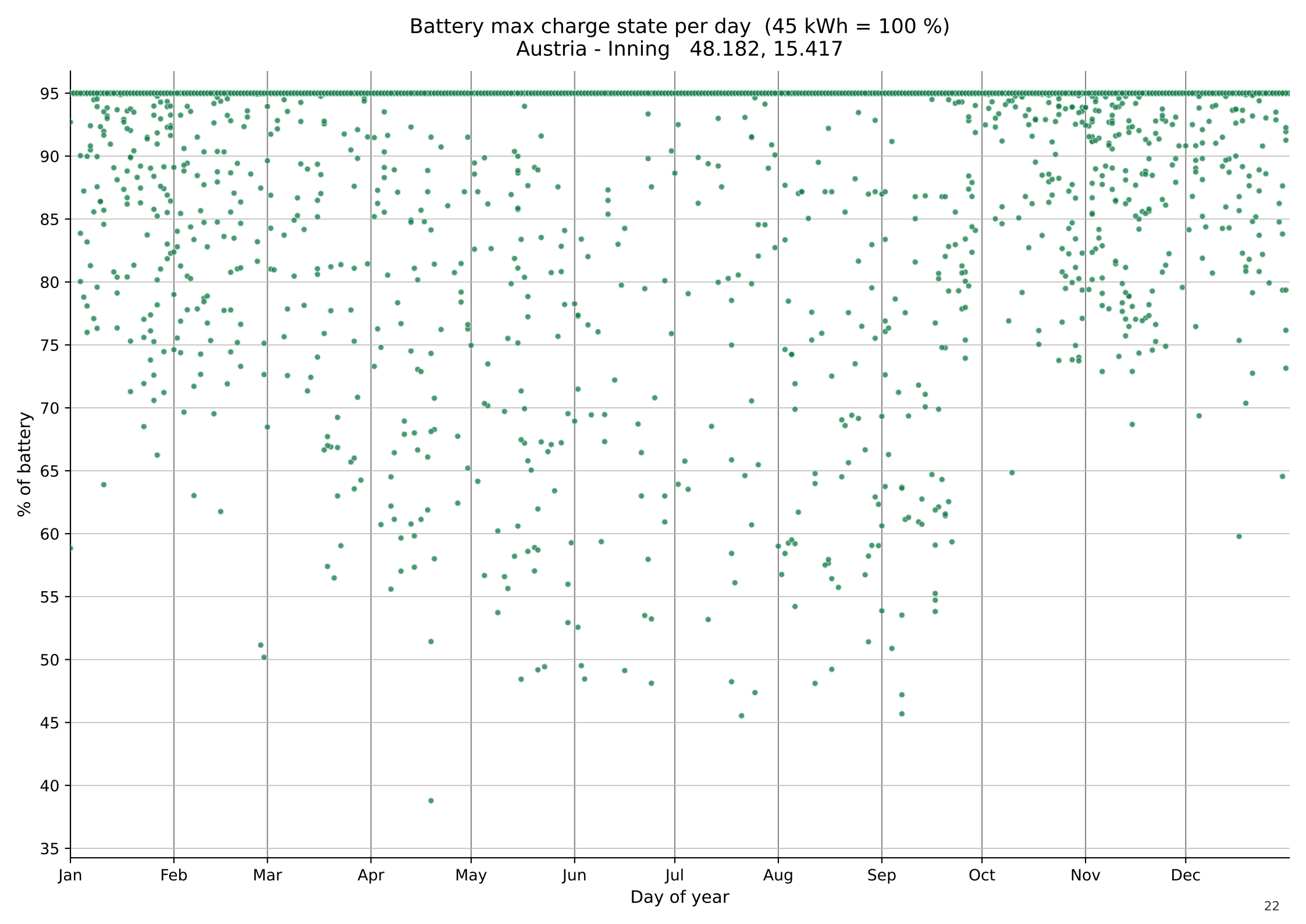
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

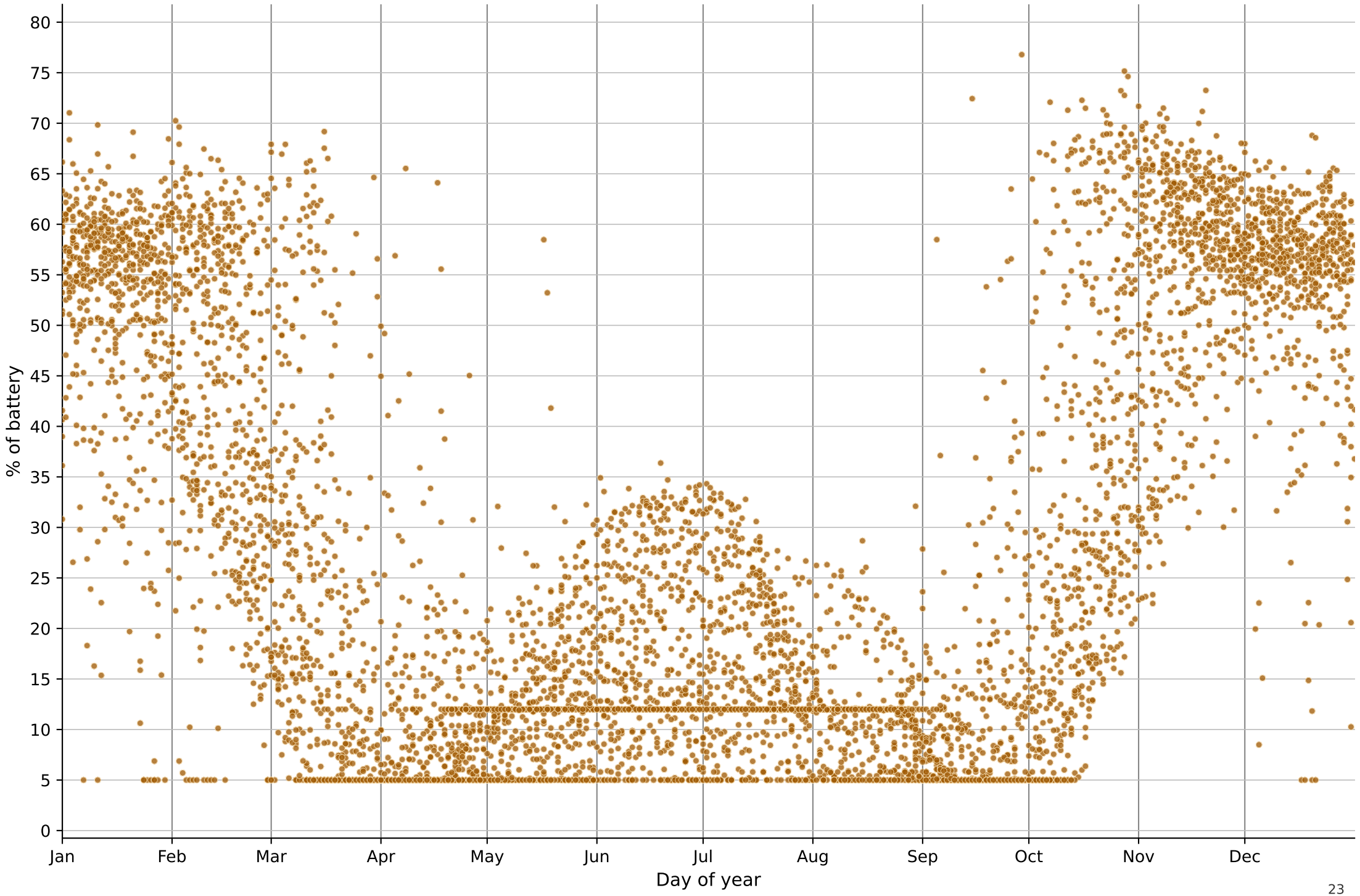
Battery
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	0	1	114	970	1,030	1,217	1,132	851	444	1	0	0	5,075
month average	0	0	64	635	811	938	903	651	314	0	0	0	4,316
month minimum	0	0	23	418	477	643	633	473	177	0	0	0	3,860
day Maximum	0.0	0.7	15.0	89.6	97.9	105.5	95.4	83.9	60.4	0.6	0.0	0.0	105.5
day average	0.0	0.0	2.1	21.2	26.2	31.3	29.1	21.0	10.5	0.0	0.0	0.0	11.8
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
Full cycles													
month Maximum	21	23	28	29	31	31	32	30	28	24	15	20	284
month average	16	17	25	28	30	29	30	29	26	20	13	14	277
month minimum	13	13	23	25	27	28	29	27	23	15	11	12	268
day Maximum	1.3	1.3	1.8	1.7	1.7	1.6	1.7	1.7	1.7	1.7	1.1	1.1	1.8
day average	0.5	0.6	0.8	0.9	1.0	1.0	1.0	0.9	0.9	0.7	0.4	0.5	0.8
day minimum	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.3	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	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.1	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
35
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
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year