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
Total counted			35,930				

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 2016-05-17 10:10 local (09:10 UTC) 19,628 W 0.546 W/Wp of 35,930 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.

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	20.0 °C / 25.0 °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	200 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 3 Feb 3 Mar 2 Apr 2 May 2 Jun 2
	Import cap Jul–Dec kW	Jul 2 Aug 2 Sep 2 Oct 2 Nov 3 Dec 3
Cars	Lunch DC / night AC	0.0 kWh @ 30.0 kW night 10.0 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	2016-05-17 09:10	2012-05-18 09:10	2013-05-13 09:10	2006-05-25 09:10	2020-05-07 09:10	2009-06-13 09:10	2017-04-30 09:10	2021-05-26 09:10	2019-05-01 09:10	2012-04-25 09:10
Garage roof	7,574	7,617	7,581	7,713	7,489	7,701	7,365	7,689	7,362	7,242
Garage side wall south	1,520	1,509	1,561	1,424	1,625	1,299	1,723	1,409	1,696	1,785
Garage side wall north	202	178	171	137	155	175	141	111	143	153
Garage door side	41	36	34	28	31	35	28	22	29	31
Garage back side	1,115	1,114	1,118	1,098	1,124	1,102	1,146	1,094	1,133	1,158
Garden fence east	2,634	2,632	2,642	2,595	2,654	2,604	2,708	2,585	2,678	2,734
Garden fence east face2	279	245	236	190	214	242	195	154	198	211
Roof south	2,321	2,331	2,341	2,343	2,341	2,304	2,330	2,329	2,330	2,321
Roof east	2,323	2,335	2,333	2,363	2,318	2,357	2,290	2,351	2,291	2,267
Roof west	1,621	1,626	1,604	1,643	1,563	1,654	1,519	1,640	1,516	1,474
Watt at record	19,628	19,623	19,622	19,534	19,515	19,473	19,446	19,385	19,375	19,375
Percent of installed peak	54.6	54.6	54.6	54.4	54.3	54.2	54.1	54.0	53.9	53.9

Values are watts at that hour. Date and time are UTC. Record 19,628 W (54.6 % of 35,930 Wp).

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

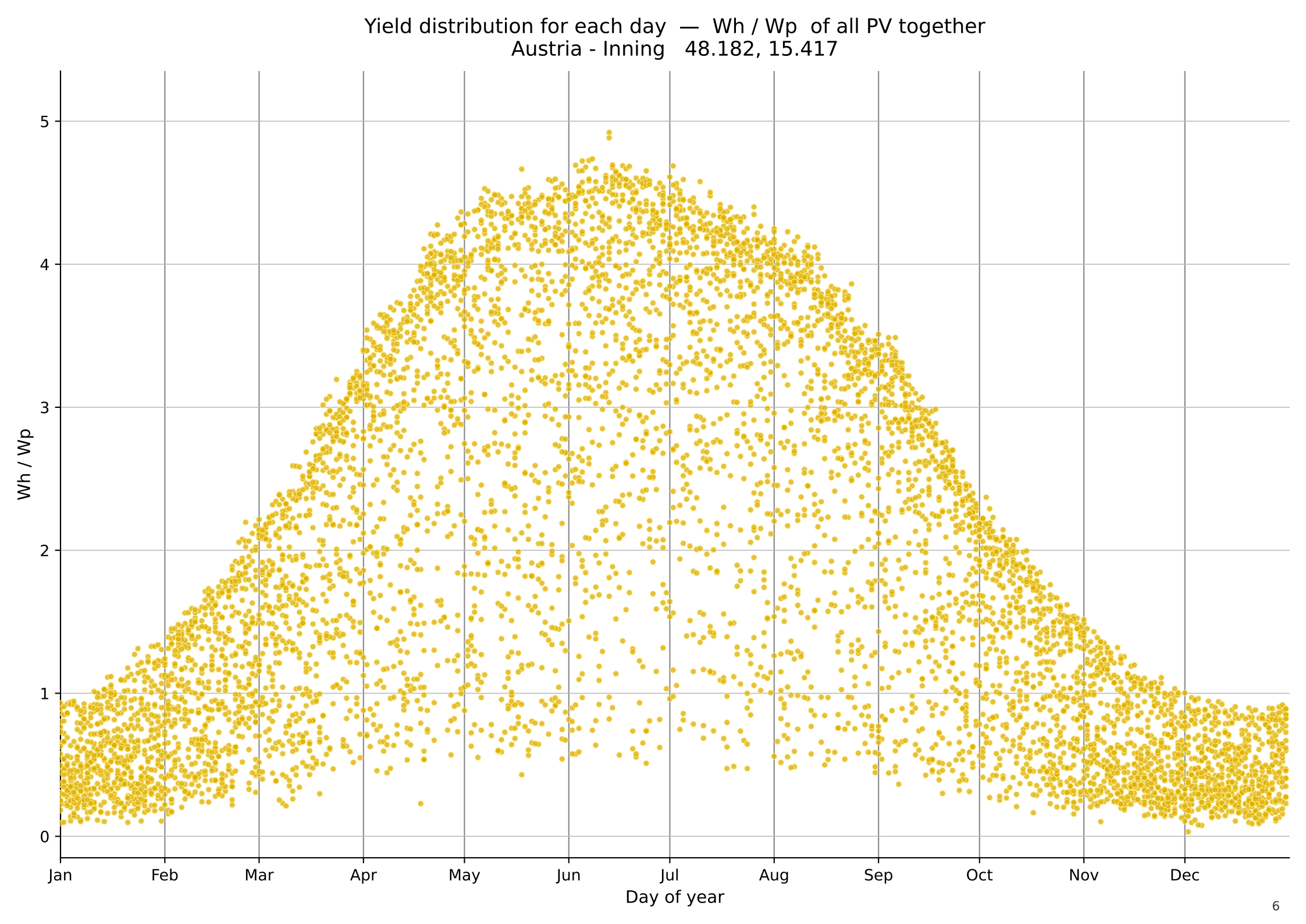
Of the record	Hours	Watts
98 %	19	19,235 W
96 %	76	18,843 W
94 %	249	18,450 W
92 %	626	18,058 W
90 %	1,265	17,665 W

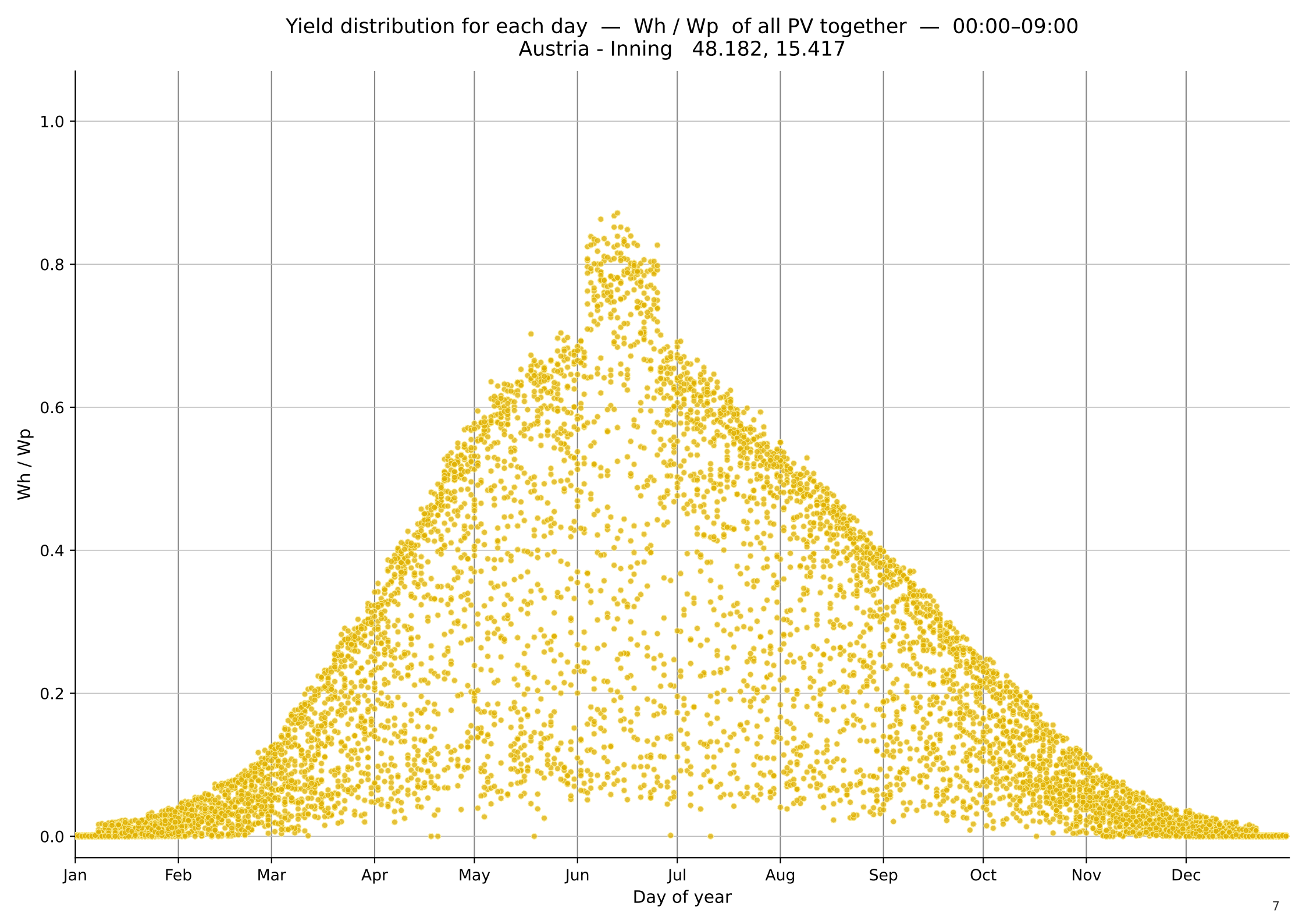
Record hour = 19,628 W combined.

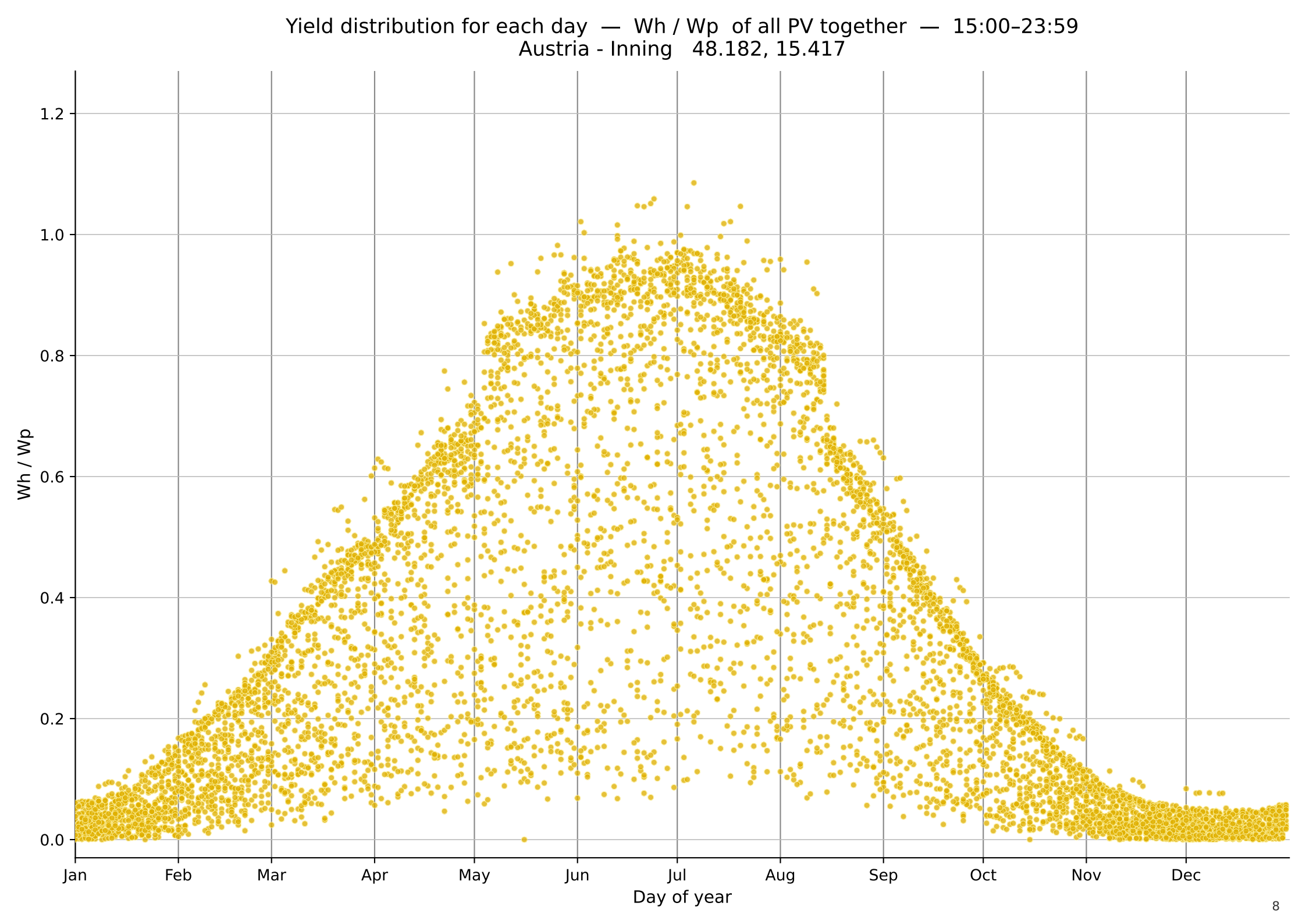
Records of each photovoltaic field
Austria - Inning 48.182, 15.417

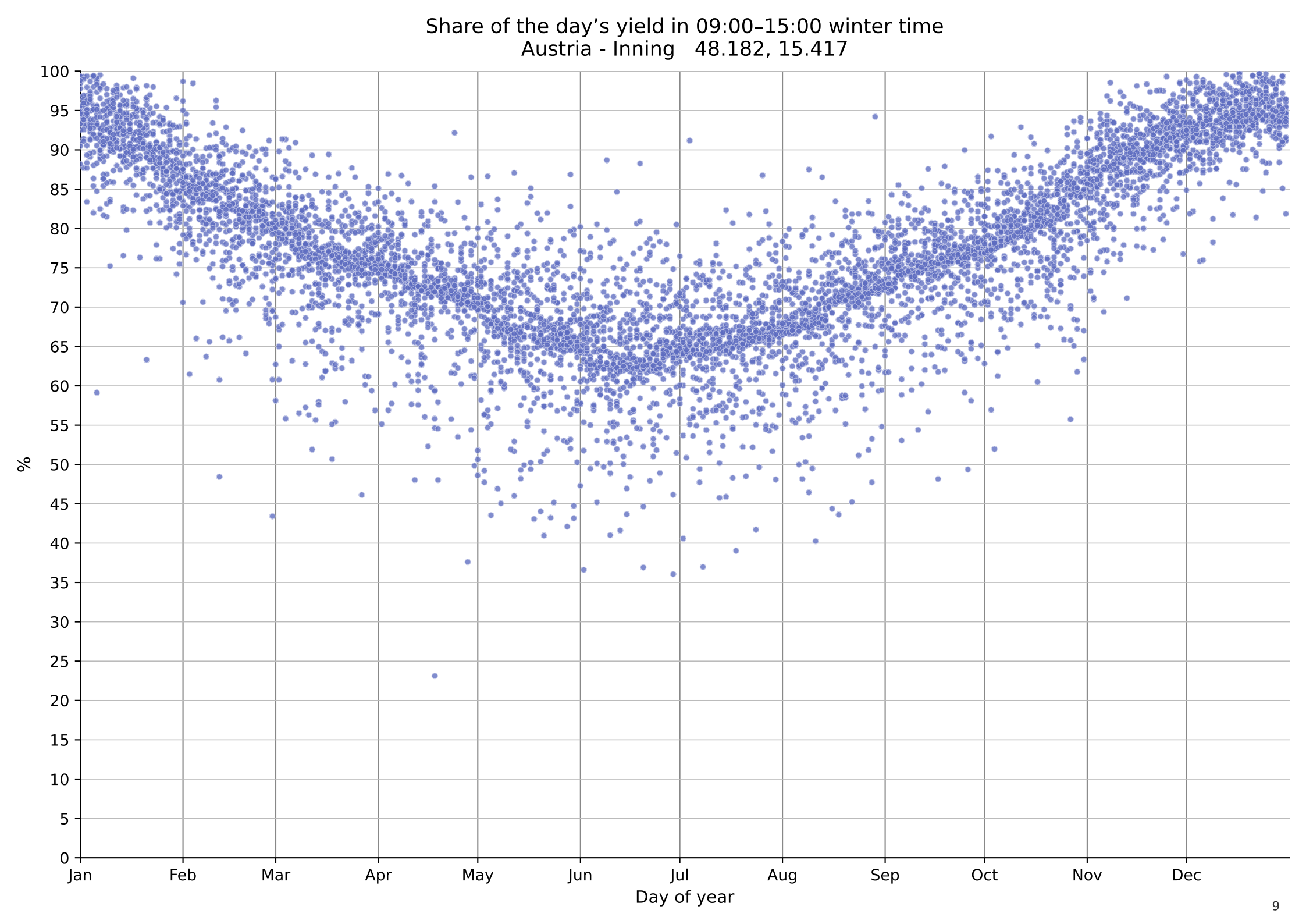
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Garage roof	2009-06-13 11:10	8,369	77.9	8	33	112	320	671
Garage side wall south	2009-03-22 11:10	2,638	75.9	8	17	26	45	75
Garage side wall north	2023-06-13 05:10	611	17.6	1	8	25	50	108
Garage door side	2005-05-08 14:10	473	67.6	1	3	5	16	49
Garage back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

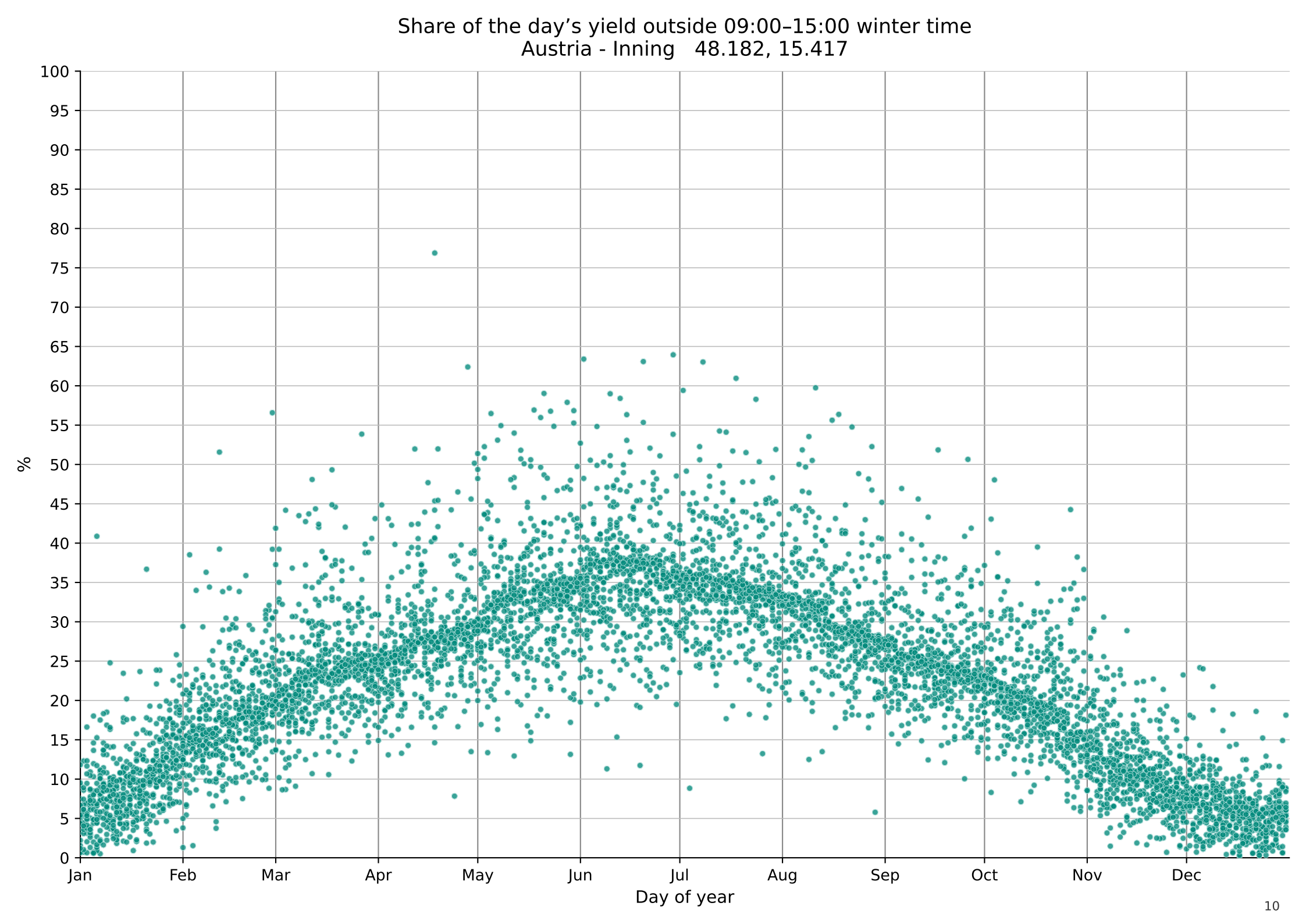
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

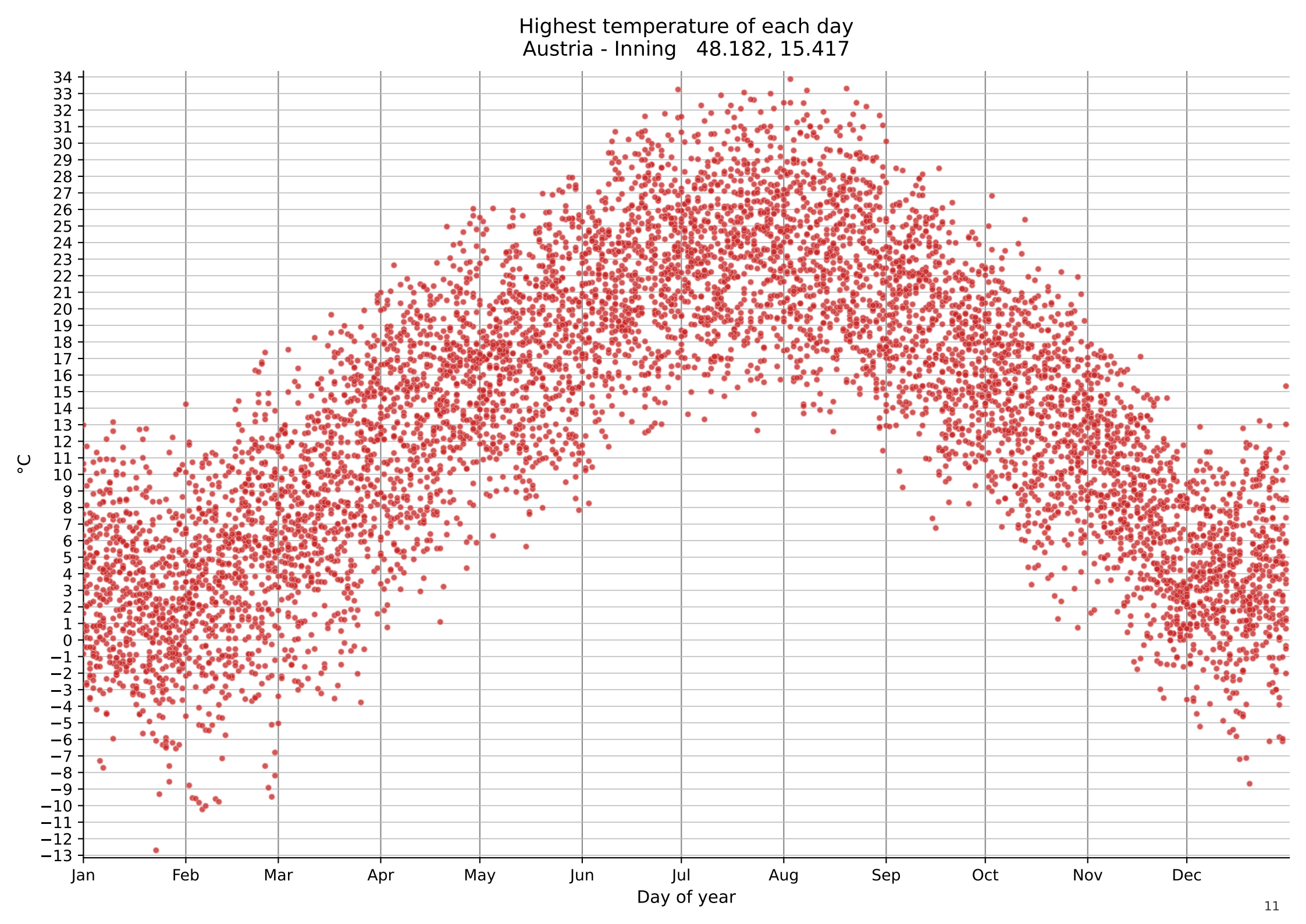

Yield distribution for each day — Wh / Wp of all PV together
Austria - Inning 48.182, 15.417
Wh / Wp
0
1
2
3
4
5
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

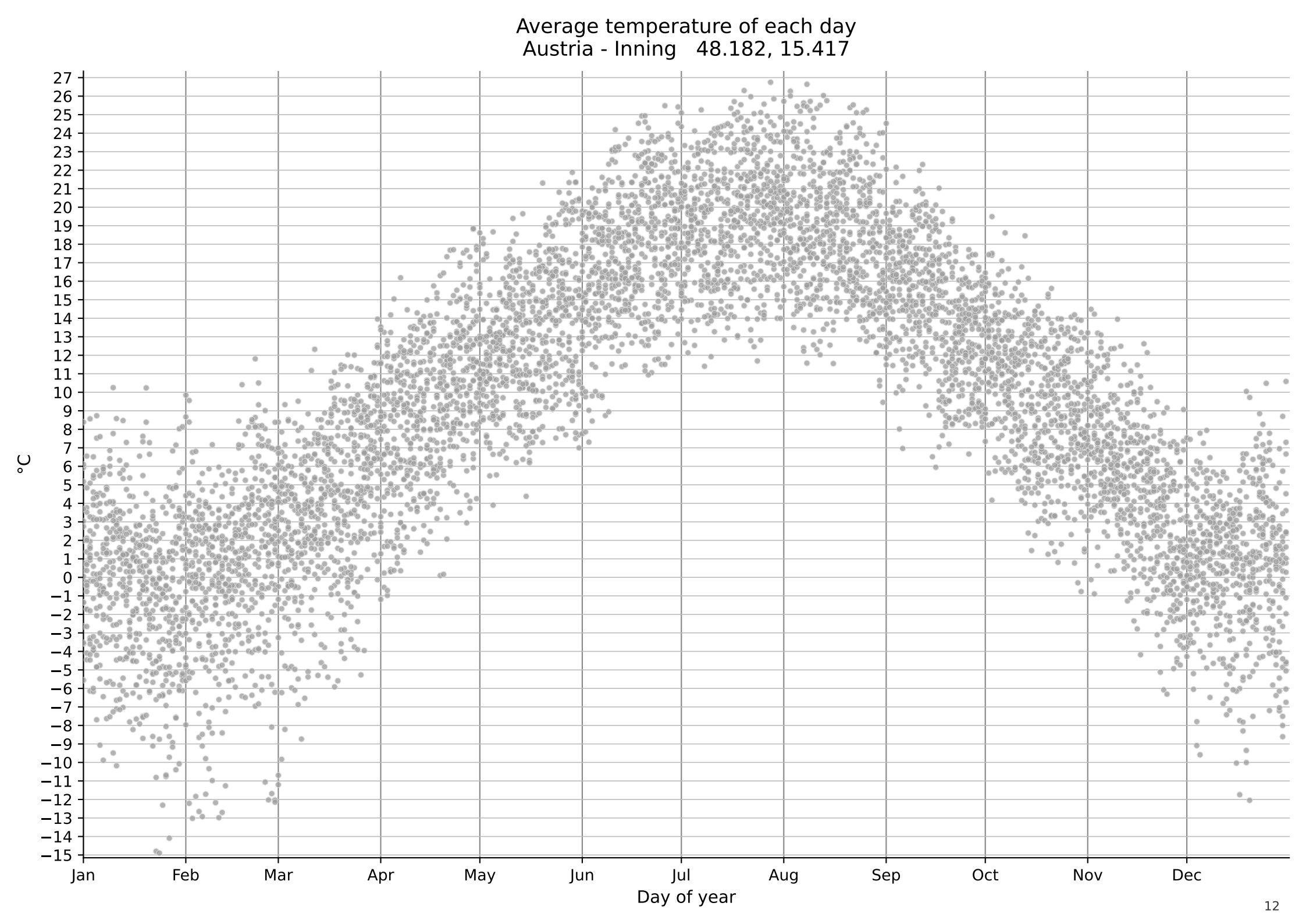

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
Austria - Inning 48.182, 15.417
1.0
0.8
0.6
0.4
0.2
0.0
Wh / Wp
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

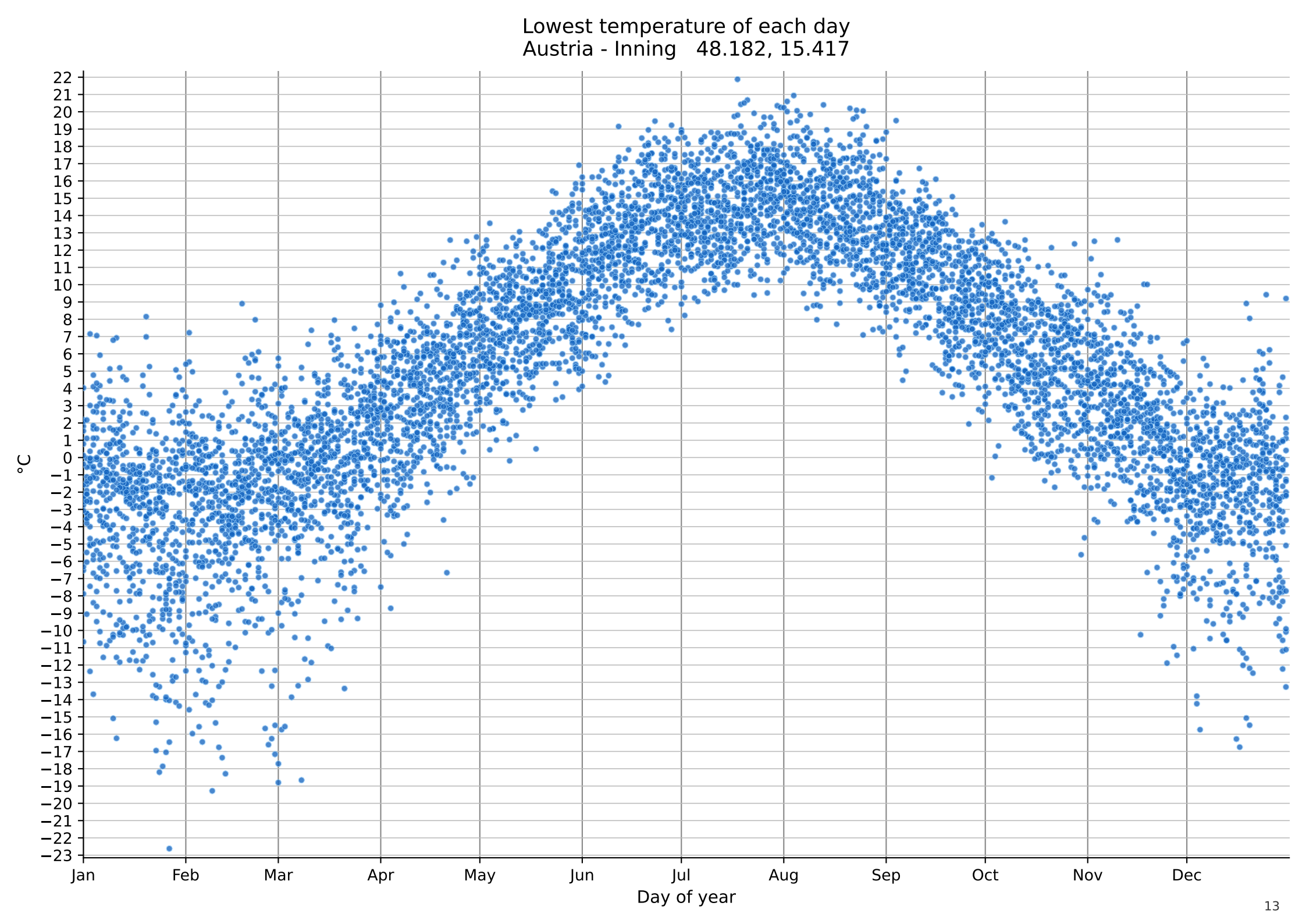

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
Austria - Inning 48.182, 15.417
Wh / Wp
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

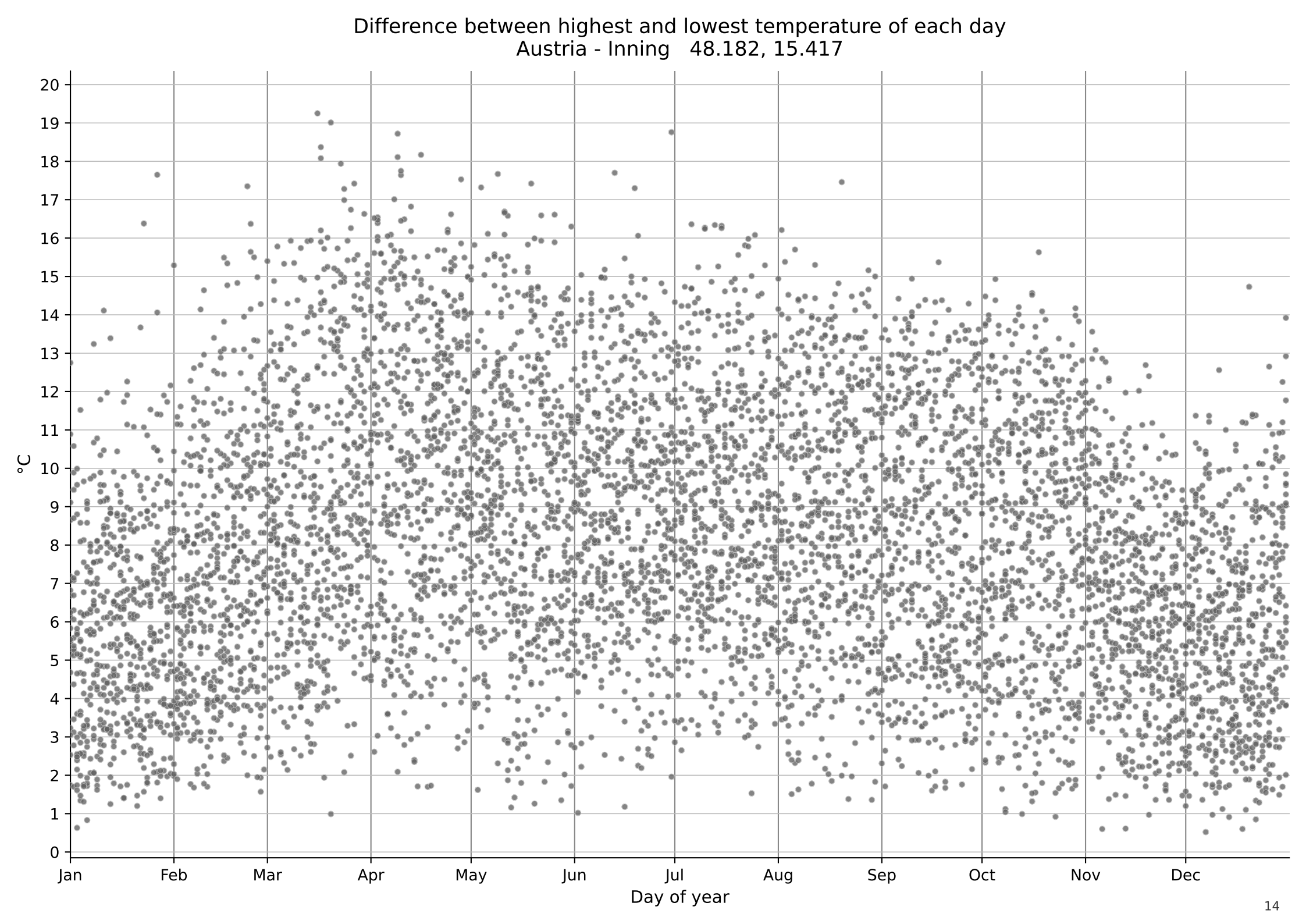

Share of the day’s yield in 09:00–15:00 winter time
Austria - Inning 48.182, 15.417
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


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	24.19
	average	23.62	5.26	5.26	5.93	6.73	11.47	17.59
	minimum	17.95	4.09	4.09	4.60	5.29	8.97	13.49
February	Maximum	51.56	9.78	9.78	11.74	11.07	20.46	35.52
	average	41.81	8.23	8.23	10.69	9.69	18.25	29.70
	minimum	30.53	7.01	7.01	9.55	8.85	16.58	22.93
March	Maximum	103.67	40.02	16.17	20.69	20.57	37.09	71.15
	average	78.18	32.13	14.12	18.52	18.64	33.45	55.71
	minimum	60.95	23.96	12.21	16.23	16.11	29.09	44.92
April	Maximum	138.59	85.87	20.80	35.62	37.00	65.39	100.86
	average	110.61	68.54	18.98	32.57	33.18	59.23	82.33
	minimum	87.14	54.04	16.79	27.32	27.21	49.07	65.50
May	Maximum	144.59	75.98	26.21	49.99	44.67	82.61	106.18
	average	124.01	66.13	24.16	43.00	39.77	74.17	92.35
	minimum	91.48	48.94	22.30	34.42	32.92	60.46	69.82
June	Maximum	163.28	73.17	28.27	50.65	56.41	95.84	119.13
	average	135.71	62.75	26.40	45.09	48.98	85.06	100.79
	minimum	109.40	51.97	24.08	39.28	41.53	72.95	82.81
July	Maximum	158.88	77.19	27.83	49.85	48.86	88.73	115.57
	average	138.27	67.74	25.64	45.09	43.52	79.59	101.42
	minimum	102.76	50.02	23.06	36.77	33.52	62.94	76.47
August	Maximum	132.11	79.19	22.99	40.50	40.39	70.89	97.44
	average	117.75	70.61	19.99	36.73	36.67	66.05	87.72
	minimum	102.53	60.77	17.60	32.59	33.27	60.58	77.63
September	Maximum	104.79	59.73	16.42	24.07	22.91	41.44	74.81
	average	86.69	49.11	14.08	21.48	20.85	38.03	62.75
	minimum	69.95	40.19	11.80	18.89	18.24	33.35	51.58
October	Maximum	68.41	11.30	11.26	12.90	12.98	23.30	46.21
	average	54.55	9.83	9.80	11.44	11.69	20.84	37.62
	minimum	37.60	8.60	8.60	9.79	9.93	17.77	26.83
November	Maximum	33.54	6.47	6.47	7.53	7.71	13.74	23.98
	average	26.62	5.75	5.75	6.77	6.86	12.28	19.36
	minimum	20.26	5.33	5.33	6.04	6.01	10.83	15.07
December	Maximum	25.37	5.19	5.19	5.84	6.52	11.19	18.78
	average	19.18	4.19	4.19	4.82	5.42	9.28	14.44
	minimum	15.84	2.90	2.90	3.46	3.86	6.63	11.71
All years	Maximum	1,005.5	478.1	182.9	291.4	295.1	527.0	734.3
	average	957.0	450.3	176.6	282.1	282.0	507.7	701.8
	minimum	908.1	423.9	171.8	274.0	269.5	495.0	670.1

Highest combined yield hour: 2016-05-17 09:10 UTC 19,628.0 W (0.546 W/Wp) of 35,930 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	All together
January	Maximum	59.27	36.85	30.08	24.19
	average	37.06	23.58	23.23	17.59
	minimum	23.55	16.80	18.03	13.49
February	Maximum	75.54	49.26	49.87	35.52
	average	58.38	40.22	41.12	29.70
	minimum	36.92	30.48	29.89	22.93
March	Maximum	133.58	99.75	99.70	71.15
	average	95.71	74.39	76.61	55.71
	minimum	71.29	59.28	58.23	44.92
April	Maximum	156.48	133.40	131.91	100.86
	average	122.70	105.31	106.56	82.33
	minimum	95.59	82.02	84.70	65.50
May	Maximum	150.08	137.57	139.02	106.18
	average	128.09	118.60	118.75	92.35
	minimum	93.07	87.34	88.28	69.82
June	Maximum	165.27	156.95	153.86	119.13
	average	136.66	128.94	130.27	100.79
	minimum	109.18	103.92	106.46	82.81
July	Maximum	162.55	152.09	151.66	115.57
	average	141.16	131.40	132.40	101.42
	minimum	103.60	97.26	99.10	76.47
August	Maximum	142.95	126.69	125.59	97.44
	average	126.99	111.62	113.81	87.72
	minimum	109.63	94.28	100.43	77.63
September	Maximum	126.49	98.66	103.01	74.81
	average	102.56	82.54	84.24	62.75
	minimum	81.14	67.58	67.69	51.58
October	Maximum	96.83	60.47	74.56	46.21
	average	72.60	50.79	54.92	37.62
	minimum	47.41	35.78	37.36	26.83
November	Maximum	53.94	32.08	33.83	23.98
	average	39.49	25.23	26.53	19.36
	minimum	27.00	19.79	20.38	15.07
December	Maximum	49.81	24.73	25.32	18.78
	average	32.24	18.98	19.08	14.44
	minimum	24.36	15.07	15.87	11.71
All years	Maximum	1,149.3	966.9	966.2	734.3
	average	1,093.6	911.6	927.5	701.8
	minimum	1,028.3	855.5	881.1	670.1

Highest combined yield hour: 2016-05-17 09:10 UTC 19,628.0 W (0.546 W/Wp) of 35,930 Wp installed. Use this hour to size battery charge power.

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

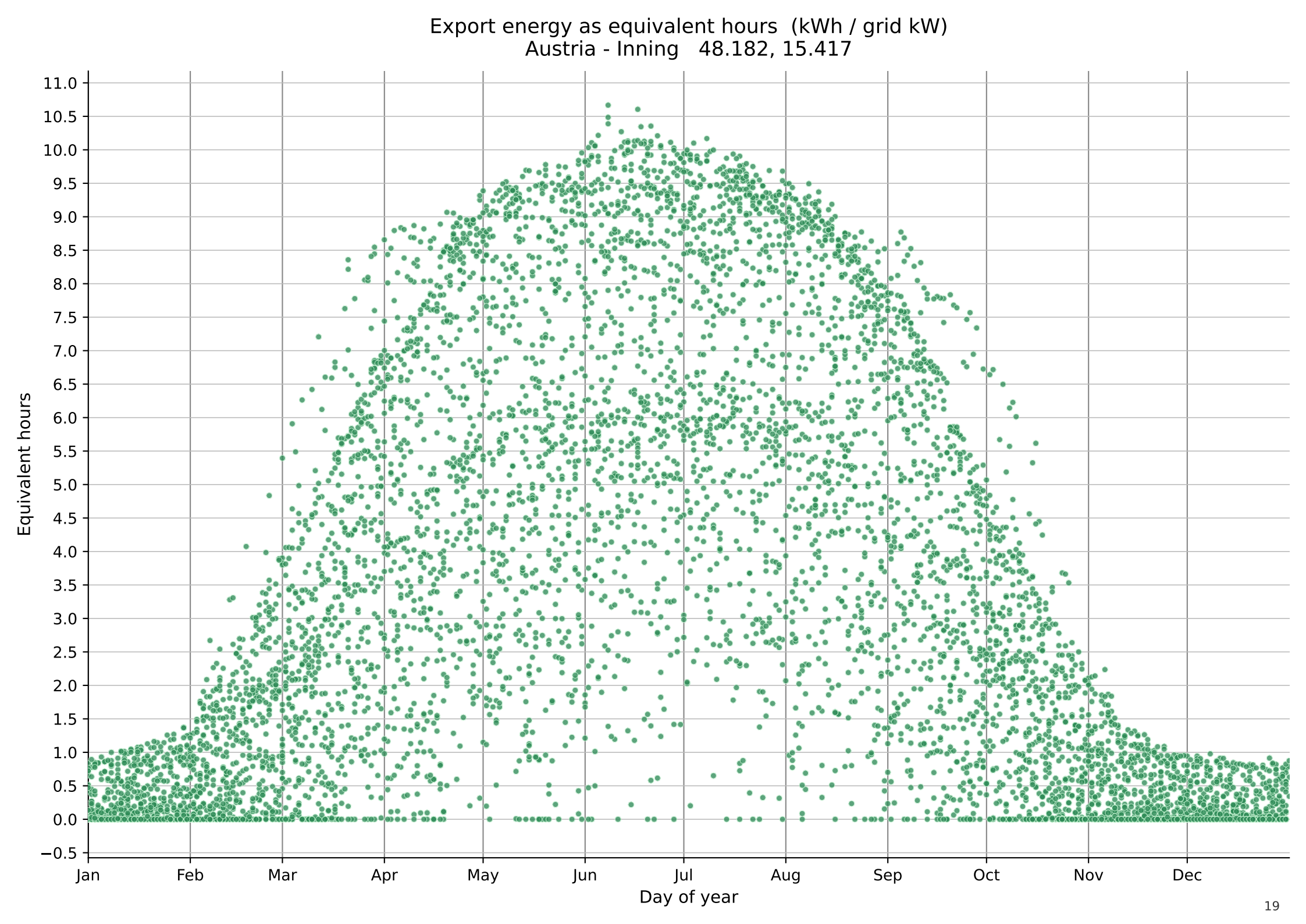
Month / year		Garage roof 1°/0° 10,740 Wp	Garage side wall south 90°/0° 3,475 Wp	Garage side wall north 90°/180° 3,475 Wp	Garage door side 90°/90° 700 Wp	Garage back side 90°/-90° 2,540 Wp	Garden fence east 90°/-90° + 90°/90° 6000 Wp bifacial ×80%	All together
January	Maximum	352.68	25.23	25.23	5.62	23.10	93.08	869.07
	average	253.64	18.29	18.29	4.15	17.08	68.84	631.89
	minimum	192.81	14.22	14.22	3.22	13.43	53.81	484.80
February	Maximum	553.71	34.00	34.00	8.22	28.11	122.77	1,276.28
	average	449.02	28.61	28.61	7.49	24.62	109.49	1,067.02
	minimum	327.93	24.35	24.35	6.69	22.49	99.50	823.86
March	Maximum	1,113.39	139.08	56.20	14.49	52.24	222.56	2,556.48
	average	839.69	111.66	49.08	12.97	47.33	200.73	2,001.60
	minimum	654.63	83.28	42.43	11.36	40.91	174.54	1,613.88
April	Maximum	1,488.40	298.38	72.30	24.93	93.97	392.34	3,623.78
	average	1,188.00	238.16	65.95	22.80	84.27	355.39	2,958.29
	minimum	935.83	187.80	58.33	19.13	69.12	294.43	2,353.33
May	Maximum	1,552.93	264.04	91.09	34.99	113.45	495.67	3,815.01
	average	1,331.89	229.81	83.95	30.10	101.03	445.05	3,318.12
	minimum	982.45	170.05	77.49	24.10	83.62	362.77	2,508.71
June	Maximum	1,753.66	254.25	98.25	35.46	143.28	575.03	4,280.28
	average	1,457.52	218.06	91.75	31.57	124.41	510.33	3,621.25
	minimum	1,174.96	180.59	83.68	27.49	105.48	437.68	2,975.27
July	Maximum	1,706.42	268.23	96.72	34.89	124.10	532.41	4,152.40
	average	1,485.03	235.41	89.09	31.56	110.53	477.52	3,644.04
	minimum	1,103.61	173.81	80.15	25.74	85.15	377.65	2,747.39
August	Maximum	1,418.83	275.17	79.90	28.35	102.58	425.37	3,501.06
	average	1,264.60	245.38	69.46	25.71	93.15	396.32	3,151.86
	minimum	1,101.14	211.18	61.15	22.81	84.50	363.46	2,789.15
September	Maximum	1,125.43	207.56	57.06	16.85	58.18	248.65	2,688.09
	average	931.05	170.64	48.91	15.04	52.95	228.18	2,254.78
	minimum	751.23	139.67	41.01	13.22	46.33	200.12	1,853.18
October	Maximum	734.70	39.26	39.13	9.03	32.97	139.81	1,660.45
	average	585.91	34.17	34.07	8.01	29.69	125.04	1,351.83
	minimum	403.85	29.90	29.87	6.86	25.23	106.61	963.98
November	Maximum	360.26	22.49	22.49	5.27	19.59	82.43	861.69
	average	285.88	19.98	19.98	4.74	17.43	73.67	695.45
	minimum	217.55	18.50	18.50	4.22	15.26	65.01	541.32
December	Maximum	272.47	18.04	18.04	4.09	16.56	67.15	674.62
	average	206.03	14.54	14.54	3.38	13.77	55.68	518.84
	minimum	170.14	10.09	10.09	2.42	9.80	39.77	420.82
All years	Maximum	10,798.9	1,661.5	635.6	204.0	749.6	3,161.9	26,382.4
	average	10,278.3	1,564.7	613.7	197.5	716.3	3,046.2	25,215.0
	minimum	9,753.0	1,472.9	597.2	191.8	684.5	2,969.9	24,076.1

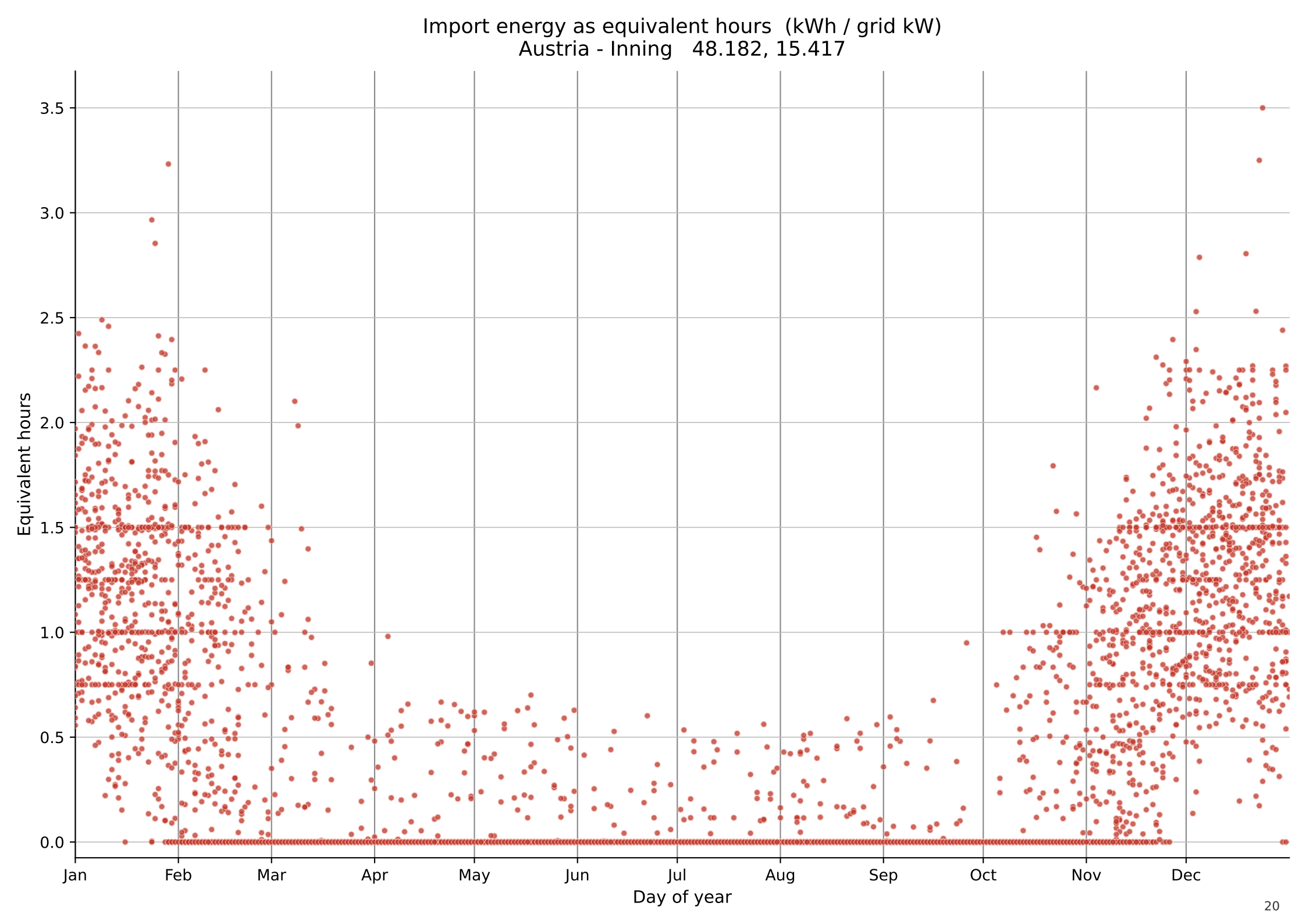
Highest combined yield hour: 2016-05-17 09:10 UTC 19,628.0 W (0.546 W/Wp) of 35,930 Wp installed. Use this hour to size battery charge power.

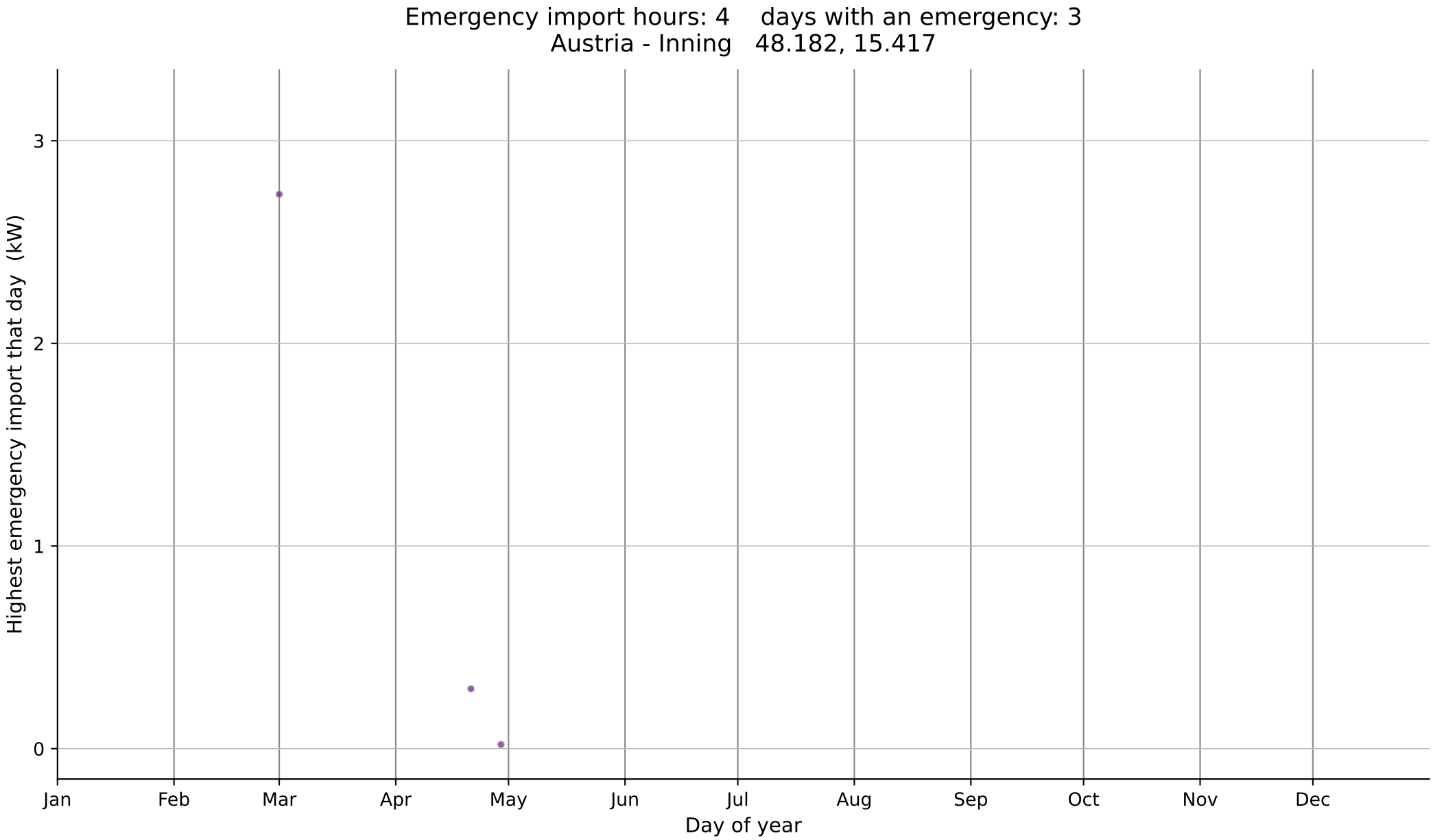
Monthly and yearly total yield (kWh)
Austria - Inning 48.182, 15.417

Month / year		Roof south 22°/0° 3,000 Wp	Roof east 22°/-90° 3,000 Wp	Roof west 22°/90° 3,000 Wp	All together
January	Maximum	177.82	110.55	90.25	869.07
	average	111.17	70.75	69.68	631.89
	minimum	70.66	50.40	54.08	484.80
February	Maximum	226.61	147.77	149.62	1,276.28
	average	175.15	120.67	123.36	1,067.02
	minimum	110.76	91.43	89.68	823.86
March	Maximum	400.74	299.26	299.11	2,556.48
	average	287.14	223.18	229.84	2,001.60
	minimum	213.87	177.84	174.70	1,613.88
April	Maximum	469.45	400.19	395.74	3,623.78
	average	368.11	315.94	319.68	2,958.29
	minimum	286.78	246.06	254.11	2,353.33
May	Maximum	450.23	412.71	417.05	3,815.01
	average	384.27	355.79	356.24	3,318.12
	minimum	279.21	262.03	264.85	2,508.71
June	Maximum	495.80	470.86	461.57	4,280.28
	average	409.98	386.82	390.81	3,621.25
	minimum	327.54	311.75	319.38	2,975.27
July	Maximum	487.65	456.28	454.99	4,152.40
	average	423.49	394.21	397.19	3,644.04
	minimum	310.80	291.78	297.31	2,747.39
August	Maximum	428.84	380.06	376.76	3,501.06
	average	380.96	334.85	341.44	3,151.86
	minimum	328.90	282.83	301.28	2,789.15
September	Maximum	379.46	295.97	309.04	2,688.09
	average	307.69	247.61	252.71	2,254.78
	minimum	243.42	202.75	203.08	1,853.18
October	Maximum	290.50	181.40	223.67	1,660.45
	average	217.80	152.38	164.77	1,351.83
	minimum	142.24	107.35	112.07	963.98
November	Maximum	161.81	96.25	101.48	861.69
	average	118.48	75.70	79.60	695.45
	minimum	81.01	59.37	61.15	541.32
December	Maximum	149.42	74.19	75.95	674.62
	average	96.72	56.94	57.24	518.84
	minimum	73.07	45.20	47.60	420.82
All years	Maximum	3,447.9	2,900.7	2,898.7	26,382.4
	average	3,280.9	2,734.8	2,782.6	25,215.0
	minimum	3,084.8	2,566.5	2,643.2	24,076.1

Highest combined yield hour: 2016-05-17 09:10 UTC 19,628.0 W (0.546 W/Wp) of 35,930 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	170	495	1,585	2,333	2,550	2,920	2,930	2,467	1,802	880	231	137	15,733
month average	111	343	1,111	1,806	2,119	2,427	2,492	2,157	1,400	624	151	74	14,815
month minimum	35	186	718	1,246	1,507	1,932	1,691	1,777	1,050	271	104	37	13,624
day Maximum	16.5	58.0	102.5	111.8	119.4	128.0	122.0	114.0	105.3	80.6	26.8	11.7	128.0
day average	3.6	12.2	35.8	60.2	68.3	80.9	80.4	69.6	46.7	20.1	5.0	2.4	40.6
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 from grid													
month Maximum	572	262	107	26	16	14	20	19	27	135	430	640	1,963
month average	450	135	21	10	9	3	5	7	4	42	276	489	1,452
month minimum	354	16	0	0	0	0	0	0	0	0	146	322	1,121
day Maximum	38.8	27.0	25.2	11.8	8.4	7.2	6.7	7.1	11.4	21.5	28.7	42.0	42.0
day average	14.5	4.8	0.7	0.3	0.3	0.1	0.2	0.2	0.1	1.4	9.2	15.8	4.0
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
Total energy used for house													
month Maximum	1,050	1,013	872	722	661	563	547	556	610	736	811	991	8,608
month average	888	794	797	669	615	529	517	521	562	678	750	853	8,173
month minimum	802	721	737	595	561	498	501	495	512	613	711	789	7,916
day Maximum	52.2	47.2	44.3	28.5	25.5	24.7	22.7	23.1	25.6	28.2	34.2	44.6	52.2
day average	28.6	28.1	25.7	22.3	19.8	17.6	16.7	16.8	18.7	21.9	25.0	27.5	22.4
day minimum	16.3	20.7	19.3	15.7	15.6	15.6	15.5	15.5	15.5	15.8	18.9	21.5	15.5

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	10	50	191	281	312	323	343	315	242	121	16	8	1,971
month average	6	29	140	224	263	288	310	282	190	79	9	4	1,826
month minimum	2	11	84	146	190	243	243	243	141	15	6	2	1,678
day Maximum	1.1	9.2	16.2	15.8	16.8	16.2	16.4	15.5	15.9	15.0	3.6	0.8	16.8
day average	0.2	1.0	4.5	7.5	8.5	9.6	10.0	9.1	6.3	2.5	0.3	0.1	5.0
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													
month Maximum	136	61	27	6	4	4	5	5	5	32	101	152	467
month average	105	32	5	2	2	1	1	2	1	10	64	115	340
month minimum	83	4	0	0	0	0	0	0	0	0	34	75	262
day Maximum	9.1	6.8	6.4	2.1	2.0	1.9	1.7	1.9	2.1	5.5	6.9	9.9	9.9
day average	3.4	1.1	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.3	2.1	3.7	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	19	19	30	15	13	10	10	10	13	13	19	19	161
month average	19	19	11	9	10	4	6	7	6	10	19	19	140
month minimum	19	19	0	0	0	0	0	0	0	0	19	19	108
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	155	80	58	21	16	13	15	14	17	44	120	171	606
month average	124	51	16	12	12	5	7	9	7	20	83	134	479
month minimum	102	23	0	0	0	0	0	0	0	0	53	94	401
day Maximum	9.1	6.8	6.4	2.1	2.0	1.9	1.7	1.9	2.1	5.5	6.9	9.9	9.9
day average	3.4	1.1	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.3	2.1	3.7	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	-92	27	178	268	296	323	343	311	242	118	-39	-86	1,510
month average	-118	-22	124	212	252	283	303	273	183	59	-74	-129	1,347
month minimum	-151	-69	66	125	179	235	229	231	124	-18	-113	-167	1,153
day Maximum	0.8	9.2	16.2	15.8	16.8	16.2	16.4	15.5	15.9	15.0	3.6	0.0	16.8
day average	-3.2	-0.1	4.4	7.4	8.4	9.6	10.0	9.1	6.3	2.2	-1.8	-3.6	4.1
day minimum	-9.1	-6.8	-6.4	-1.9	-1.0	0.0	0.0	0.0	-2.1	-5.5	-6.9	-9.9	-9.9

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	170	495	1,585	2,333	2,550	2,920	2,930	2,467	1,802	880	231	137	15,733
month average	111	343	1,111	1,806	2,119	2,427	2,492	2,157	1,400	624	151	74	14,815
month minimum	35	186	718	1,246	1,507	1,932	1,691	1,777	1,050	271	104	37	13,624
day Maximum	16.5	58.0	102.5	111.8	119.4	128.0	122.0	114.0	105.3	80.6	26.8	11.7	128.0
day average	3.6	12.2	35.8	60.2	68.3	80.9	80.4	69.6	46.7	20.1	5.0	2.4	40.6
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
Export during high price hours													
month Maximum	0	141	671	1,210	1,330	1,329	1,423	1,381	1,067	457	45	0	8,331
month average	0	57	499	964	1,141	1,207	1,332	1,234	825	285	6	0	7,551
month minimum	0	0	282	678	843	1,027	1,099	1,118	568	11	0	0	6,872
day Maximum	0.0	34.5	63.0	65.0	67.0	65.4	66.2	65.5	68.0	62.3	15.5	0.0	68.0
day average	0.0	2.0	16.1	32.1	36.8	40.2	43.0	39.8	27.5	9.2	0.2	0.0	20.7
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
Export during medium price hours													
month Maximum	38	112	295	411	529	714	690	451	297	178	37	21	3,107
month average	21	89	208	318	414	549	525	379	226	102	19	7	2,857
month minimum	5	54	121	218	266	377	304	292	146	48	7	1	2,579
day Maximum	3.8	9.4	15.6	23.0	30.1	34.0	32.0	24.9	16.3	9.1	3.4	2.6	34.0
day average	0.7	3.1	6.7	10.6	13.4	18.3	16.9	12.2	7.5	3.3	0.6	0.2	7.8
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
Export during low price hours													
month Maximum	147	257	619	749	767	934	831	721	451	309	191	116	4,728
month average	90	197	403	524	563	671	636	544	349	237	127	66	4,406
month minimum	29	126	314	304	343	475	288	337	246	139	78	36	3,923
day Maximum	13.3	37.7	54.9	51.3	62.7	56.2	46.8	47.2	47.9	46.8	23.0	10.4	62.7
day average	2.9	7.0	13.0	17.5	18.2	22.4	20.5	17.5	11.6	7.6	4.2	2.1	12.1
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

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

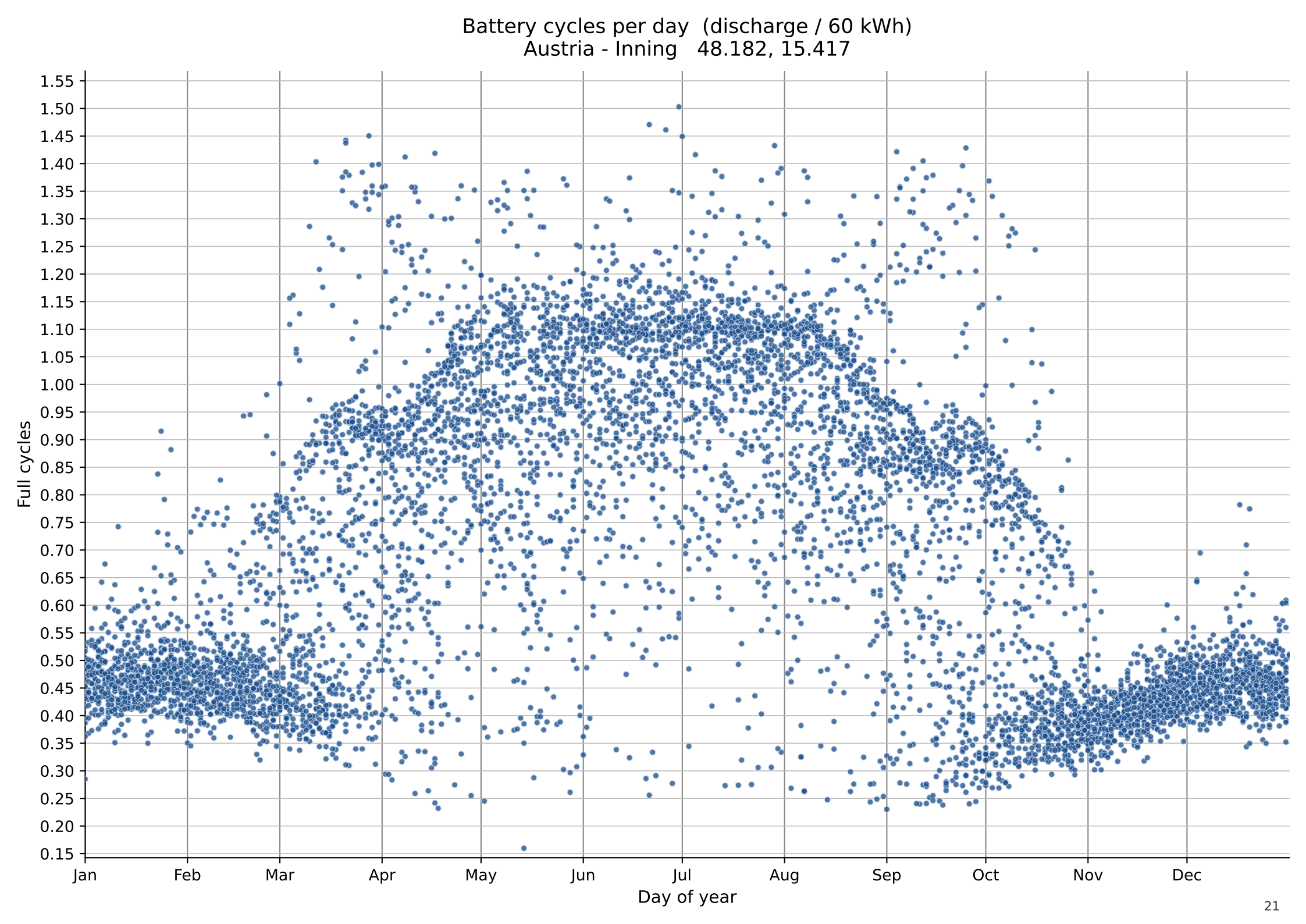
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	546	542	369	240	166	88	61	69	136	238	328	491	2,772
month average	384	336	294	189	123	56	32	35	90	182	267	354	2,343
month minimum	298	266	235	120	72	28	15	7	44	121	230	290	2,090
day Maximum	35.9	31.0	28.1	12.4	9.4	8.7	6.9	7.5	9.8	12.1	18.1	28.5	35.9
day average	12.4	11.9	9.5	6.3	4.0	1.9	1.0	1.1	3.0	5.9	8.9	11.4	6.4
day minimum	0.0	4.6	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	5.4	0.0
Cooling													
month Maximum	0	0	0	0	0	1	8	6	0	0	0	0	10
month average	0	0	0	0	0	0	1	2	0	0	0	0	3
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	0.8	5.9	5.0	0.0	0.0	0.0	0.0	5.9
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	70	65	70	62	61	55	52	53	54	64	63	66	722
month average	70	63	69	59	59	53	49	50	52	62	63	66	714
month minimum	70	62	68	55	55	50	48	48	48	59	62	65	701
day Maximum	2.5	2.3	2.3	2.1	2.1	2.1	1.9	2.0	2.0	2.1	2.1	2.1	2.5
day average	2.3	2.3	2.2	2.0	1.9	1.8	1.6	1.6	1.7	2.0	2.1	2.1	2.0
day minimum	2.2	2.1	1.9	1.6	1.6	1.6	1.5	1.5	1.5	1.7	1.9	2.0	1.5
Direct electric													
month Maximum	110	157	39	0	0	0	0	0	0	0	4	59	164
month average	16	17	4	0	0	0	0	0	0	0	0	7	44
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	19.9	15.0	12.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	3.5	12.5	19.9
day average	0.5	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	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

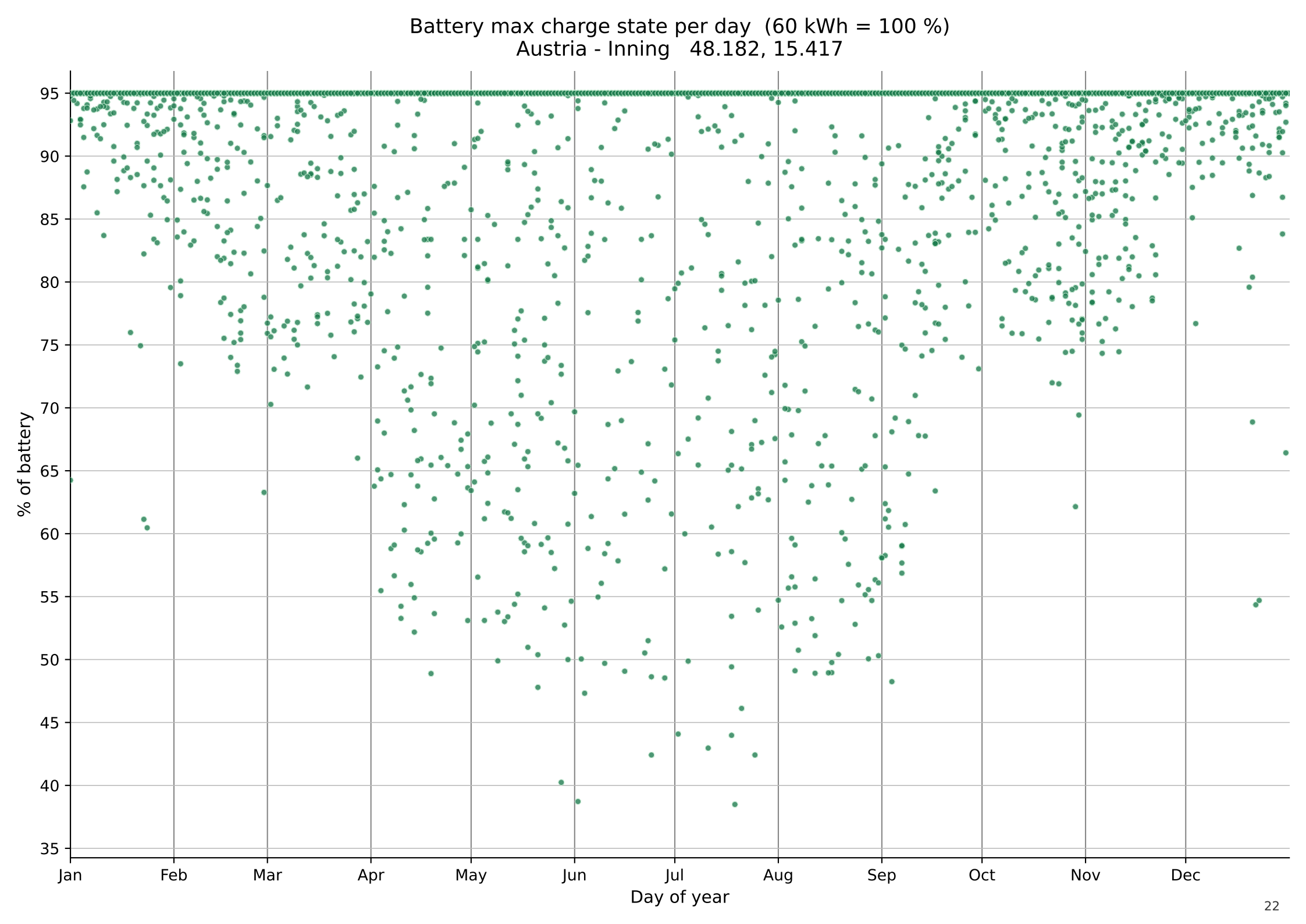
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

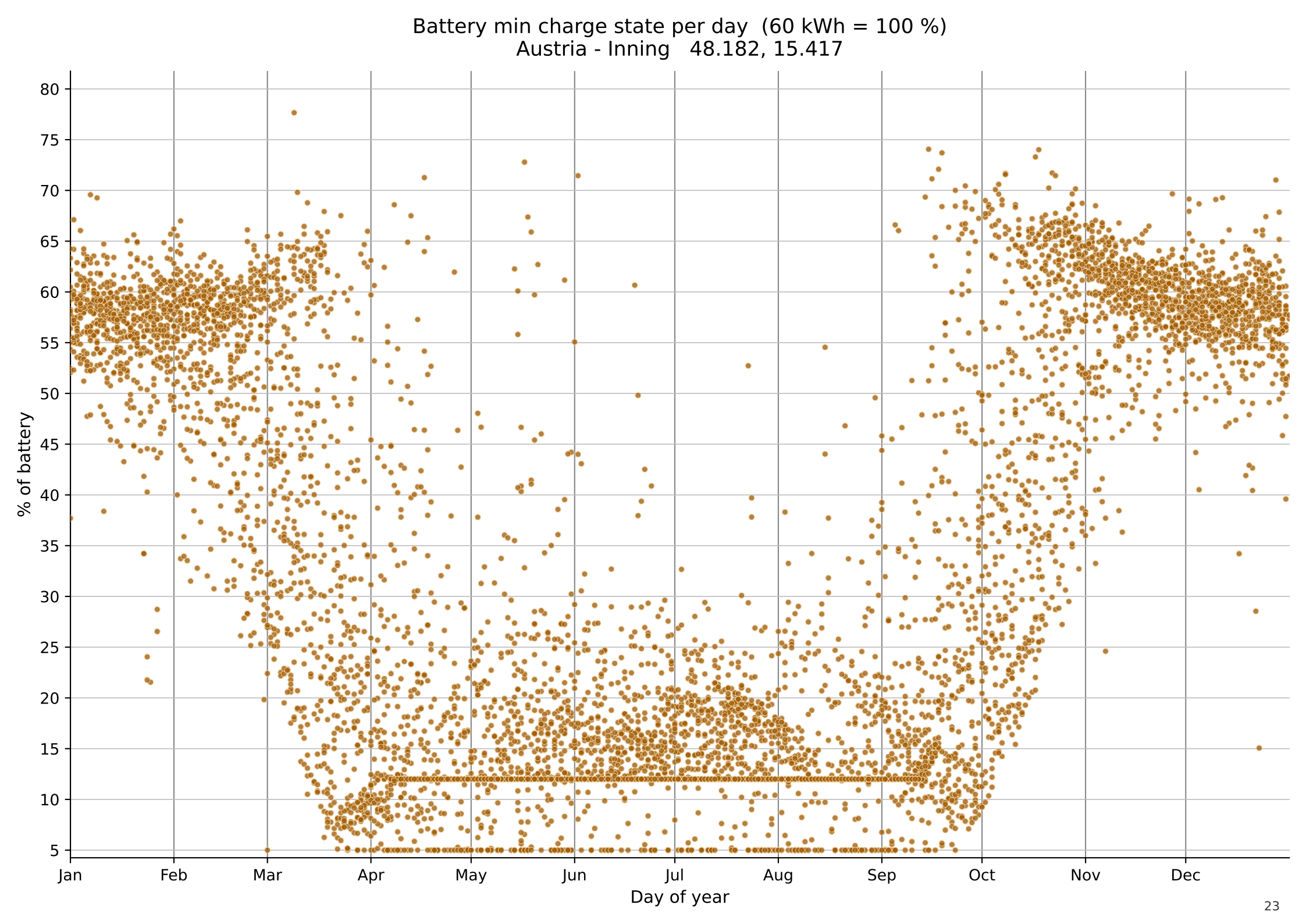
Battery
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	0	0	45	564	582	697	614	450	253	0	0	0	2,837
month average	0	0	27	369	446	522	484	345	171	0	0	0	2,365
month minimum	0	0	8	218	248	353	369	232	72	0	0	0	2,058
day Maximum	0.0	0.0	12.8	62.8	66.3	81.1	65.8	57.7	52.3	0.2	0.0	0.0	81.1
day average	0.0	0.0	0.9	12.3	14.4	17.4	15.6	11.1	5.7	0.0	0.0	0.0	6.5
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
Full cycles													
month Maximum	17	17	23	29	32	32	33	30	26	19	13	17	269
month average	15	14	21	26	29	30	31	28	23	16	13	14	259
month minimum	13	12	18	21	24	27	27	27	19	12	12	13	250
day Maximum	0.9	1.0	1.5	1.4	1.4	1.5	1.4	1.4	1.4	1.4	0.7	0.8	1.5
day average	0.5	0.5	0.7	0.9	0.9	1.0	1.0	0.9	0.8	0.5	0.4	0.5	0.7
day minimum	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.3	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	0.2	0.2	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	0.1	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
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