Scenario — PV
GEMINI-60-house-with-garage Austria - Inning 48.182, 15.417

Name	Slope °	Azimuth °	Wp	Wall d/h m	Face	Bifacial	Wp counted
Roof East	22	-90	19,800	—	front	—	yes
Roof West	22	90	19,800	—	front	—	yes
Terrace railing south	90	0	4,620	5 / 4	front	—	yes
Terrace railing north	90	180	4,620	5 / 4	front	—	yes
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 west	90	90	700	5 / 4	front	—	yes
Garage back side east	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
Total counted			75,770				

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 2009-06-13 11:10 local (10:10 UTC) 42,862 W 0.566 W/Wp of 75,770 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
GEMINI-60-house-with-garage Austria - Inning 48.182, 15.417

Chapter	Parameter	Value
Building	Design out / in / heat	-10.0 °C / 20.0 °C / 1,600 W
	Heat on / cool on / ground	22.0 °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 42.0 °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	176.8 kWh C 0.5 5 / 95 / 50 %
	Nameplate	—
	Charge / discharge η	95 % / 90 %
Grid	Inverter / grid connection	34.0 kW / 17.0 kW
	Max export	17.0 kW
	Import cap Jan–Jun kW	Jan 8 Feb 8 Mar 8 Apr 8 May 8 Jun 8
	Import cap Jul–Dec kW	Jul 8 Aug 8 Sep 8 Oct 8 Nov 8 Dec 8
Cars	Lunch DC / night AC	30.0 kWh @ 40.0 kW night 30.0 kWh @ 11.0 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	2009-06-13 10:10	2016-05-15 12:10	2020-05-24 10:10	2012-05-18 10:10	2009-06-03 10:10	2013-05-13 11:10	2021-05-26 10:10	2009-06-13 11:10	2020-05-07 10:10	2005-04-22 11:10
Roof East	15,272	12,163	15,115	14,892	15,107	13,831	15,100	14,180	14,873	13,630
Roof West	13,169	15,912	13,082	12,912	13,065	14,598	13,072	14,741	12,722	14,359
Terrace railing south	2,017	2,262	2,192	2,274	2,066	2,425	2,155	2,083	2,449	2,899
Terrace railing north	228	184	223	259	230	217	164	221	201	153
Garage roof	8,237	8,180	8,175	8,050	8,164	8,243	8,172	8,369	8,024	8,152
Garage side wall south	1,517	1,701	1,648	1,711	1,554	1,824	1,621	1,567	1,842	2,180
Garage side wall north	172	138	168	195	173	163	123	166	152	115
Garage door side west	35	245	34	39	35	93	25	87	31	80
Garage back side east	589	101	567	583	571	119	544	121	564	84
Garden fence east	1,391	239	1,339	1,376	1,349	281	1,285	287	1,333	199
Garden fence east face2	237	1,677	232	269	239	637	170	599	209	547
Watt at record	42,862	42,802	42,775	42,560	42,553	42,432	42,431	42,421	42,400	42,399
Percent of installed peak	56.6	56.5	56.5	56.2	56.2	56.0	56.0	56.0	56.0	56.0

Values are watts at that hour. Date and time are UTC. Record 42,862 W (56.6 % of 75,770 Wp).

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

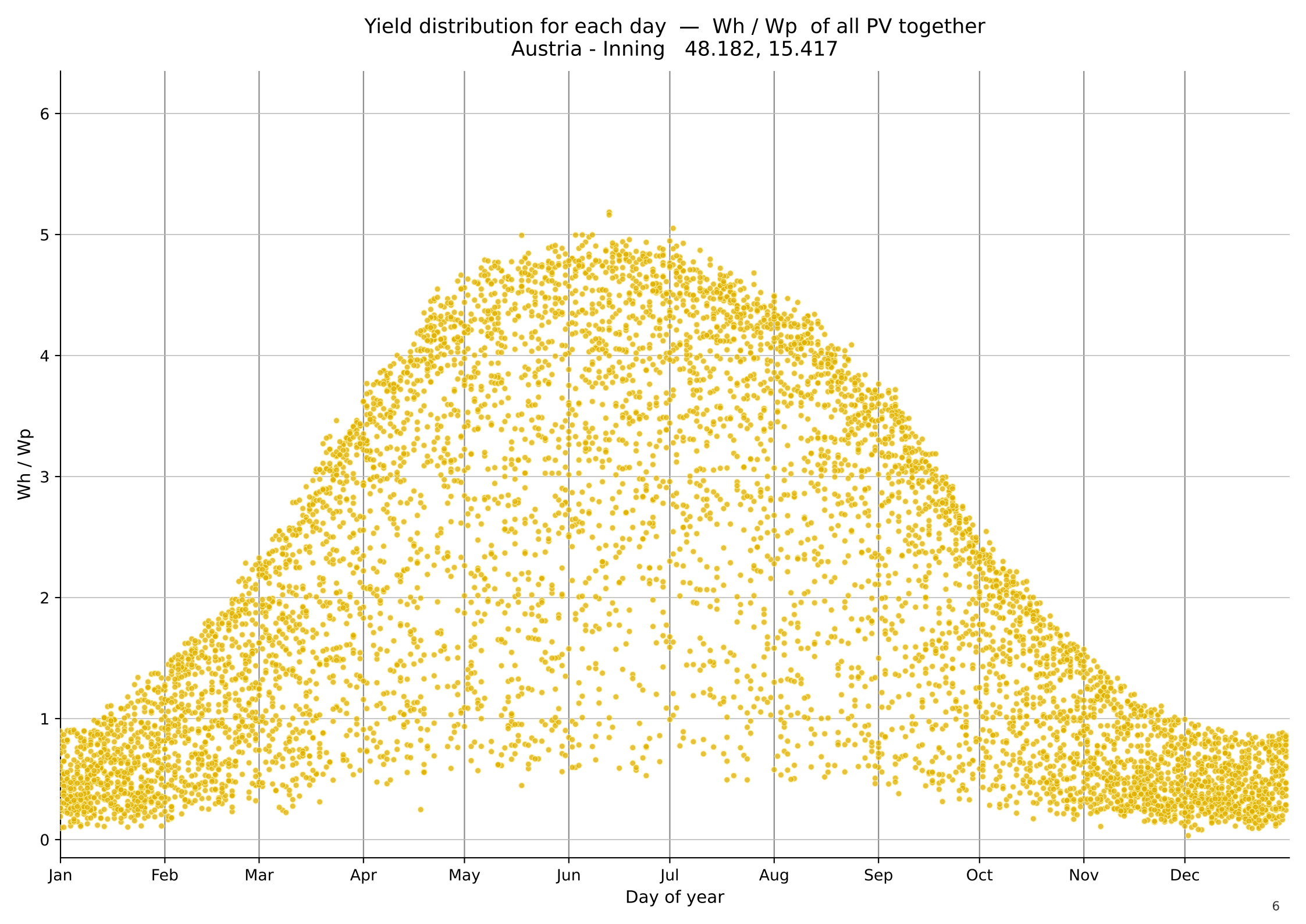
Of the record	Hours	Watts
98 %	17	42,005 W
96 %	95	41,148 W
94 %	348	40,291 W
92 %	816	39,433 W
90 %	1,644	38,576 W

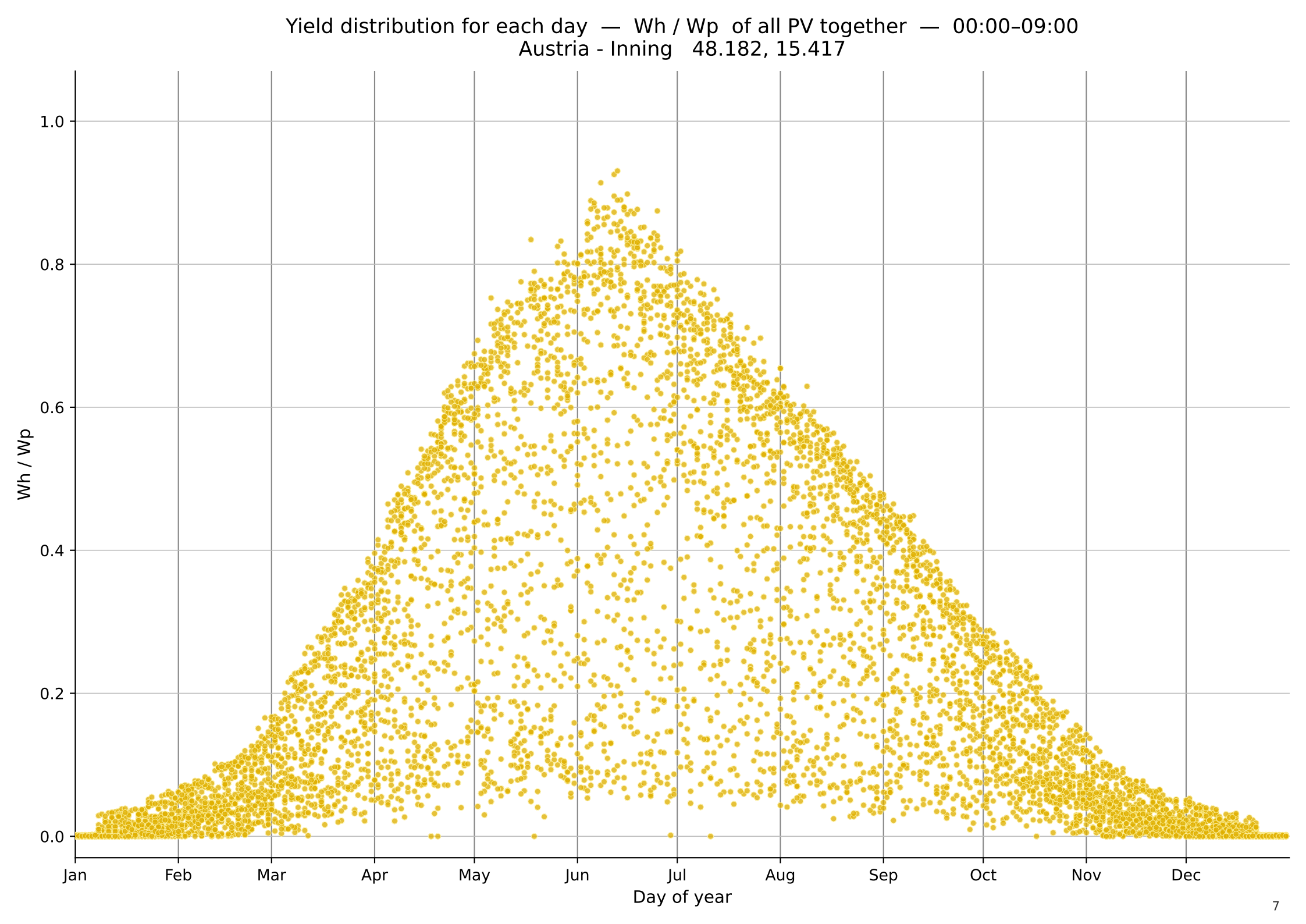
Record hour = 42,862 W combined.

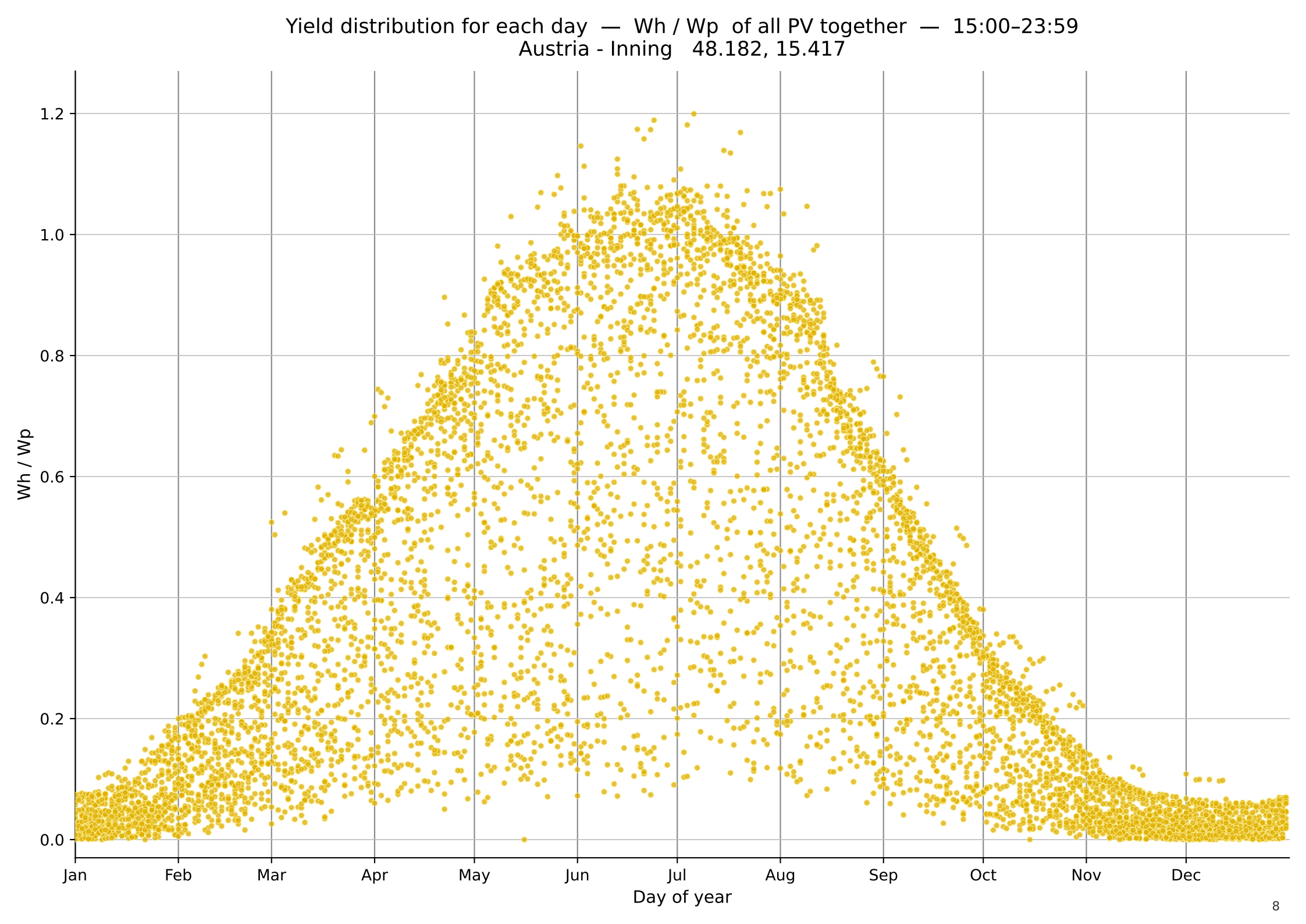
Records of each photovoltaic field
Austria - Inning 48.182, 15.417

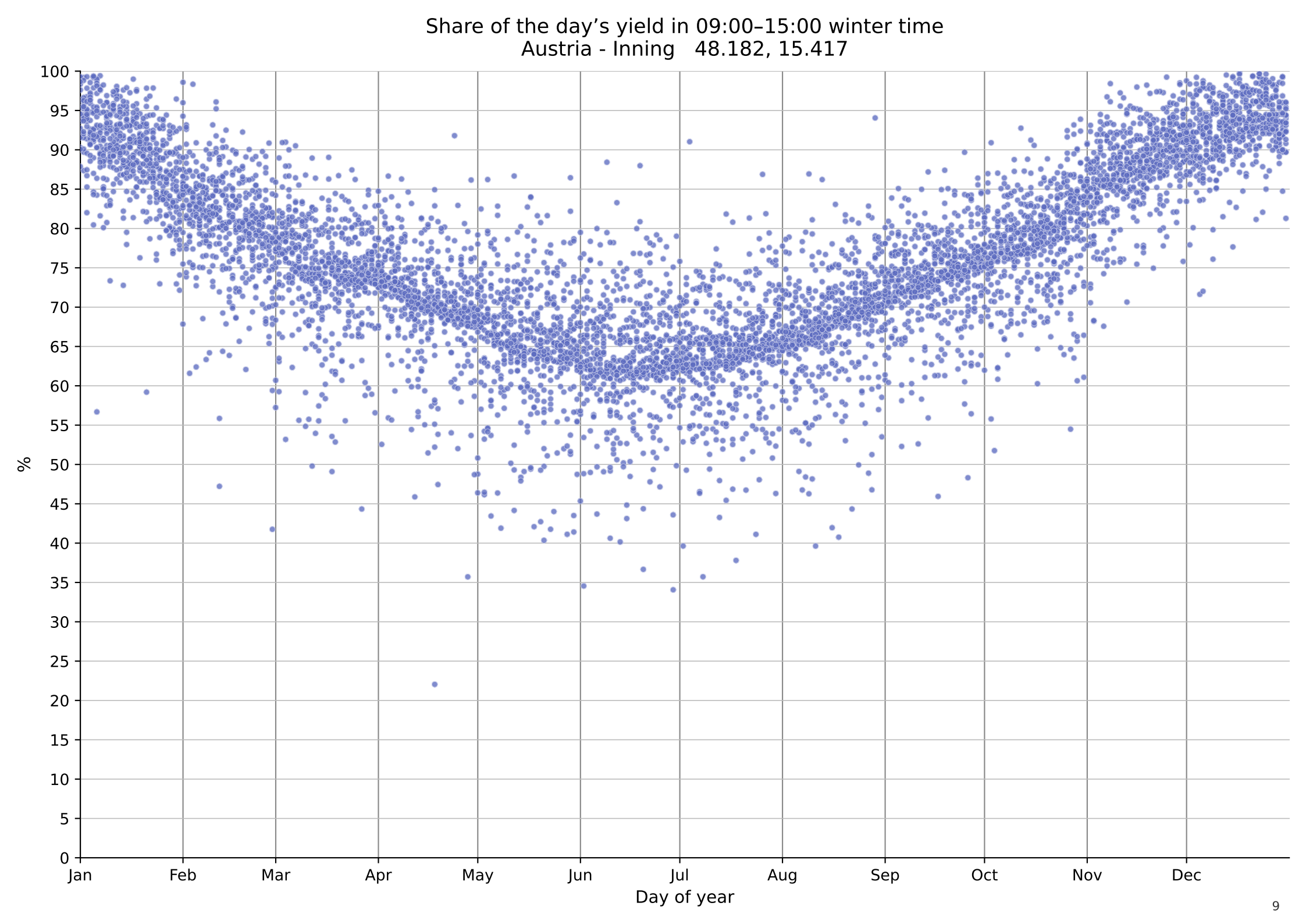
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Roof East	2006-05-25 09:10	15,595	78.8	11	38	156	391	806
Roof West	2016-05-15 12:10	15,912	80.4	3	12	30	118	333
Terrace railing south	2009-03-22 11:10	3,507	75.9	8	17	26	45	75
Terrace railing north	2023-06-13 05:10	812	17.6	1	8	25	50	108
Garage roof	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 west	2005-05-08 14:10	473	67.6	1	3	5	16	49
Garage back side east	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

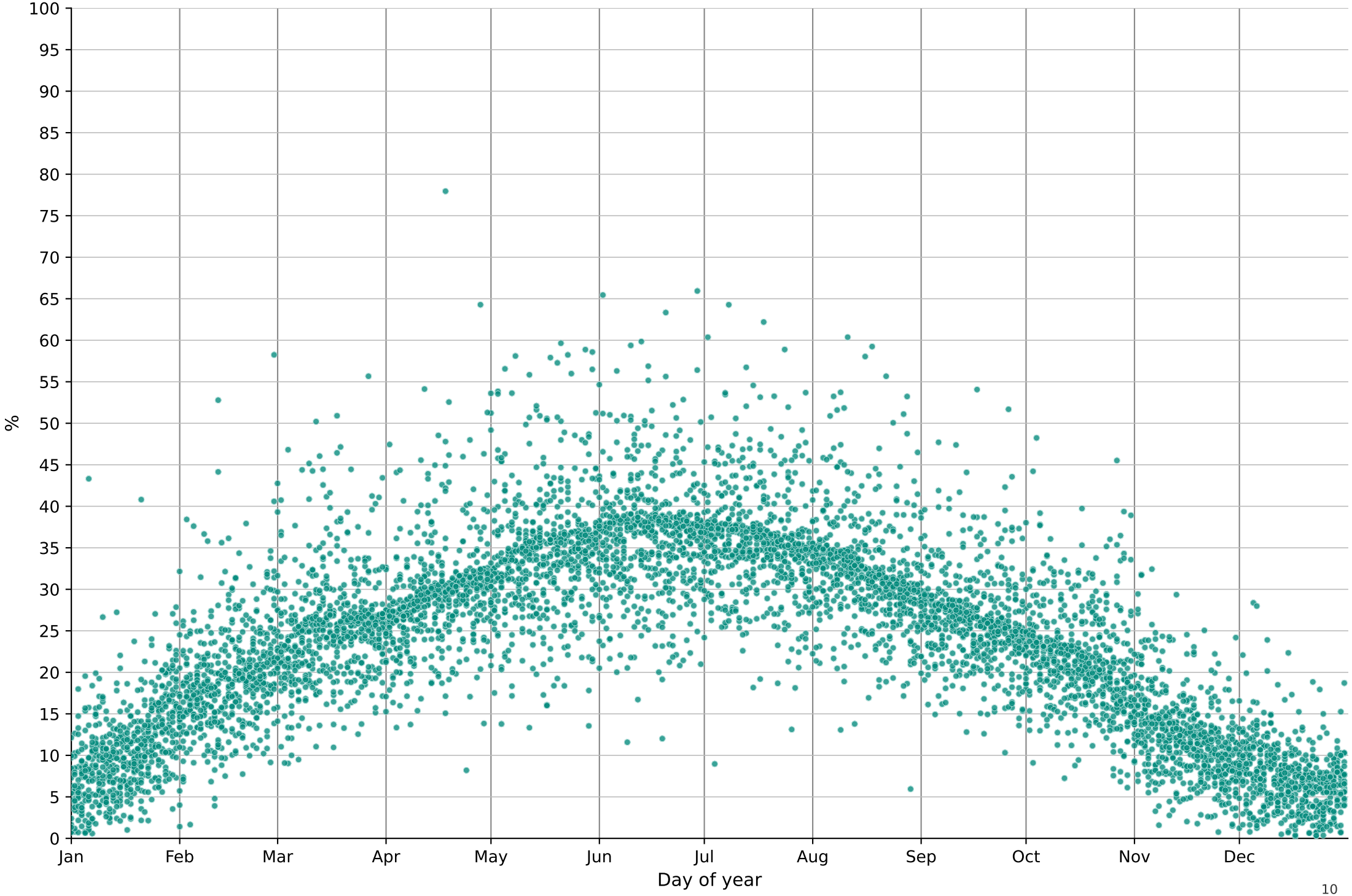
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

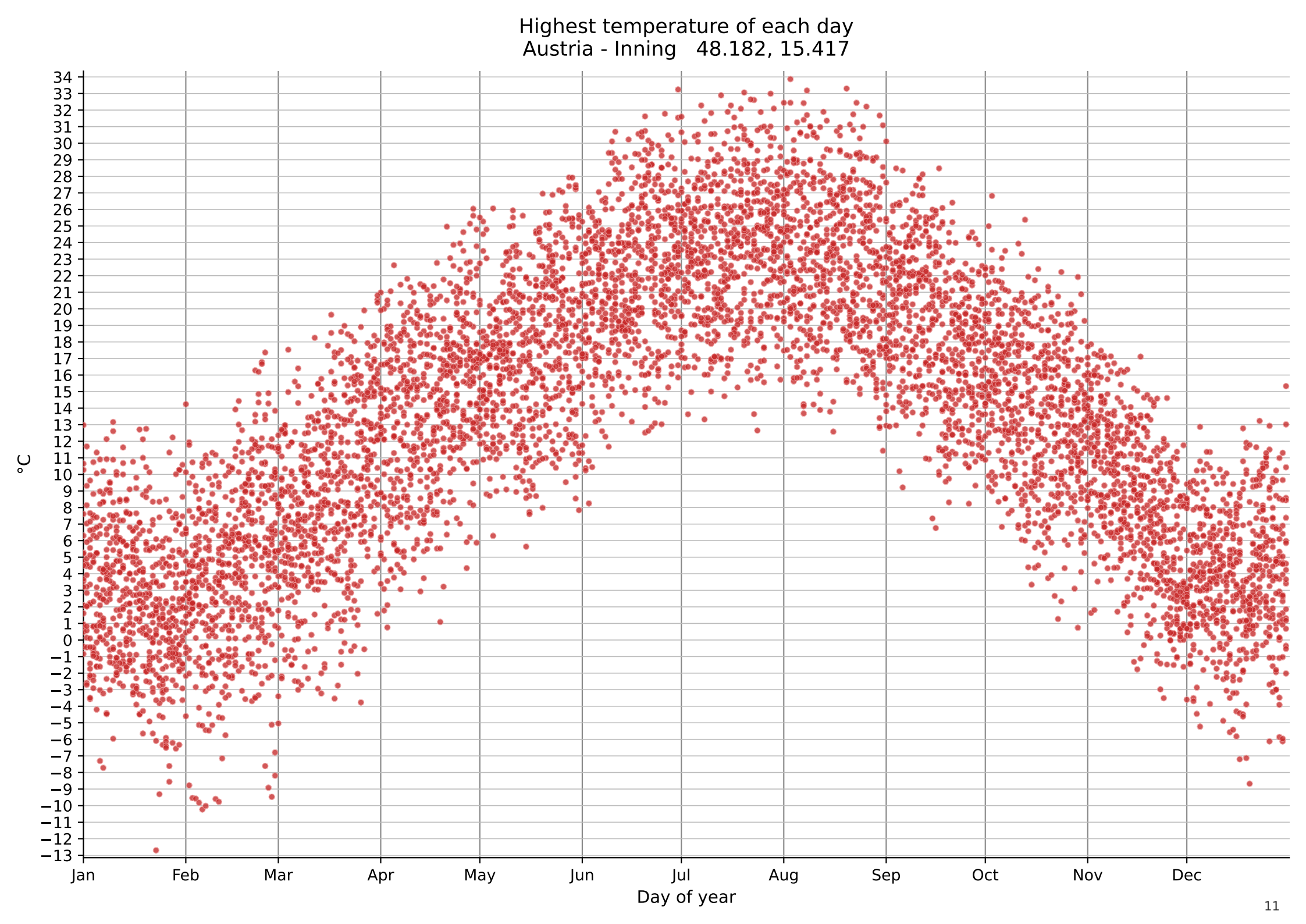

Yield distribution for each day — Wh / Wp of all PV together
Austria - Inning 48.182, 15.417
Wh / Wp
0
1
2
3
4
5
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

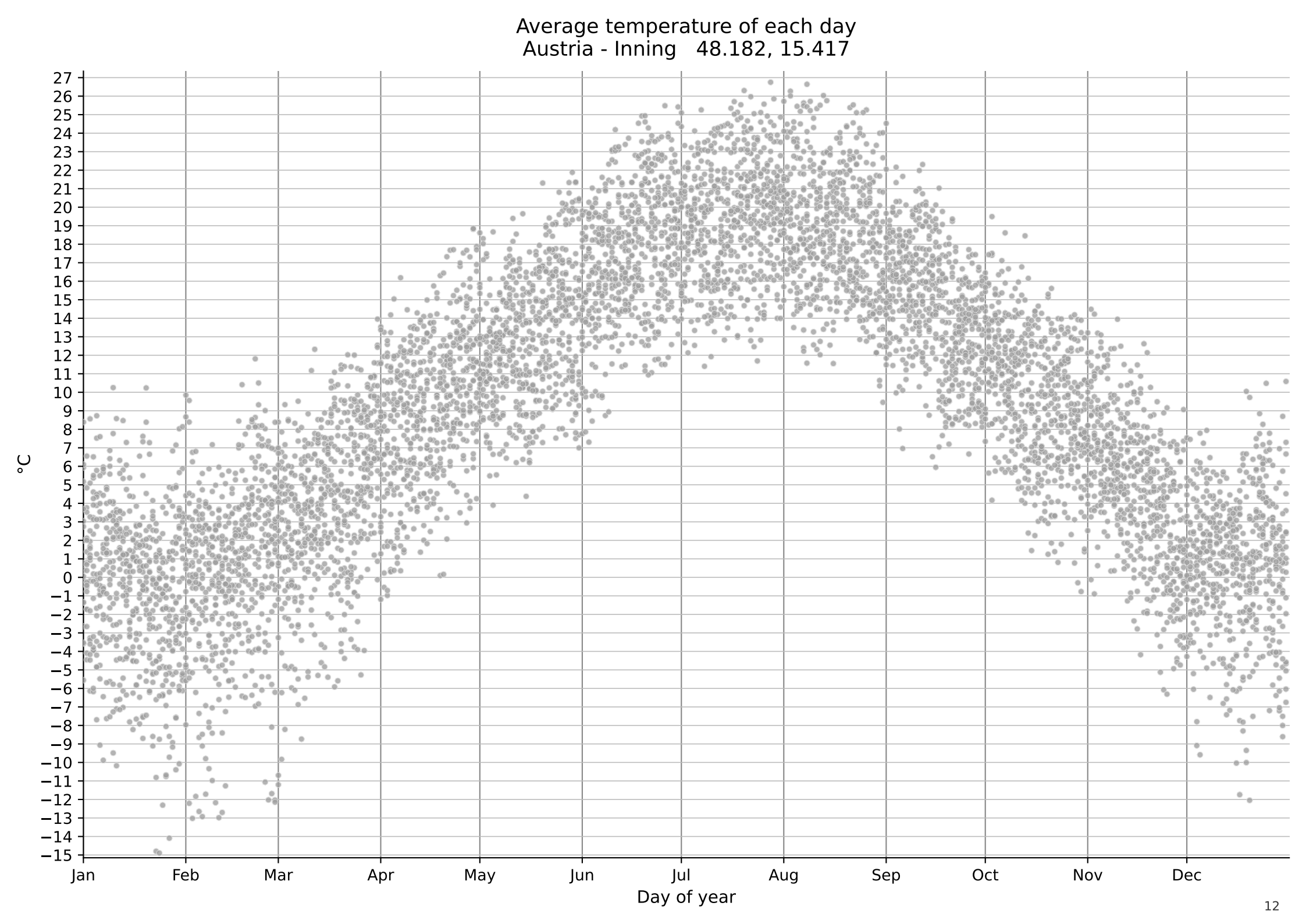

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
Austria - Inning 48.182, 15.417
1.0
0.8
0.6
0.4
0.2
0.0
Wh / Wp
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

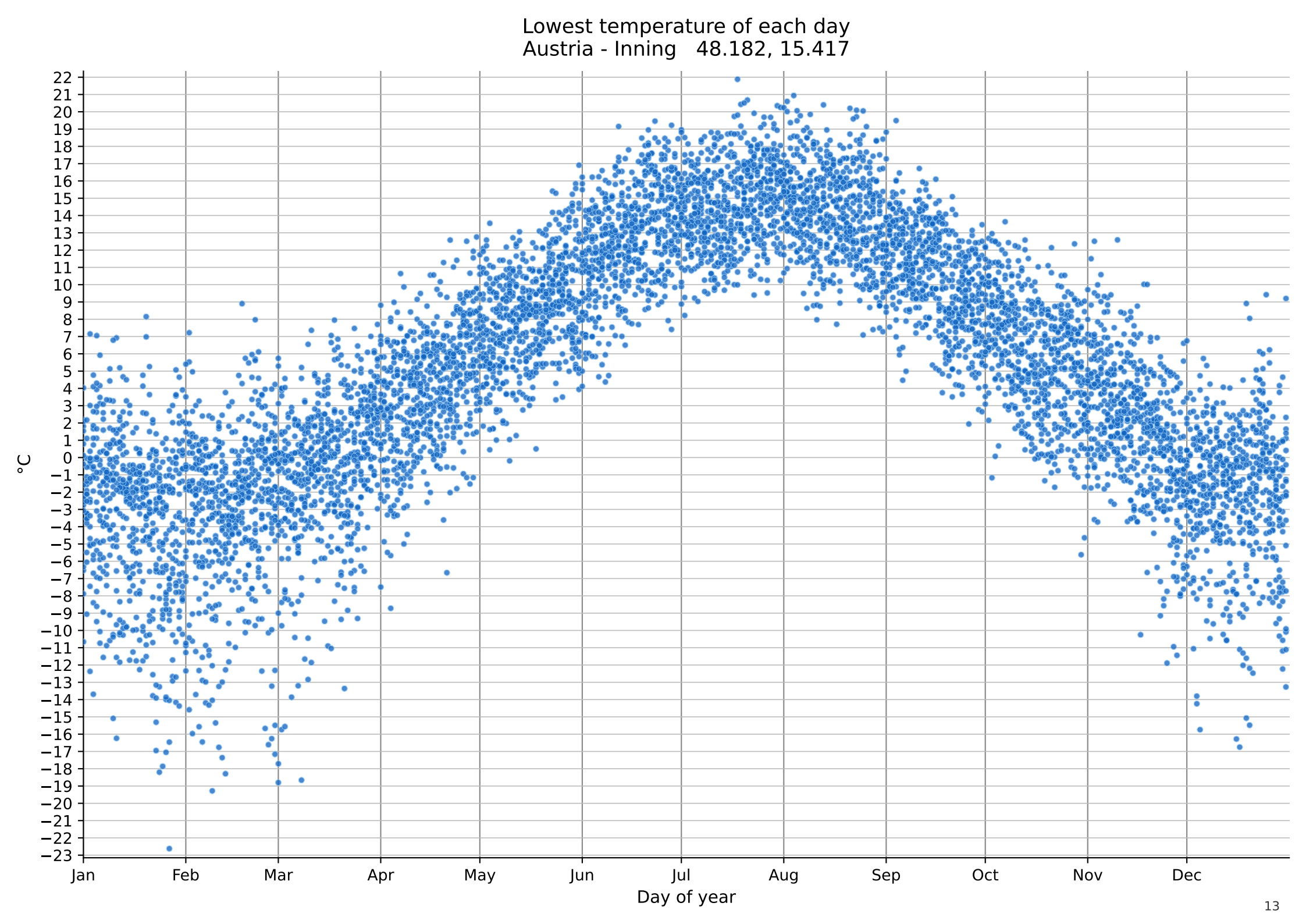

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
Austria - Inning 48.182, 15.417
Wh / Wp
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

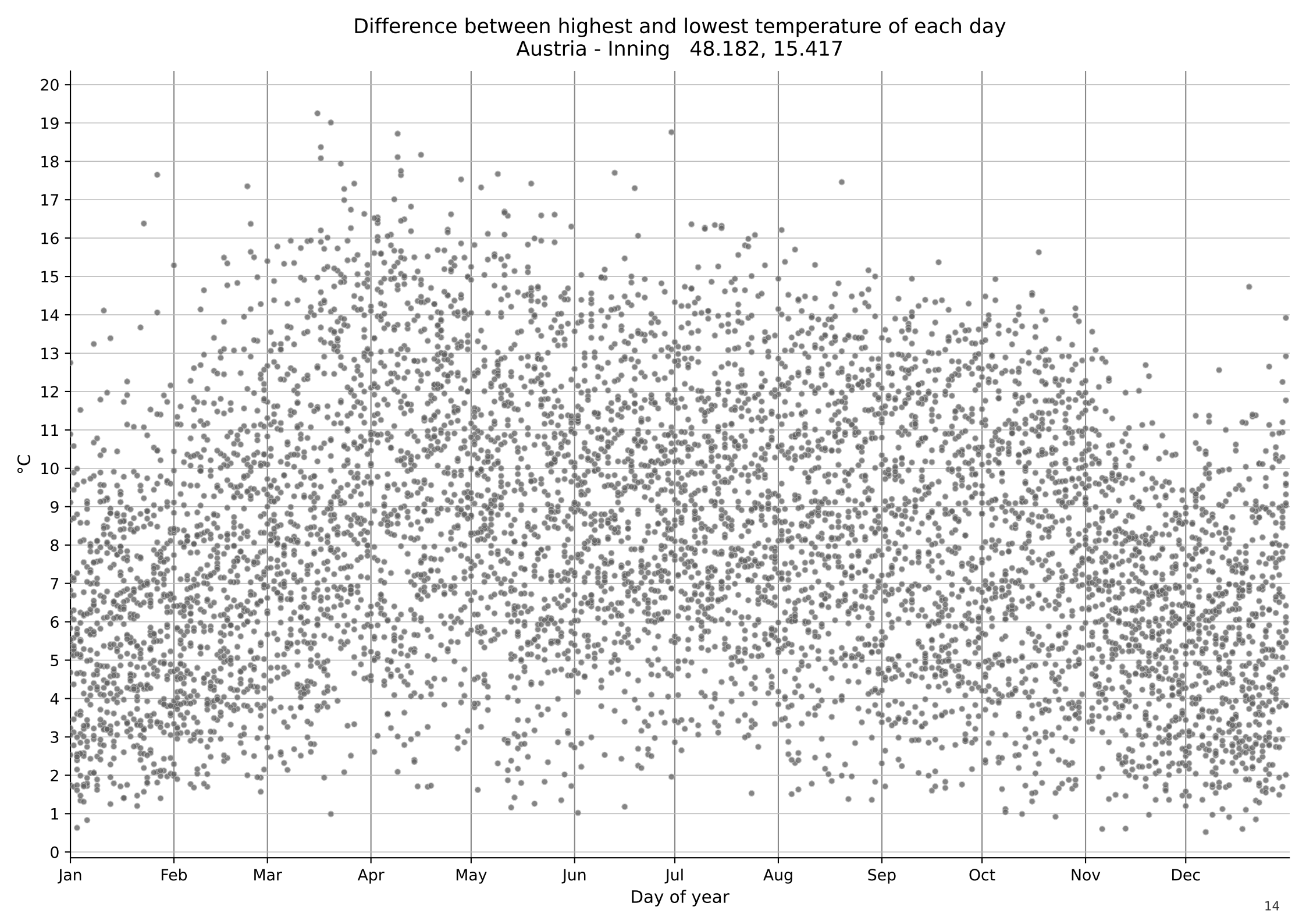

Share of the day’s yield in 09:00–15:00 winter time
Austria - Inning 48.182, 15.417
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


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		Roof East 22°/-90° 19,800 Wp	Roof West 22°/90° 19,800 Wp	Terrace railing south 90°/0° 4,620 Wp	Terrace railing north 90°/180° 4,620 Wp	Garage roof 1°/0° 10,740 Wp	Garage side wall south 90°/0° 3,475 Wp	All together
January	Maximum	36.85	30.08	7.26	7.26	32.84	7.26	24.61
	average	23.58	23.23	5.26	5.26	23.62	5.26	17.89
	minimum	16.80	18.03	4.09	4.09	17.95	4.09	13.98
February	Maximum	49.26	49.87	9.78	9.78	51.56	9.78	36.78
	average	40.22	41.12	8.23	8.23	41.81	8.23	30.81
	minimum	30.48	29.89	7.01	7.01	30.53	7.01	23.90
March	Maximum	99.75	99.70	40.02	16.17	103.67	40.02	75.86
	average	74.39	76.61	32.13	14.12	78.18	32.13	58.93
	minimum	59.28	58.23	23.96	12.21	60.95	23.96	47.14
April	Maximum	133.40	131.91	85.87	20.80	138.59	85.87	106.75
	average	105.31	106.56	68.54	18.98	110.61	68.54	86.50
	minimum	82.02	84.70	54.04	16.79	87.14	54.04	68.59
May	Maximum	137.57	139.02	75.98	26.21	144.59	75.98	111.72
	average	118.60	118.75	66.13	24.16	124.01	66.13	96.85
	minimum	87.34	88.28	48.94	22.30	91.48	48.94	72.75
June	Maximum	156.95	153.86	73.17	28.27	163.28	73.17	124.92
	average	128.94	130.27	62.75	26.40	135.71	62.75	105.29
	minimum	103.92	106.46	51.97	24.08	109.40	51.97	86.34
July	Maximum	152.09	151.66	77.19	27.83	158.88	77.19	121.89
	average	131.40	132.40	67.74	25.64	138.27	67.74	106.69
	minimum	97.26	99.10	50.02	23.06	102.76	50.02	80.18
August	Maximum	126.69	125.59	79.19	22.99	132.11	79.19	102.48
	average	111.62	113.81	70.61	19.99	117.75	70.61	92.08
	minimum	94.28	100.43	60.77	17.60	102.53	60.77	81.36
September	Maximum	98.66	103.01	59.73	16.42	104.79	59.73	79.69
	average	82.54	84.24	49.11	14.08	86.69	49.11	66.53
	minimum	67.58	67.69	40.19	11.80	69.95	40.19	54.53
October	Maximum	60.47	74.56	11.30	11.26	68.41	11.30	48.97
	average	50.79	54.92	9.83	9.80	54.55	9.83	39.60
	minimum	35.78	37.36	8.60	8.60	37.60	8.60	28.11
November	Maximum	32.08	33.83	6.47	6.47	33.54	6.47	24.56
	average	25.23	26.53	5.75	5.75	26.62	5.75	19.79
	minimum	19.79	20.38	5.33	5.33	20.26	5.33	15.64
December	Maximum	24.73	25.32	5.19	5.19	25.37	5.19	18.49
	average	18.98	19.08	4.19	4.19	19.18	4.19	14.52
	minimum	15.07	15.87	2.90	2.90	15.84	2.90	11.78
All years	Maximum	966.9	966.2	478.1	182.9	1,005.5	478.1	770.4
	average	911.6	927.5	450.3	176.6	957.0	450.3	735.5
	minimum	855.5	881.1	423.9	171.8	908.1	423.9	701.4

Highest combined yield hour: 2009-06-13 10:10 UTC 42,862.3 W (0.566 W/Wp) of 75,770 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		Garage side wall north 90°/180° 3,475 Wp	Garage door side west 90°/90° 700 Wp	Garage back side east 90°/-90° 2,540 Wp	Garden fence east 90°/-90° + 90°/90° 6000 Wp bifacial ×80%	All together
January	Maximum	7.26	8.02	9.10	15.51	24.61
	average	5.26	5.93	6.73	11.47	17.89
	minimum	4.09	4.60	5.29	8.97	13.98
February	Maximum	9.78	11.74	11.07	20.46	36.78
	average	8.23	10.69	9.69	18.25	30.81
	minimum	7.01	9.55	8.85	16.58	23.90
March	Maximum	16.17	20.69	20.57	37.09	75.86
	average	14.12	18.52	18.64	33.45	58.93
	minimum	12.21	16.23	16.11	29.09	47.14
April	Maximum	20.80	35.62	37.00	65.39	106.75
	average	18.98	32.57	33.18	59.23	86.50
	minimum	16.79	27.32	27.21	49.07	68.59
May	Maximum	26.21	49.99	44.67	82.61	111.72
	average	24.16	43.00	39.77	74.17	96.85
	minimum	22.30	34.42	32.92	60.46	72.75
June	Maximum	28.27	50.65	56.41	95.84	124.92
	average	26.40	45.09	48.98	85.06	105.29
	minimum	24.08	39.28	41.53	72.95	86.34
July	Maximum	27.83	49.85	48.86	88.73	121.89
	average	25.64	45.09	43.52	79.59	106.69
	minimum	23.06	36.77	33.52	62.94	80.18
August	Maximum	22.99	40.50	40.39	70.89	102.48
	average	19.99	36.73	36.67	66.05	92.08
	minimum	17.60	32.59	33.27	60.58	81.36
September	Maximum	16.42	24.07	22.91	41.44	79.69
	average	14.08	21.48	20.85	38.03	66.53
	minimum	11.80	18.89	18.24	33.35	54.53
October	Maximum	11.26	12.90	12.98	23.30	48.97
	average	9.80	11.44	11.69	20.84	39.60
	minimum	8.60	9.79	9.93	17.77	28.11
November	Maximum	6.47	7.53	7.71	13.74	24.56
	average	5.75	6.77	6.86	12.28	19.79
	minimum	5.33	6.04	6.01	10.83	15.64
December	Maximum	5.19	5.84	6.52	11.19	18.49
	average	4.19	4.82	5.42	9.28	14.52
	minimum	2.90	3.46	3.86	6.63	11.78
All years	Maximum	182.9	291.4	295.1	527.0	770.4
	average	176.6	282.1	282.0	507.7	735.5
	minimum	171.8	274.0	269.5	495.0	701.4

Highest combined yield hour: 2009-06-13 10:10 UTC 42,862.3 W (0.566 W/Wp) of 75,770 Wp installed. Use this hour to size battery charge power.

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

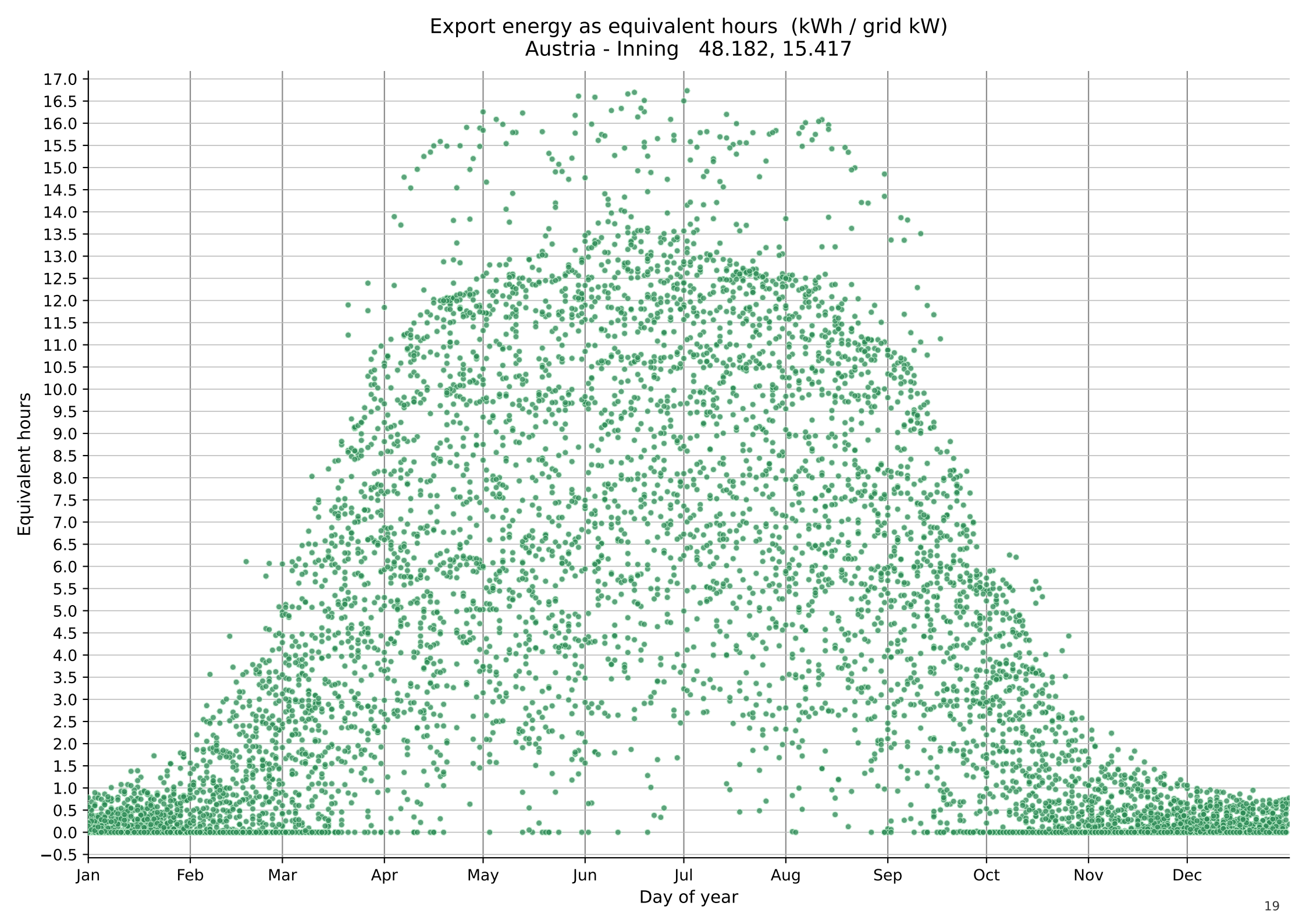
Month / year		Roof East 22°/-90° 19,800 Wp	Roof West 22°/90° 19,800 Wp	Terrace railing south 90°/0° 4,620 Wp	Terrace railing north 90°/180° 4,620 Wp	Garage roof 1°/0° 10,740 Wp	Garage side wall south 90°/0° 3,475 Wp	All together
January	Maximum	729.62	595.63	33.54	33.54	352.68	25.23	1,864.87
	average	466.95	459.87	24.32	24.32	253.64	18.29	1,355.75
	minimum	332.64	356.93	18.91	18.91	192.81	14.22	1,059.39
February	Maximum	975.26	987.50	45.20	45.20	553.71	34.00	2,786.71
	average	796.39	814.20	38.04	38.04	449.02	28.61	2,334.52
	minimum	603.41	591.90	32.37	32.37	327.93	24.35	1,811.18
March	Maximum	1,975.11	1,974.12	184.90	74.72	1,113.39	139.08	5,747.91
	average	1,472.96	1,516.95	148.45	65.25	839.69	111.66	4,465.05
	minimum	1,173.73	1,153.01	110.72	56.41	654.63	83.28	3,572.13
April	Maximum	2,641.23	2,611.90	396.70	96.12	1,488.40	298.38	8,088.12
	average	2,085.17	2,109.91	316.63	87.68	1,188.00	238.16	6,553.96
	minimum	1,623.98	1,677.11	249.68	77.55	935.83	187.80	5,197.03
May	Maximum	2,723.88	2,752.50	351.04	121.11	1,552.93	264.04	8,465.02
	average	2,348.20	2,351.18	305.53	111.61	1,331.89	229.81	7,338.35
	minimum	1,729.39	1,748.01	226.09	103.02	982.45	170.05	5,511.98
June	Maximum	3,107.65	3,046.33	338.03	130.62	1,753.66	254.25	9,465.47
	average	2,553.04	2,579.32	289.91	121.99	1,457.52	218.06	7,977.90
	minimum	2,057.55	2,107.91	240.09	111.25	1,174.96	180.59	6,542.36
July	Maximum	3,011.44	3,002.90	356.62	128.59	1,706.42	268.23	9,235.46
	average	2,601.77	2,621.47	312.97	118.45	1,485.03	235.41	8,083.81
	minimum	1,925.78	1,962.25	231.08	106.55	1,103.61	173.81	6,075.00
August	Maximum	2,508.37	2,486.63	365.84	106.22	1,418.83	275.17	7,765.26
	average	2,210.04	2,253.51	326.23	92.35	1,264.60	245.38	6,976.73
	minimum	1,866.69	1,988.43	280.77	81.31	1,101.14	211.18	6,164.79
September	Maximum	1,953.41	2,039.67	275.95	75.86	1,125.43	207.56	6,037.90
	average	1,634.24	1,667.88	226.87	65.03	931.05	170.64	5,040.79
	minimum	1,338.16	1,340.33	185.69	54.53	751.23	139.67	4,131.90
October	Maximum	1,197.21	1,476.25	52.20	52.02	734.70	39.26	3,710.30
	average	1,005.70	1,087.48	45.43	45.30	585.91	34.17	3,000.78
	minimum	708.51	739.66	39.75	39.71	403.85	29.90	2,129.95
November	Maximum	635.26	669.76	29.90	29.90	360.26	22.49	1,860.60
	average	499.61	525.39	26.56	26.56	285.88	19.98	1,499.78
	minimum	391.81	403.60	24.60	24.60	217.55	18.50	1,185.40
December	Maximum	489.63	501.26	23.98	23.98	272.47	18.04	1,400.96
	average	375.79	377.79	19.33	19.33	206.03	14.54	1,100.19
	minimum	298.32	314.19	13.41	13.41	170.14	10.09	892.28
All years	Maximum	19,144.6	19,131.5	2,209.0	845.0	10,798.9	1,661.5	58,372.1
	average	18,049.9	18,365.0	2,080.3	815.9	10,278.3	1,564.7	55,727.6
	minimum	16,938.9	17,444.8	1,958.2	793.9	9,753.0	1,472.9	53,147.1

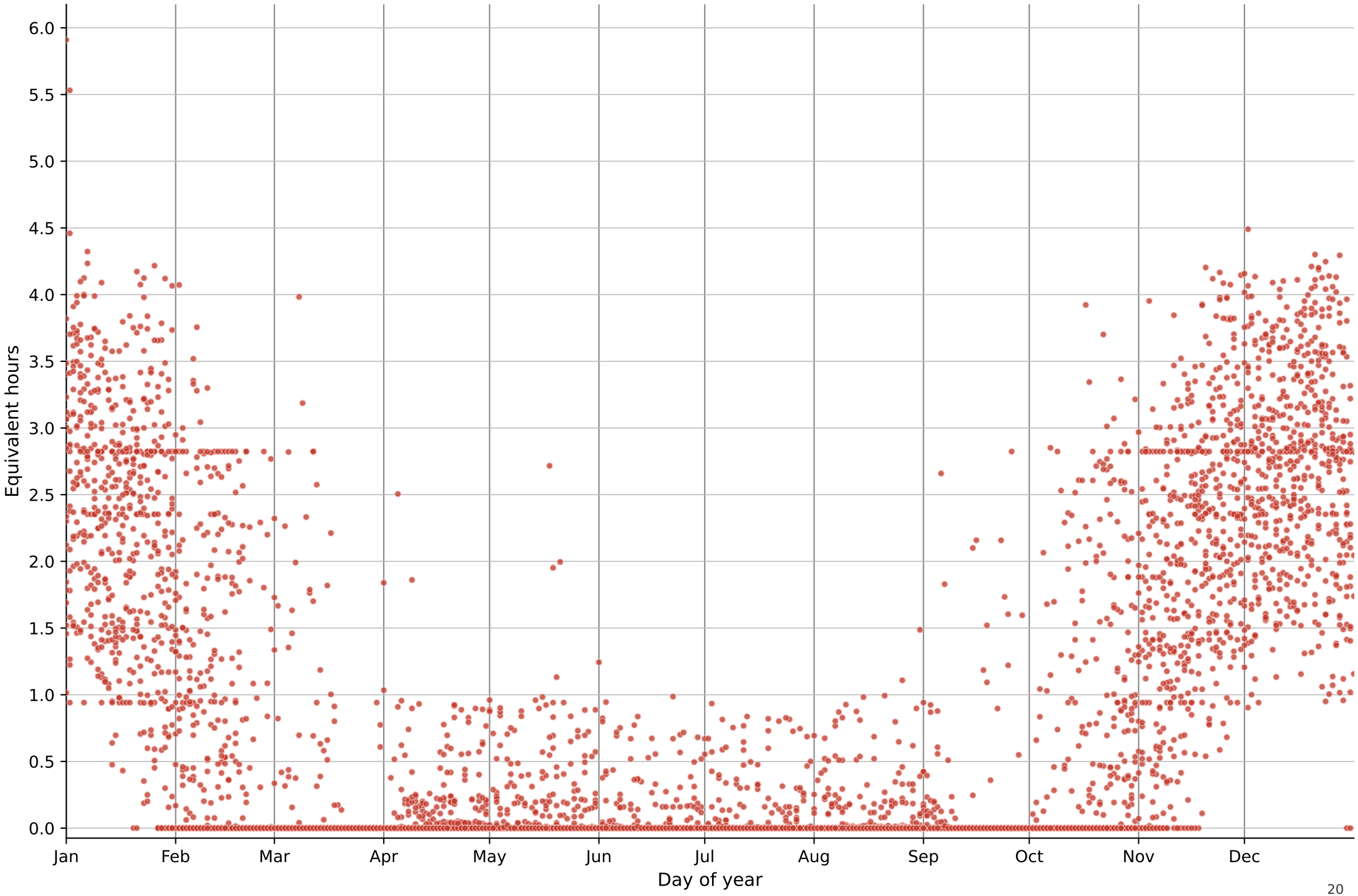
Highest combined yield hour: 2009-06-13 10:10 UTC 42,862.3 W (0.566 W/Wp) of 75,770 Wp installed. Use this hour to size battery charge power.

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

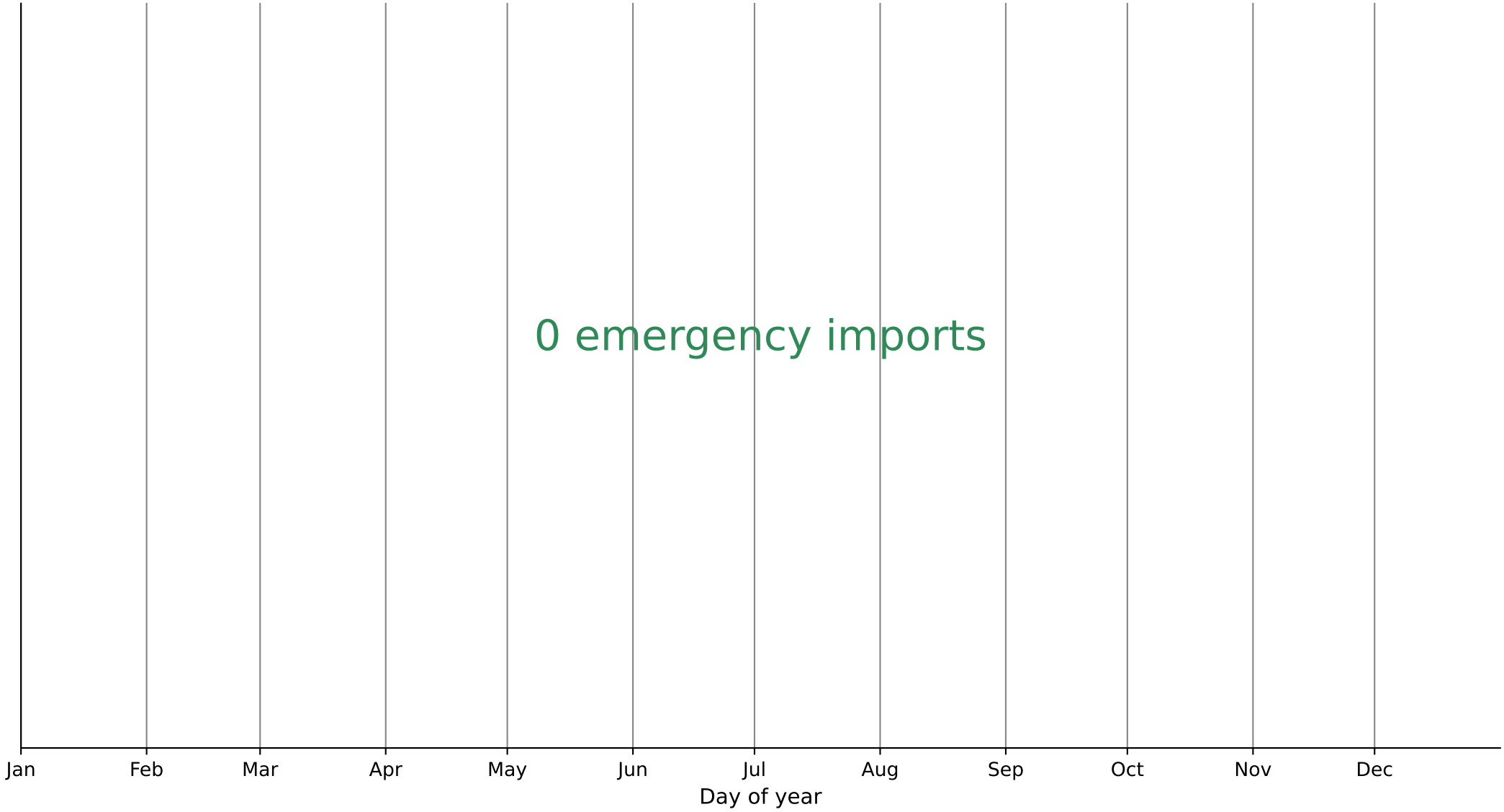
Month / year		Garage side wall north 90°/180° 3,475 Wp	Garage door side west 90°/90° 700 Wp	Garage back side east 90°/-90° 2,540 Wp	Garden fence east 90°/-90° + 90°/90° 6000 Wp bifacial ×80%	All together
January	Maximum	25.23	5.62	23.10	93.08	1,864.87
	average	18.29	4.15	17.08	68.84	1,355.75
	minimum	14.22	3.22	13.43	53.81	1,059.39
February	Maximum	34.00	8.22	28.11	122.77	2,786.71
	average	28.61	7.49	24.62	109.49	2,334.52
	minimum	24.35	6.69	22.49	99.50	1,811.18
March	Maximum	56.20	14.49	52.24	222.56	5,747.91
	average	49.08	12.97	47.33	200.73	4,465.05
	minimum	42.43	11.36	40.91	174.54	3,572.13
April	Maximum	72.30	24.93	93.97	392.34	8,088.12
	average	65.95	22.80	84.27	355.39	6,553.96
	minimum	58.33	19.13	69.12	294.43	5,197.03
May	Maximum	91.09	34.99	113.45	495.67	8,465.02
	average	83.95	30.10	101.03	445.05	7,338.35
	minimum	77.49	24.10	83.62	362.77	5,511.98
June	Maximum	98.25	35.46	143.28	575.03	9,465.47
	average	91.75	31.57	124.41	510.33	7,977.90
	minimum	83.68	27.49	105.48	437.68	6,542.36
July	Maximum	96.72	34.89	124.10	532.41	9,235.46
	average	89.09	31.56	110.53	477.52	8,083.81
	minimum	80.15	25.74	85.15	377.65	6,075.00
August	Maximum	79.90	28.35	102.58	425.37	7,765.26
	average	69.46	25.71	93.15	396.32	6,976.73
	minimum	61.15	22.81	84.50	363.46	6,164.79
September	Maximum	57.06	16.85	58.18	248.65	6,037.90
	average	48.91	15.04	52.95	228.18	5,040.79
	minimum	41.01	13.22	46.33	200.12	4,131.90
October	Maximum	39.13	9.03	32.97	139.81	3,710.30
	average	34.07	8.01	29.69	125.04	3,000.78
	minimum	29.87	6.86	25.23	106.61	2,129.95
November	Maximum	22.49	5.27	19.59	82.43	1,860.60
	average	19.98	4.74	17.43	73.67	1,499.78
	minimum	18.50	4.22	15.26	65.01	1,185.40
December	Maximum	18.04	4.09	16.56	67.15	1,400.96
	average	14.54	3.38	13.77	55.68	1,100.19
	minimum	10.09	2.42	9.80	39.77	892.28
All years	Maximum	635.6	204.0	749.6	3,161.9	58,372.1
	average	613.7	197.5	716.3	3,046.2	55,727.6
	minimum	597.2	191.8	684.5	2,969.9	53,147.1

Highest combined yield hour: 2009-06-13 10:10 UTC 42,862.3 W (0.566 W/Wp) of 75,770 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
17.0
16.5
16.0
15.5
15.0
14.5
14.0
13.5
13.0
12.5
12.0
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
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

Emergency import hours: 0 days with an emergency: 0
Austria - Inning 48.182, 15.417



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	178	724	3,121	4,926	5,072	5,703	5,775	4,726	3,499	1,327	220	166	30,154
month average	147	466	2,065	3,712	4,125	4,699	4,820	4,112	2,591	857	163	110	27,867
month minimum	115	159	1,217	2,449	2,683	3,526	3,051	3,378	1,740	271	119	52	25,402
day Maximum	30.5	103.8	210.6	270.4	282.4	283.8	284.5	273.3	235.8	106.4	39.2	18.0	284.5
day average	4.7	16.5	66.6	123.7	133.1	156.6	155.5	132.6	86.4	27.7	5.4	3.5	76.3
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0	0.0	-0.0	0.0	-0.0
Import from grid													
month Maximum	1,569	593	252	106	124	67	47	54	163	503	1,301	1,731	5,374
month average	1,214	310	51	41	47	24	25	29	31	220	968	1,421	4,380
month minimum	747	42	0	14	7	5	1	6	0	4	592	1,083	3,615
day Maximum	100.5	69.2	67.7	42.6	46.2	21.1	15.9	25.3	48.0	66.7	71.5	76.3	100.5
day average	39.2	11.0	1.6	1.4	1.5	0.8	0.8	0.9	1.0	7.1	32.3	45.8	12.0
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	2,284	2,131	2,231	2,104	2,131	2,017	2,068	2,074	2,047	2,170	2,149	2,273	25,437
month average	2,240	2,031	2,200	2,077	2,108	2,001	2,049	2,052	2,022	2,141	2,119	2,226	25,266
month minimum	2,205	1,990	2,172	2,038	2,078	1,982	2,038	2,034	1,991	2,109	2,100	2,197	25,131
day Maximum	76.4	75.9	75.3	74.1	73.0	72.9	70.4	72.3	72.0	72.2	73.8	75.4	76.4
day average	72.3	72.0	71.0	69.2	68.0	66.7	66.1	66.2	67.4	69.1	70.6	71.8	69.2
day minimum	65.9	68.5	67.8	65.4	65.3	65.3	65.2	65.2	65.2	65.5	67.5	68.9	65.2

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	105	431	503	533	523	555	521	456	211	23	9	3,386
month average	10	58	310	424	445	476	498	463	348	125	11	7	3,174
month minimum	8	10	190	291	317	404	376	412	256	16	7	3	2,935
day Maximum	4.1	21.3	26.7	27.2	29.0	29.7	29.6	28.3	25.5	21.8	5.1	1.2	29.7
day average	0.3	2.1	10.0	14.1	14.4	15.9	16.1	14.9	11.6	4.0	0.4	0.2	8.7
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	-0.0	0.0	-0.0
Import													
month Maximum	375	139	61	20	21	17	12	10	26	117	308	420	1,289
month average	286	72	12	10	11	6	6	7	6	51	226	336	1,028
month minimum	175	10	0	4	2	1	0	1	0	1	137	253	848
day Maximum	22.8	17.3	16.8	7.7	6.1	4.5	3.6	4.5	8.6	15.8	18.2	19.4	22.8
day average	9.2	2.6	0.4	0.3	0.3	0.2	0.2	0.2	0.2	1.6	7.5	10.9	2.8
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
Peak grid fee													
month Maximum	51	51	51	51	51	51	51	51	51	51	51	51	517
month average	51	51	38	29	27	22	20	27	31	49	51	51	445
month minimum	51	51	0	18	15	17	6	13	0	12	51	51	365
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	426	190	112	71	71	62	58	61	77	168	359	471	1,682
month average	337	123	50	38	38	28	26	33	36	100	277	387	1,473
month minimum	226	61	0	22	17	18	7	15	0	13	187	304	1,301
day Maximum	22.8	17.3	16.8	7.7	6.1	4.5	3.6	4.5	8.6	15.8	18.2	19.4	22.8
day average	9.2	2.6	0.4	0.3	0.3	0.2	0.2	0.2	0.2	1.6	7.5	10.9	2.8
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
Balance													
month Maximum	-216	38	382	472	500	504	530	498	445	198	-177	-297	2,017
month average	-327	-65	260	385	407	448	472	429	312	26	-266	-380	1,701
month minimum	-415	-162	122	227	257	349	352	354	179	-147	-347	-461	1,323
day Maximum	4.1	21.3	26.7	27.2	29.0	29.7	29.6	28.3	25.5	21.8	5.1	0.0	29.7
day average	-8.9	-0.5	9.6	13.8	14.0	15.7	15.9	14.7	11.4	2.4	-7.2	-10.6	5.9
day minimum	-22.8	-17.3	-16.8	-1.4	-6.1	-1.7	0.9	-2.1	-8.6	-15.6	-17.8	-19.4	-22.8

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	178	724	3,121	4,926	5,072	5,703	5,775	4,726	3,499	1,327	220	166	30,154
month average	147	466	2,065	3,712	4,125	4,699	4,820	4,112	2,591	857	163	110	27,867
month minimum	115	159	1,217	2,449	2,683	3,526	3,051	3,378	1,740	271	119	52	25,402
day Maximum	30.5	103.8	210.6	270.4	282.4	283.8	284.5	273.3	235.8	106.4	39.2	18.0	284.5
day average	4.7	16.5	66.6	123.7	133.1	156.6	155.5	132.6	86.4	27.7	5.4	3.5	76.3
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0	0.0	-0.0	0.0	-0.0
Export during high price hours													
month Maximum	24	422	1,643	1,757	1,694	1,664	1,685	1,955	1,818	897	63	0	12,059
month average	1	195	1,256	1,541	1,528	1,494	1,598	1,623	1,447	523	5	0	11,210
month minimum	0	0	790	1,291	1,216	1,321	1,367	1,441	920	14	0	0	10,043
day Maximum	13.0	92.2	95.4	92.1	96.3	94.1	92.4	95.7	94.1	94.1	22.0	0.0	96.3
day average	0.0	6.9	40.5	51.4	49.3	49.8	51.5	52.4	48.2	16.9	0.2	0.0	30.7
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0
Export during medium price hours													
month Maximum	92	228	1,354	2,861	2,850	3,501	3,613	2,756	1,583	340	71	48	15,555
month average	65	164	652	1,833	2,178	2,714	2,790	2,158	1,011	185	51	35	13,836
month minimum	49	61	217	930	1,218	1,769	1,344	1,515	473	89	33	13	12,255
day Maximum	12.9	25.1	145.7	185.6	186.0	186.1	190.9	187.0	166.3	22.0	9.9	7.9	190.9
day average	2.1	5.8	21.0	61.1	70.2	90.5	90.0	69.6	33.7	6.0	1.7	1.1	37.9
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	117	179	224	504	632	773	605	495	218	221	139	120	3,186
month average	81	107	157	338	419	491	432	331	133	150	108	75	2,821
month minimum	56	49	70	207	249	283	202	202	77	77	61	38	2,456
day Maximum	26.1	53.7	67.9	68.6	78.0	76.6	72.6	69.9	68.8	68.0	31.4	14.9	78.0
day average	2.6	3.8	5.1	11.3	13.5	16.4	13.9	10.7	4.4	4.8	3.6	2.4	7.7
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Heat pump
Austria - Inning 48.182, 15.417

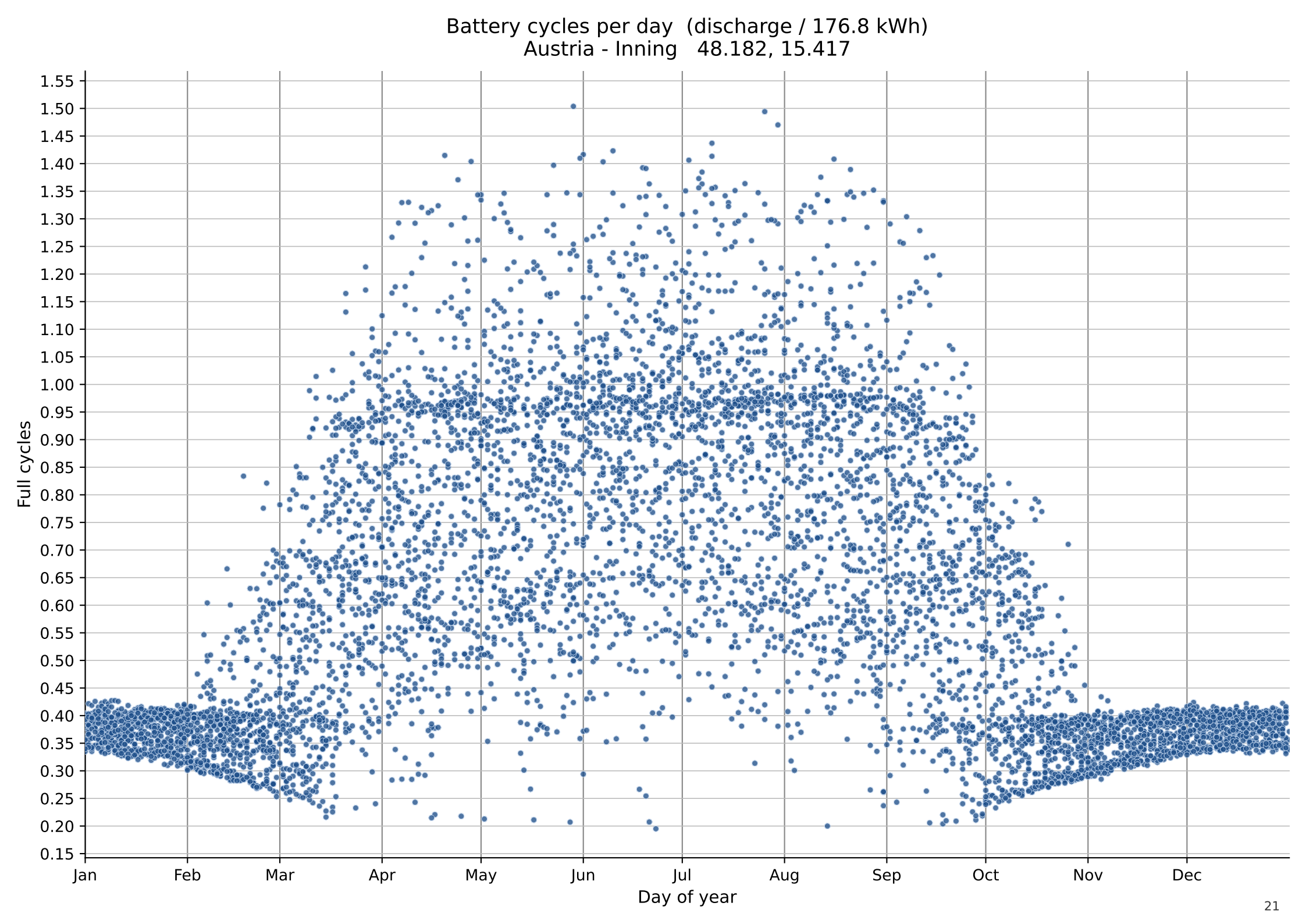
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	241	220	188	133	96	52	41	46	82	133	176	234	1,475
month average	198	173	159	108	75	37	24	26	59	106	147	187	1,297
month minimum	162	145	131	72	49	21	14	10	32	76	128	158	1,181
day Maximum	10.5	10.0	9.4	8.3	7.3	7.3	5.0	7.0	6.8	6.5	8.0	9.7	10.5
day average	6.4	6.1	5.1	3.6	2.4	1.2	0.8	0.9	2.0	3.4	4.9	6.0	3.6
day minimum	0.0	2.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.2	0.0
Cooling													
month Maximum	0	0	0	0	0	0	2	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	0.0	1.9	1.3	0.0	0.0	0.0	0.0	1.9
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	59	55	58	52	51	45	43	44	45	54	53	55	601
month average	59	53	58	50	49	43	41	41	43	51	52	55	595
month minimum	58	52	57	46	46	41	39	40	40	49	51	55	583
day Maximum	1.9	1.9	1.9	1.8	1.8	1.8	1.6	1.6	1.7	1.8	1.8	1.8	1.9
day average	1.9	1.9	1.9	1.7	1.6	1.4	1.3	1.3	1.4	1.7	1.7	1.8	1.6
day minimum	1.8	1.7	1.6	1.3	1.3	1.3	1.2	1.2	1.2	1.4	1.5	1.7	1.2
Direct electric													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0.0	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

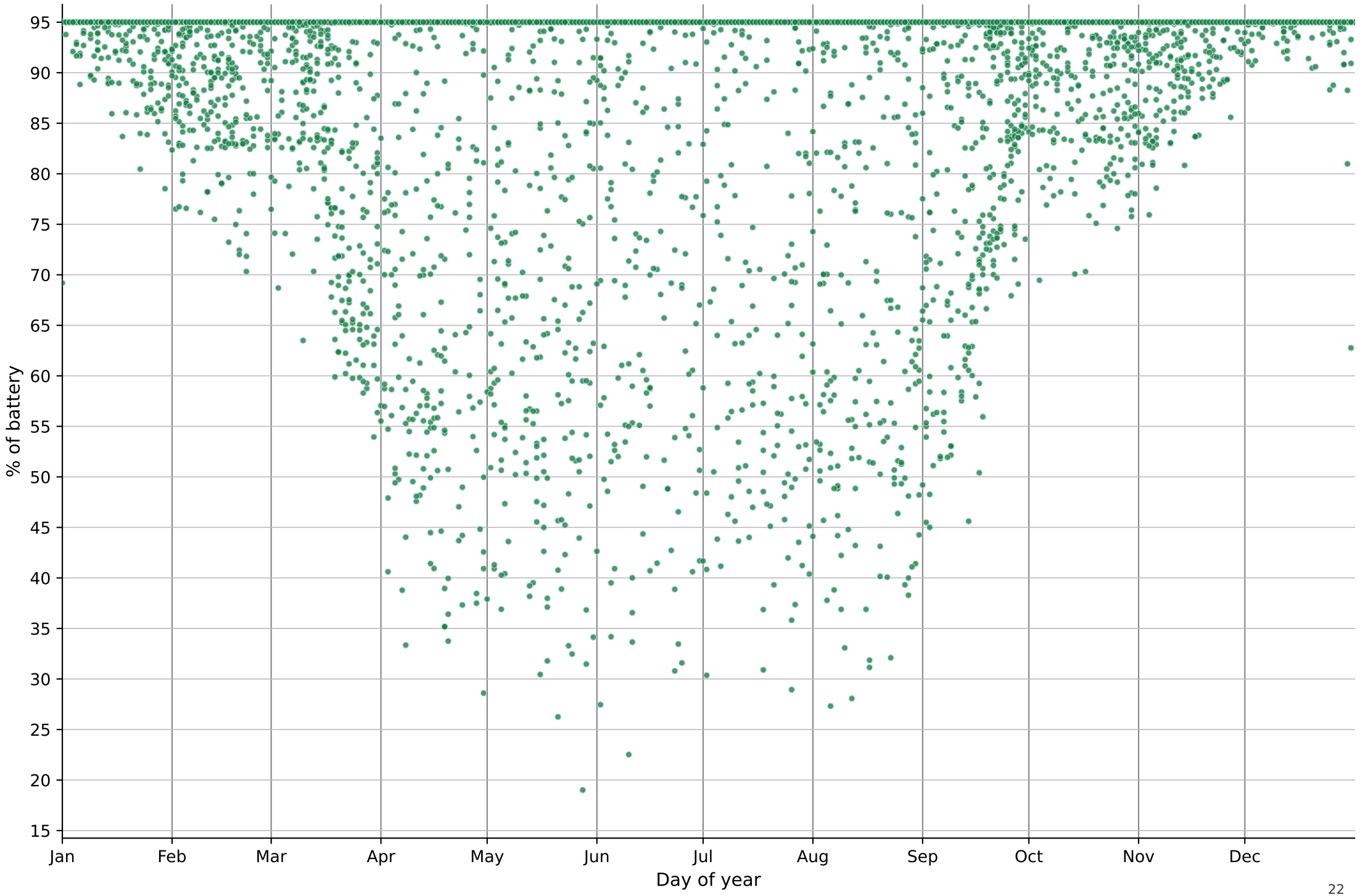
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

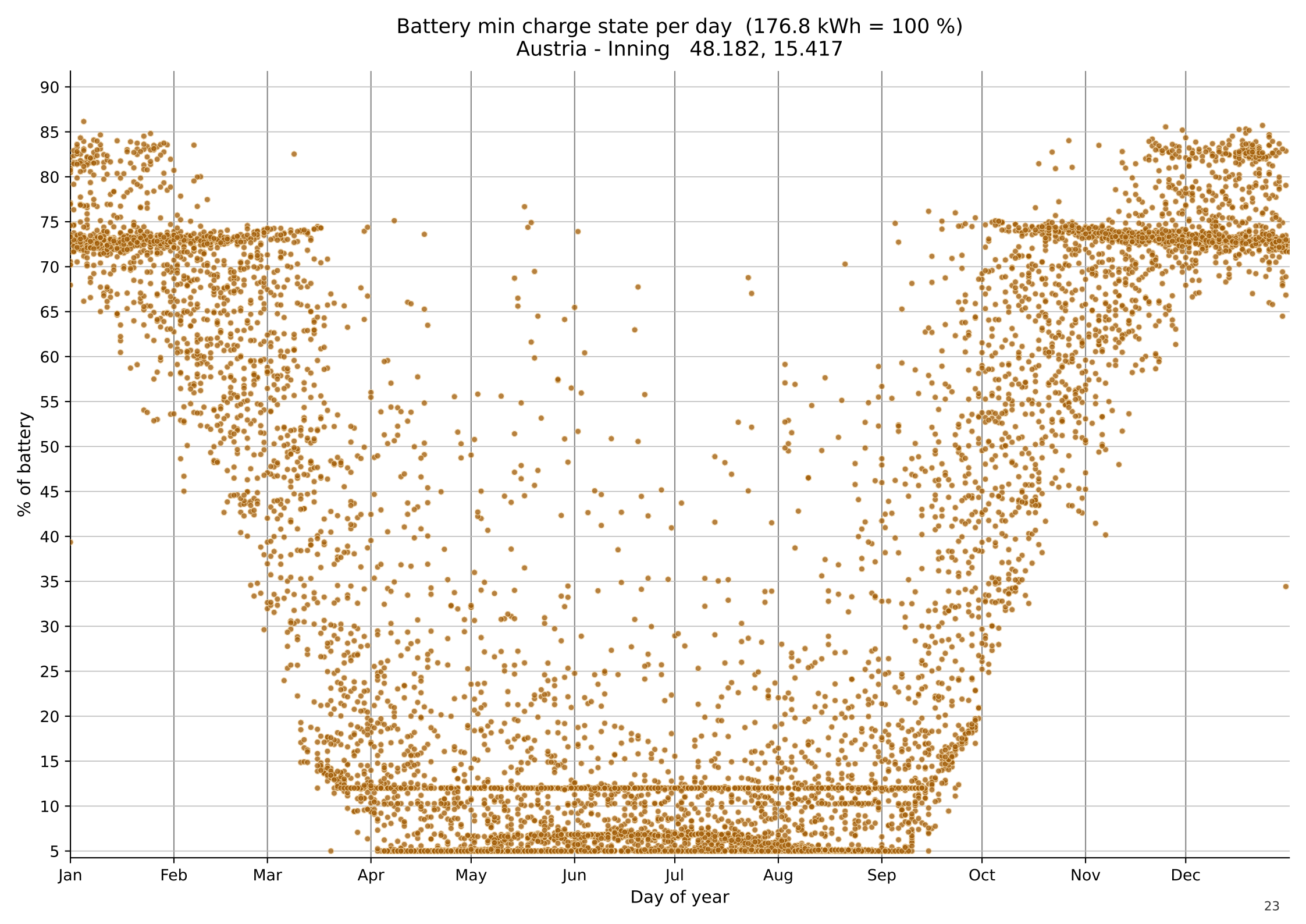
Battery
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	0	11	77	781	1,077	1,353	1,132	602	188	20	1	0	4,294
month average	0	1	35	467	777	902	824	448	98	7	0	0	3,559
month minimum	0	0	4	234	376	483	619	245	14	0	0	0	3,024
day Maximum	0.0	8.9	39.7	128.9	107.3	167.3	100.2	122.1	92.3	15.6	1.2	0.0	167.3
day average	0.0	0.0	1.1	15.6	25.1	30.1	26.6	14.5	3.3	0.2	0.0	0.0	9.7
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Full cycles													
month Maximum	12	12	22	27	28	29	30	27	24	15	11	12	234
month average	12	11	18	23	25	27	27	25	20	13	11	12	224
month minimum	11	10	15	18	20	23	22	23	16	11	10	11	216
day Maximum	0.4	0.8	1.2	1.4	1.5	1.4	1.5	1.4	1.3	0.8	0.4	0.4	1.5
day average	0.4	0.4	0.6	0.8	0.8	0.9	0.9	0.8	0.7	0.4	0.4	0.4	0.6
day minimum	0.3	0.3	0.2	0.2	0.2	0.2	0.3	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	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	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2
day average	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	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
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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
day average	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
day minimum	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0

Wasted = PV left when the export price is negative and the battery is full. Full cycles = discharge kWh / 176.8 kWh. Battery export only into hours whose export price is above 0, highest price first. At 0 cent on


Battery cycles per day (discharge / 176.8 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 (176.8 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
20
15
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery min charge state per day (176.8 kWh = 100 %)
Austria - Inning 48.182, 15.417
% of battery
90
85
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