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
share central strucure west part	8	90	20,460	—	front	—	yes
Total counted			41,390				

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 2016-05-15 13:10 local (12:10 UTC) 26,396 W 0.638 W/Wp of 41,390 Wp.
Database gaps: 10 days with 0 yield while the sun reached the horizon at noon. 2008-01-23, 2008-03-01, 2008-03-06, 2008-05-17, 2008-05-18, 2009-04-18, 2009-04-19, 2009-08-15, 2009-08-16, 2016-10-16. Yield charts skip them. The simulation uses the lowest-yield day of that month.
Sell when the export price is above 0. At 0 cent export PV yield only, not the battery. Do not sell when the earning is negative. At 15:00 import/export scheduling.

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

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

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	24.0 °C / 26.0 °C / 10.0 °C
	Curve / flow min / max	1.0 / 25.0 °C / 55.0 °C
	Thermal mass of the house	25.0 kWh/K
	Household only	4.0 kWh/day
DHW	Litres at 40 °C / tank	120 L tank 62.0 °C 8–18 h
	Water out of the pipe Q1–Q4	8 °C 10 °C 12 °C 10 °C
Heat pump	Source	air and ground
	COP −10/0/10 @ 35 °C	2.4 3.4 4.5
	COP −10/0/10 @ 50 °C	1.9 2.6 3.3
	kW −10/0/10 @ 35 °C	4.0 5.0 6.0
	kW −10/0/10 @ 50 °C	3.5 4.5 5.0
Battery	kWh / C-rate / SOC min–max–start	45.0 kWh C 0.5 5 / 95 / 50 %
	Nameplate	—
	Charge / discharge η	95 % / 90 %
Grid	Inverter / grid connection	12.0 kW / 12.0 kW
	Max export	12.0 kW
	Import cap Jan–Jun kW	Jan 7 Feb 6 Mar 5 Apr 3 May 3 Jun 3
	Import cap Jul–Dec kW	Jul 3 Aug 3 Sep 3 Oct 3 Nov 6 Dec 7
Cars	Lunch DC / night AC	0.0 kWh @ 30.0 kW night 6.0 kWh @ 4.0 kW

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

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

PV	2016-05-15 12:10	2009-06-13 11:10	2020-05-24 11:10	2013-05-13 11:10	2020-05-24 12:10	2005-04-22 11:10	2012-05-18 11:10	2009-06-13 12:10	2009-06-03 11:10	2020-05-27 11:10
Garage roof	8,180	8,369	8,302	8,243	8,095	8,152	8,219	8,121	8,251	8,209
Garage side wall south	1,701	1,567	1,691	1,824	1,570	2,180	1,758	1,445	1,595	1,656
Garage side wall north	138	166	161	163	139	115	166	149	174	144
Garage door side	245	87	91	93	236	80	93	223	91	88
Garage back side	101	121	117	119	101	84	121	109	127	105
share central strucure west part	16,031	15,819	15,710	15,596	15,850	15,375	15,554	15,854	15,608	15,536
Watt at record	26,396	26,130	26,072	26,039	25,990	25,986	25,911	25,901	25,845	25,738
Percent of installed peak	63.8	63.1	63.0	62.9	62.8	62.8	62.6	62.6	62.4	62.2

Values are watts at that hour. Date and time are UTC. Record 26,396 W (63.8 % of 41,390 Wp).

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

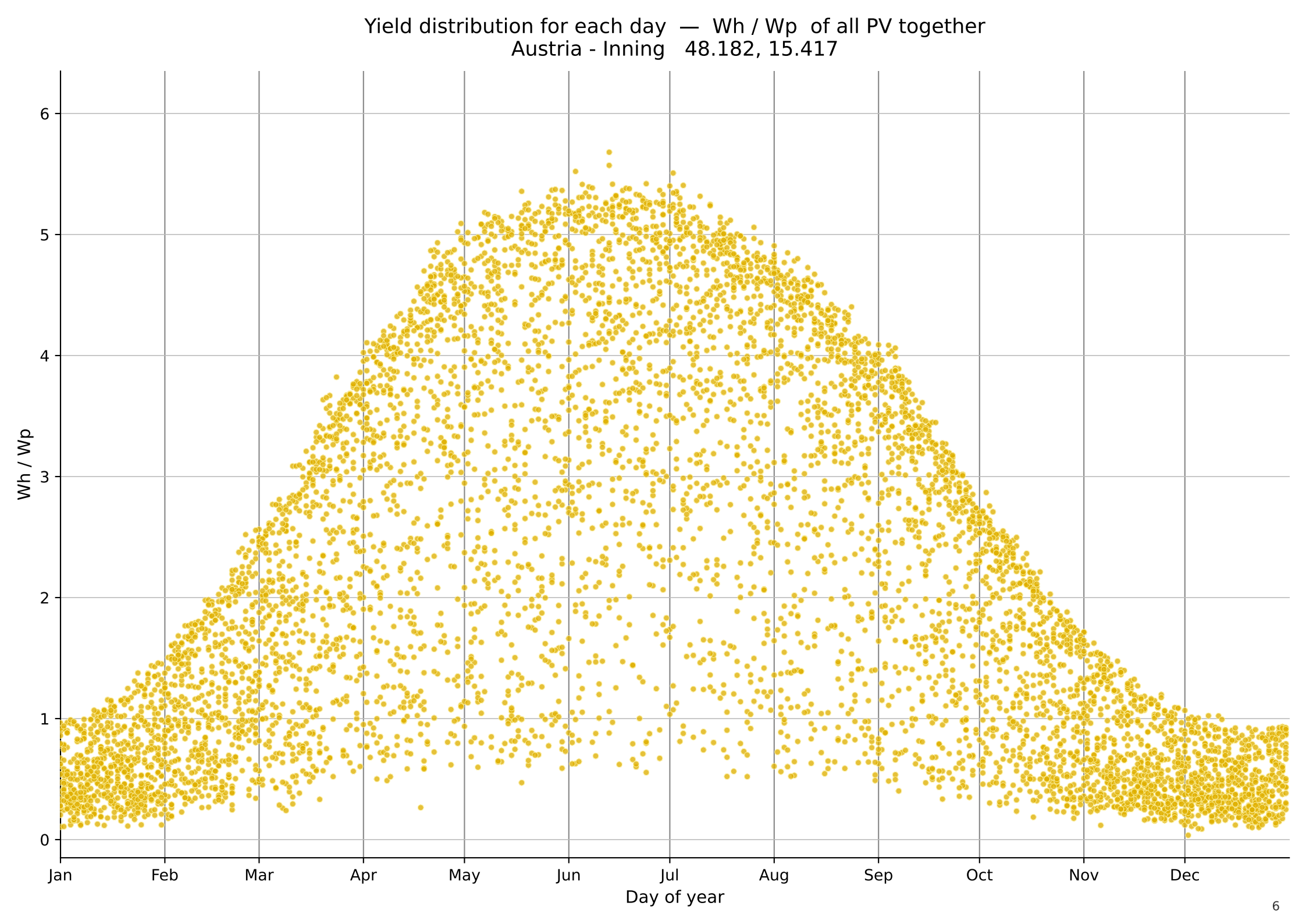
Of the record	Hours	Watts
98 %	8	25,868 W
96 %	36	25,341 W
94 %	109	24,813 W
92 %	343	24,285 W
90 %	790	23,757 W

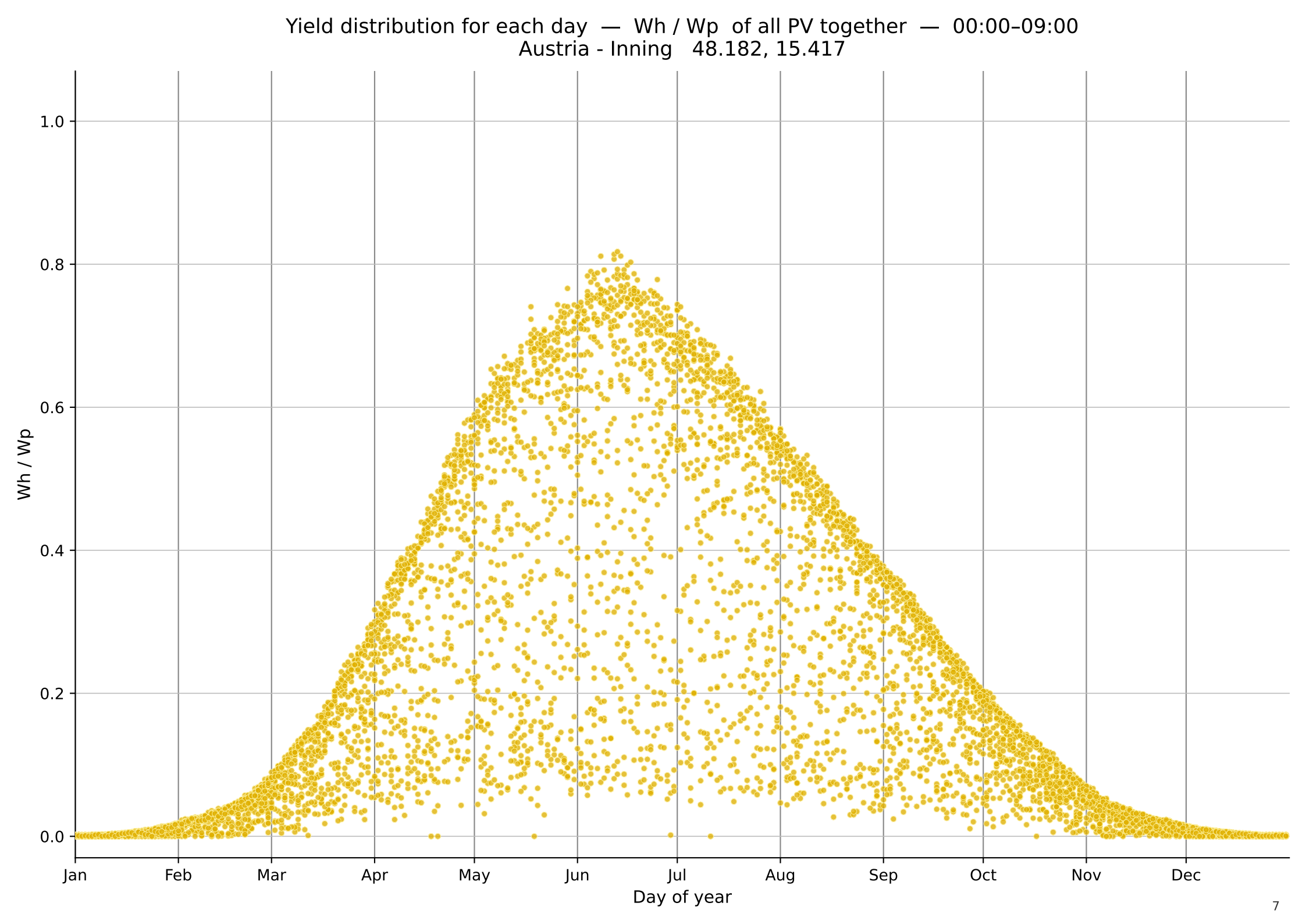
Record hour = 26,396 W combined.

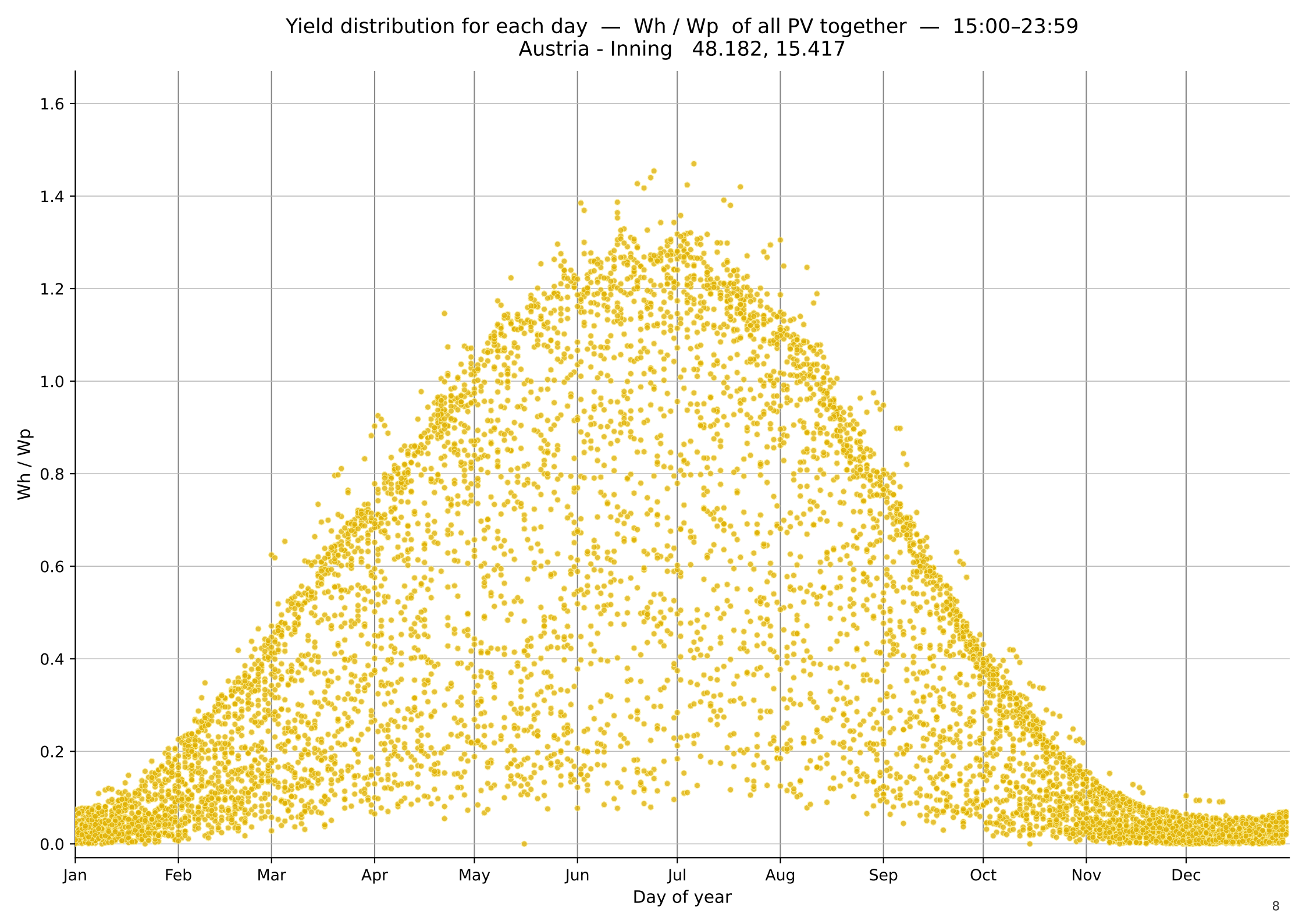
Records of each photovoltaic field
Austria - Inning 48.182, 15.417

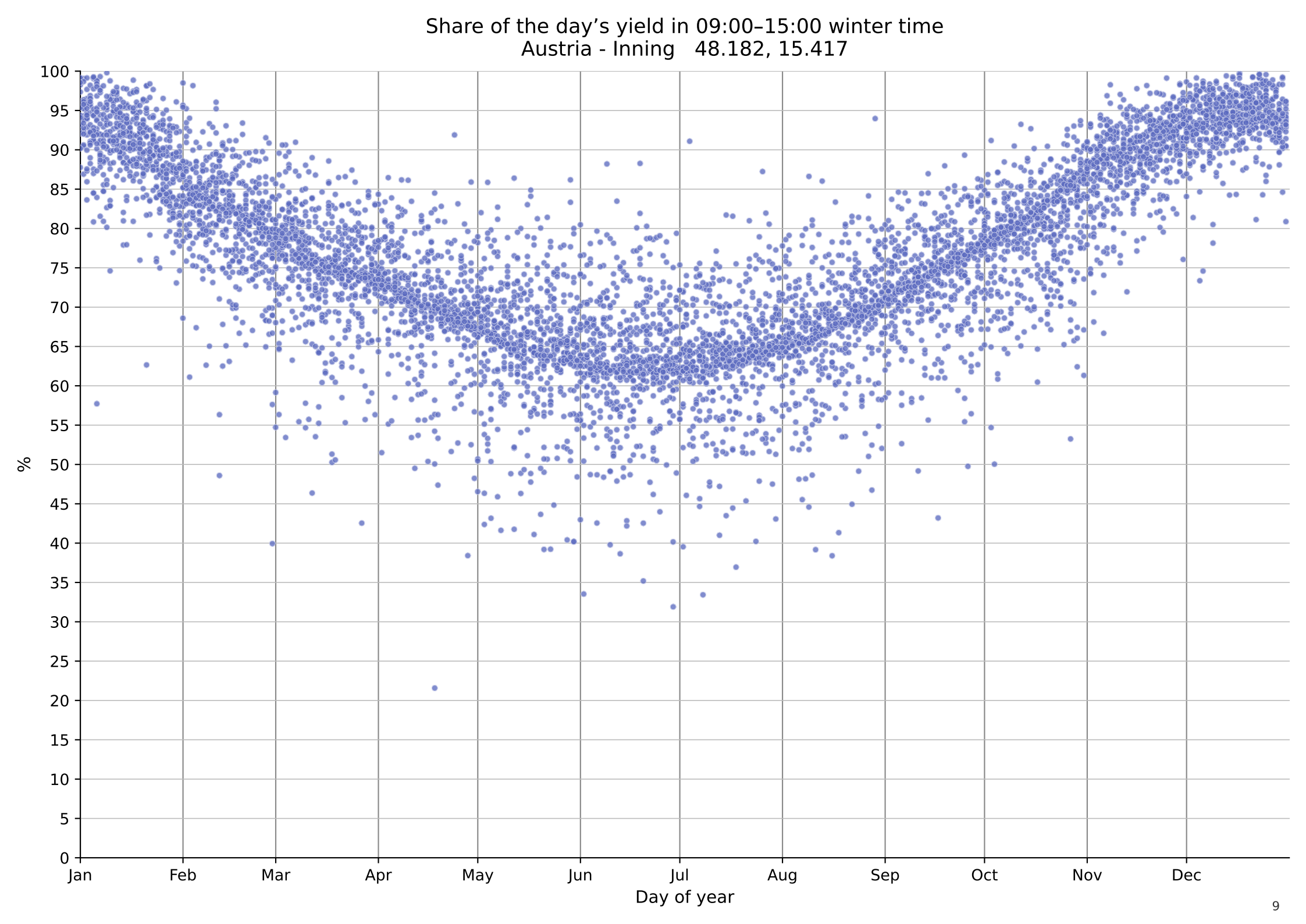
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Garage roof	2009-06-13 11:10	8,369	77.9	8	33	112	320	671
Garage side wall south	2009-03-22 11:10	2,638	75.9	8	17	26	45	75
Garage side wall north	2023-06-13 05:10	611	17.6	1	8	25	50	108
Garage door side	2005-05-08 14:10	473	67.6	1	3	5	16	49
Garage back side	2009-06-13 07:10	1,695	66.7	3	8	16	44	84
share central strucure west part	2016-05-15 12:10	16,031	78.4	4	21	59	189	471

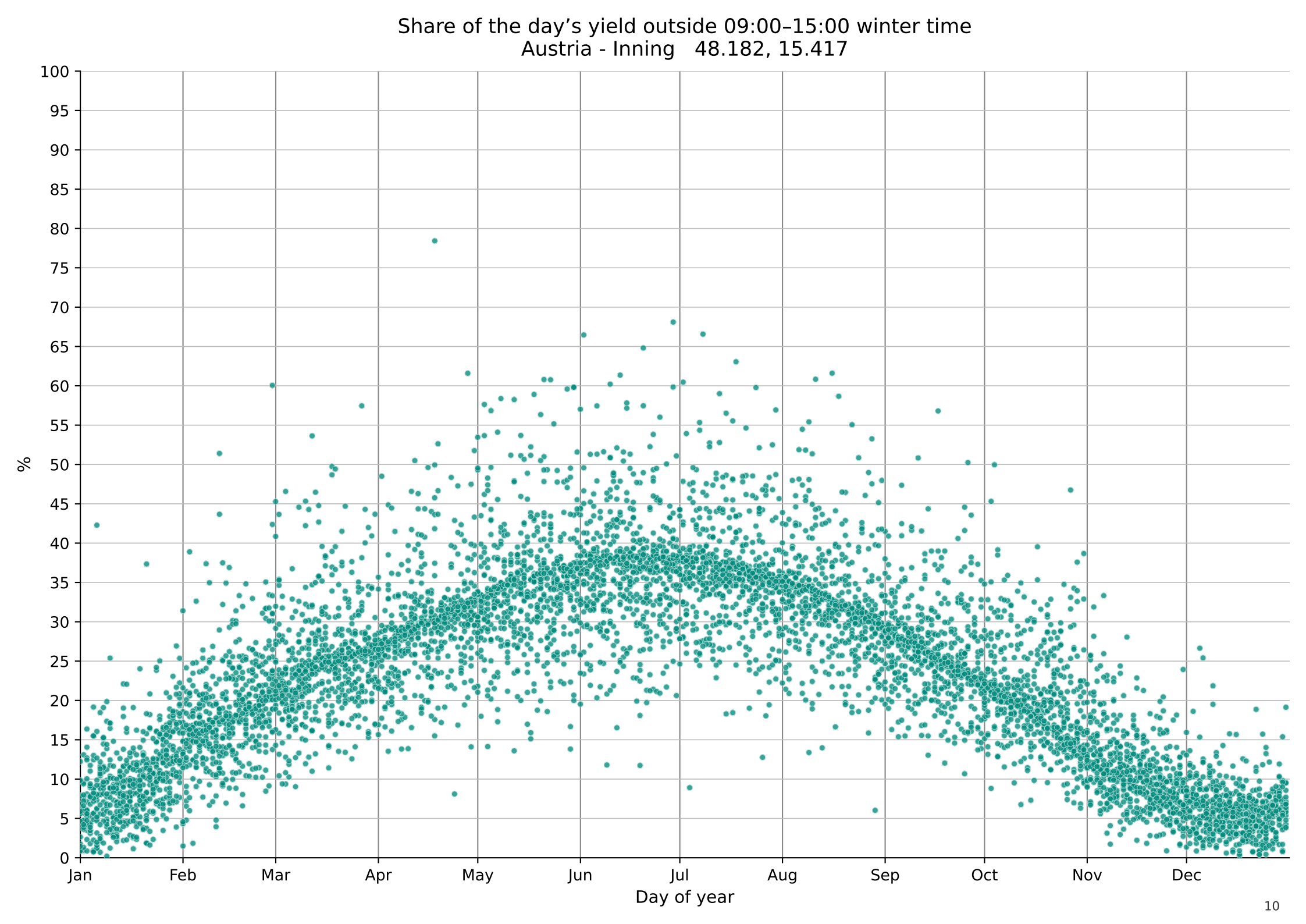
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

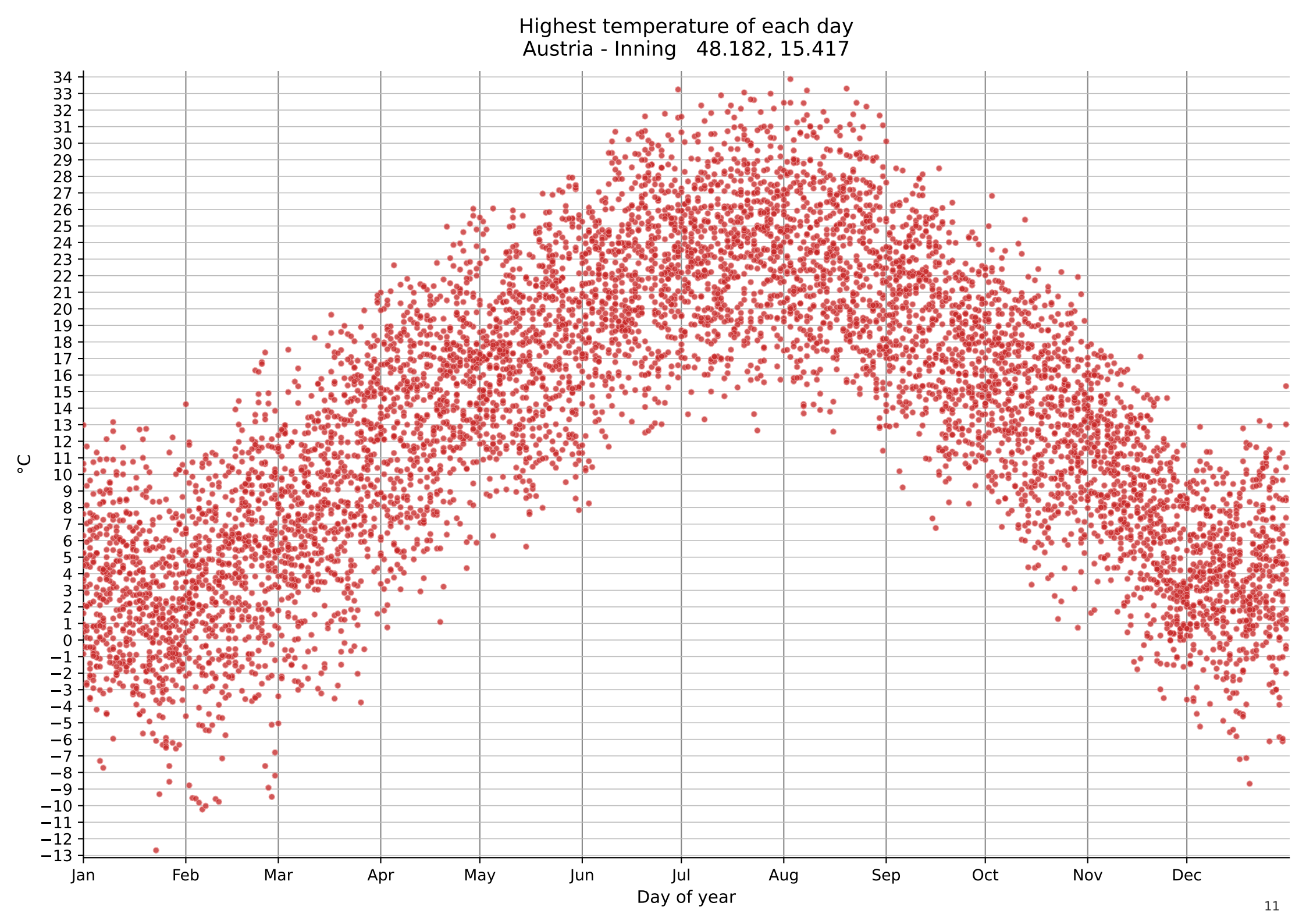

Yield distribution for each day — Wh / Wp of all PV together
Austria - Inning 48.182, 15.417
Wh / Wp
0
1
2
3
4
5
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

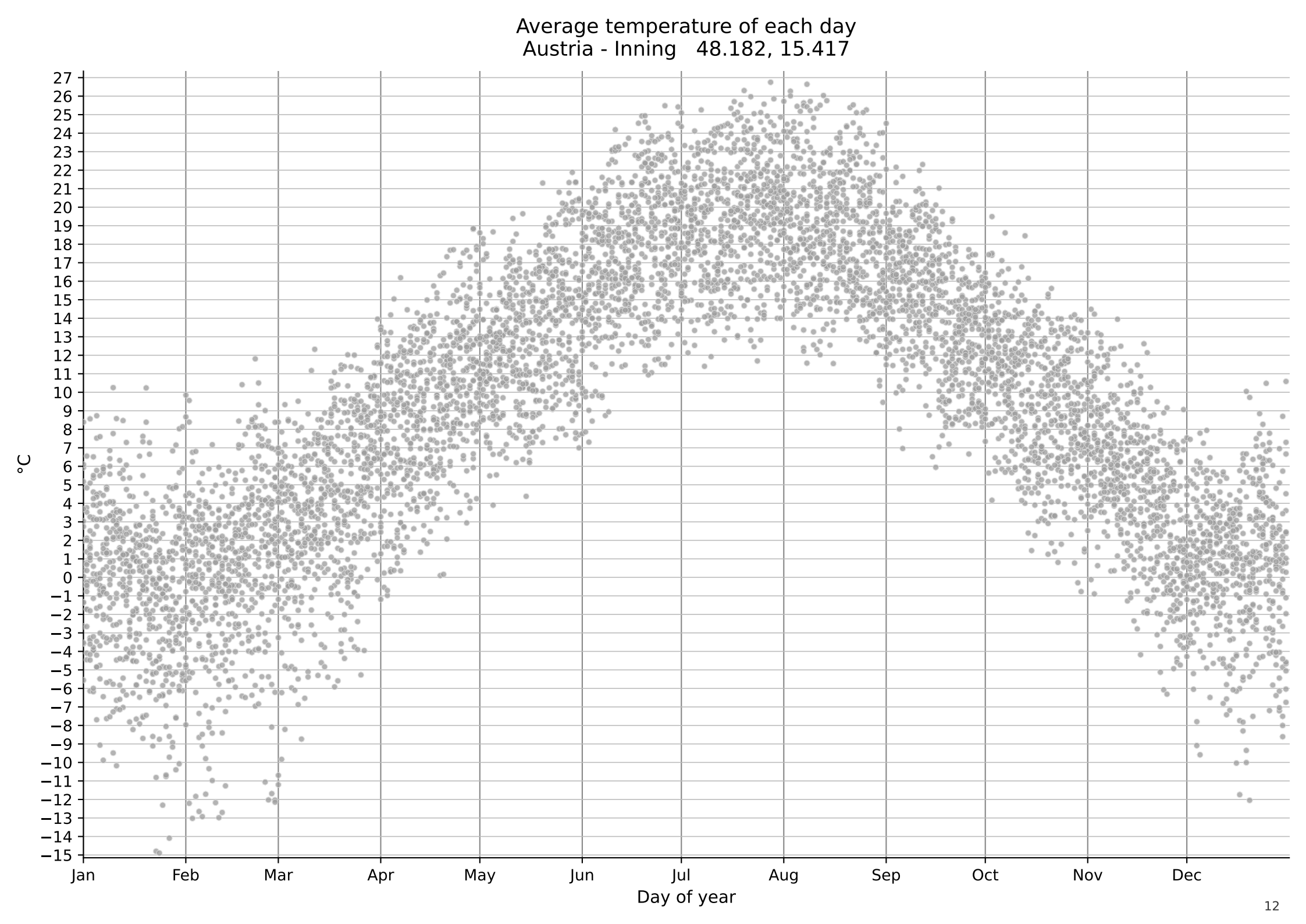

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
Austria - Inning 48.182, 15.417
1.0
0.8
0.6
0.4
0.2
0.0
Wh / Wp
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

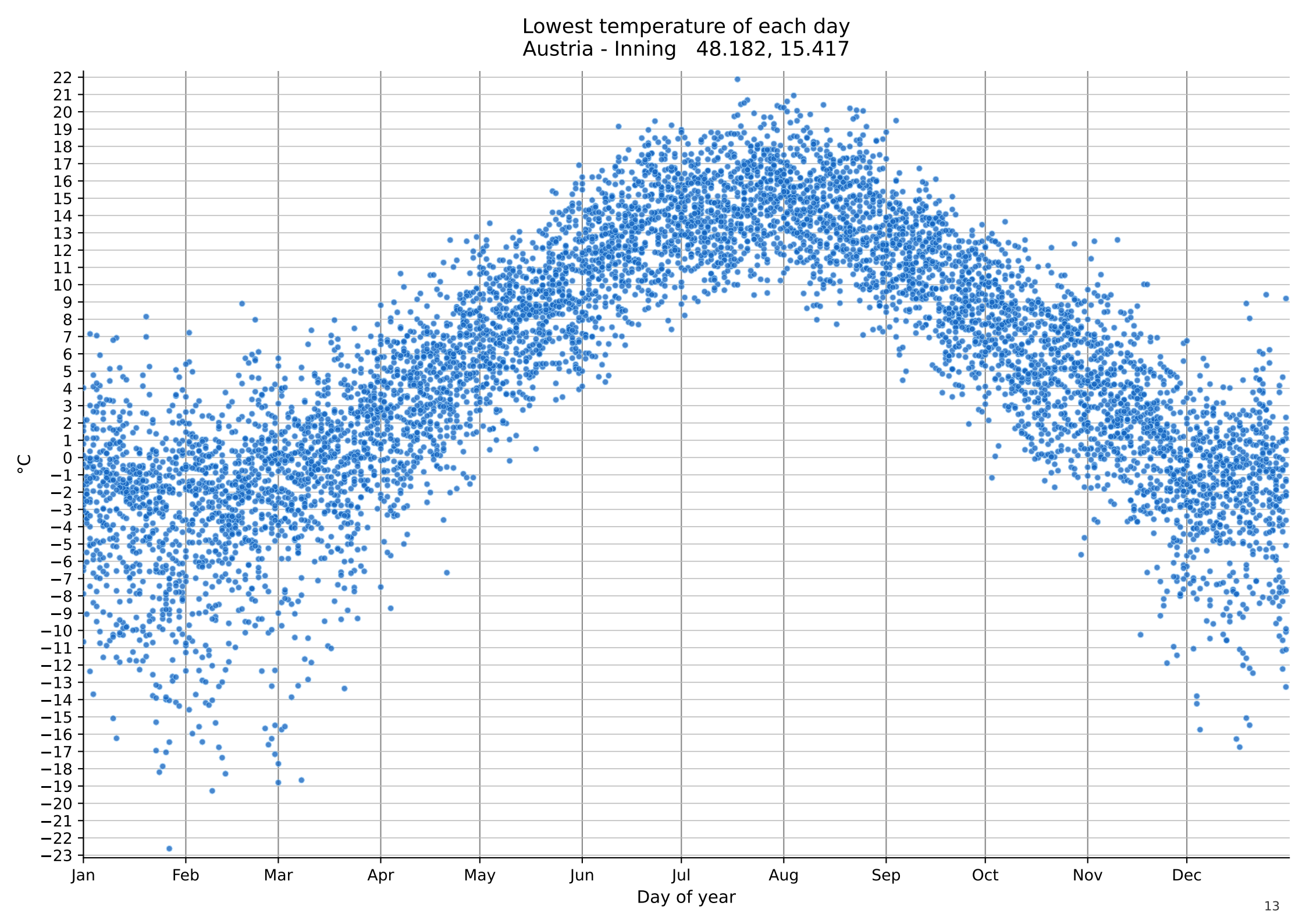

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
Austria - Inning 48.182, 15.417
Wh / Wp
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

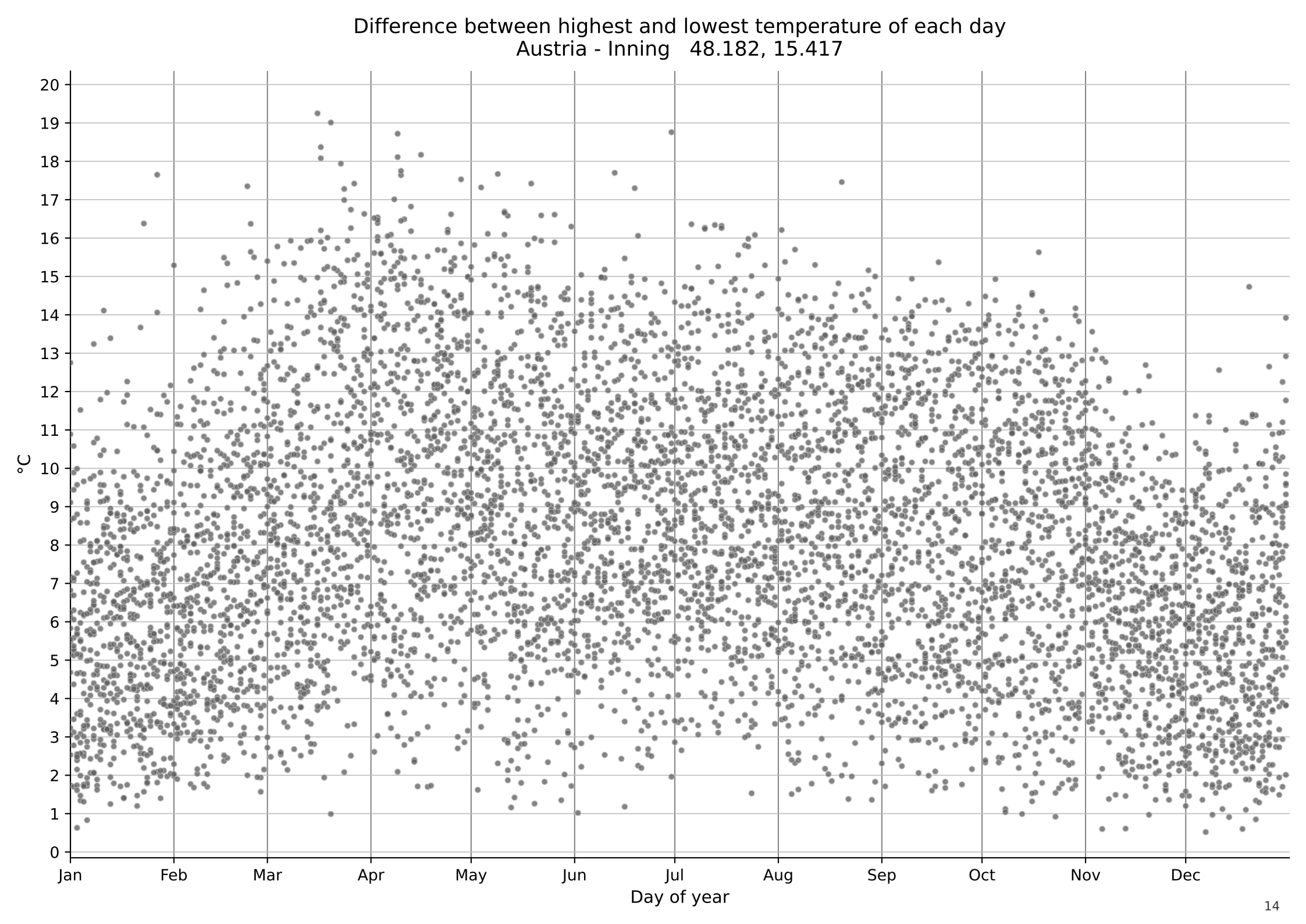

Share of the day’s yield in 09:00–15:00 winter time
Austria - Inning 48.182, 15.417
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


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

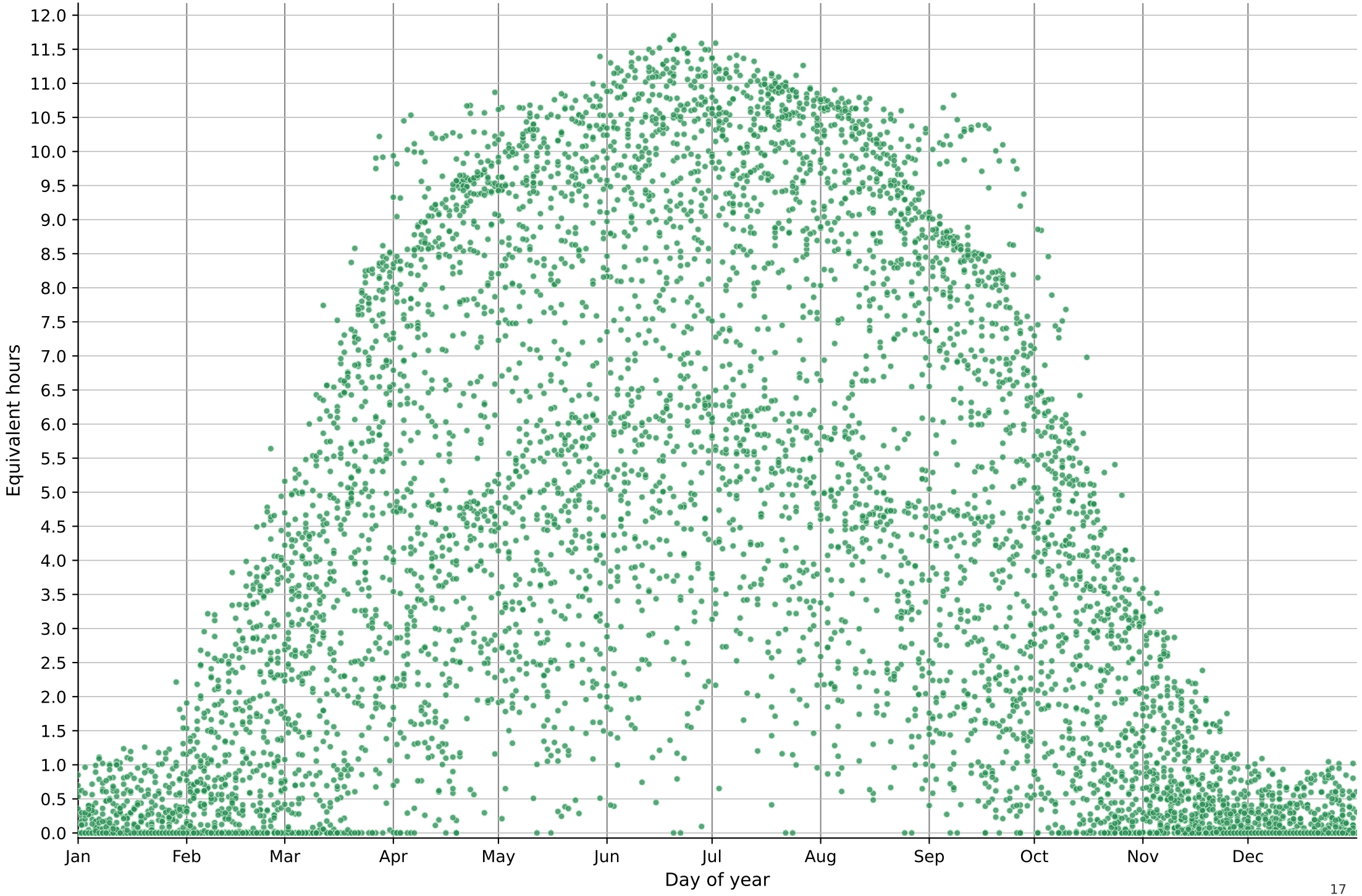
Month / year		Garage roof 1°/0° 10,740 Wp	Garage side wall south 90°/0° 3,475 Wp	Garage side wall north 90°/180° 3,475 Wp	Garage door side 90°/90° 700 Wp	Garage back side 90°/-90° 2,540 Wp	share central strucure west p 8°/90° 20,460 Wp	All together
January	Maximum	32.84	7.26	7.26	8.02	9.10	30.45	25.04
	average	23.62	5.26	5.26	5.93	6.73	22.94	18.86
	minimum	17.95	4.09	4.09	4.60	5.29	18.14	14.93
February	Maximum	51.56	9.78	9.78	11.74	11.07	50.11	40.23
	average	41.81	8.23	8.23	10.69	9.69	40.99	33.27
	minimum	30.53	7.01	7.01	9.55	8.85	30.06	25.09
March	Maximum	103.67	40.02	16.17	20.69	20.57	101.42	82.89
	average	78.18	32.13	14.12	18.52	18.64	77.31	63.84
	minimum	60.95	23.96	12.21	16.23	16.11	59.76	50.13
April	Maximum	138.59	85.87	20.80	35.62	37.00	136.19	114.82
	average	110.61	68.54	18.98	32.57	33.18	109.36	92.70
	minimum	87.14	54.04	16.79	27.32	27.21	86.54	73.51
May	Maximum	144.59	75.98	26.21	49.99	44.67	143.40	120.28
	average	124.01	66.13	24.16	43.00	39.77	122.86	103.66
	minimum	91.48	48.94	22.30	34.42	32.92	90.92	77.32
June	Maximum	163.28	73.17	28.27	50.65	56.41	161.05	134.62
	average	135.71	62.75	26.40	45.09	48.98	134.75	113.08
	minimum	109.40	51.97	24.08	39.28	41.53	109.08	92.07
July	Maximum	158.88	77.19	27.83	49.85	48.86	157.25	131.38
	average	138.27	67.74	25.64	45.09	43.52	137.14	114.94
	minimum	102.76	50.02	23.06	36.77	33.52	102.08	85.97
August	Maximum	132.11	79.19	22.99	40.50	40.39	130.16	110.01
	average	117.75	70.61	19.99	36.73	36.67	116.75	98.74
	minimum	102.53	60.77	17.60	32.59	33.27	102.14	86.72
September	Maximum	104.79	59.73	16.42	24.07	22.91	103.90	86.53
	average	86.69	49.11	14.08	21.48	20.85	85.71	71.81
	minimum	69.95	40.19	11.80	18.89	18.24	69.01	58.26
October	Maximum	68.41	11.30	11.26	12.90	12.98	70.20	55.01
	average	54.55	9.83	9.80	11.44	11.69	54.25	43.53
	minimum	37.60	8.60	8.60	9.79	9.93	37.26	30.39
November	Maximum	33.54	6.47	6.47	7.53	7.71	32.85	26.48
	average	26.62	5.75	5.75	6.77	6.86	26.15	21.33
	minimum	20.26	5.33	5.33	6.04	6.01	20.05	16.55
December	Maximum	25.37	5.19	5.19	5.84	6.52	24.35	19.70
	average	19.18	4.19	4.19	4.82	5.42	18.63	15.30
	minimum	15.84	2.90	2.90	3.46	3.86	15.59	12.60
All years	Maximum	1,005.5	478.1	182.9	291.4	295.1	990.1	828.2
	average	957.0	450.3	176.6	282.1	282.0	946.8	791.1
	minimum	908.1	423.9	171.8	274.0	269.5	899.1	752.7

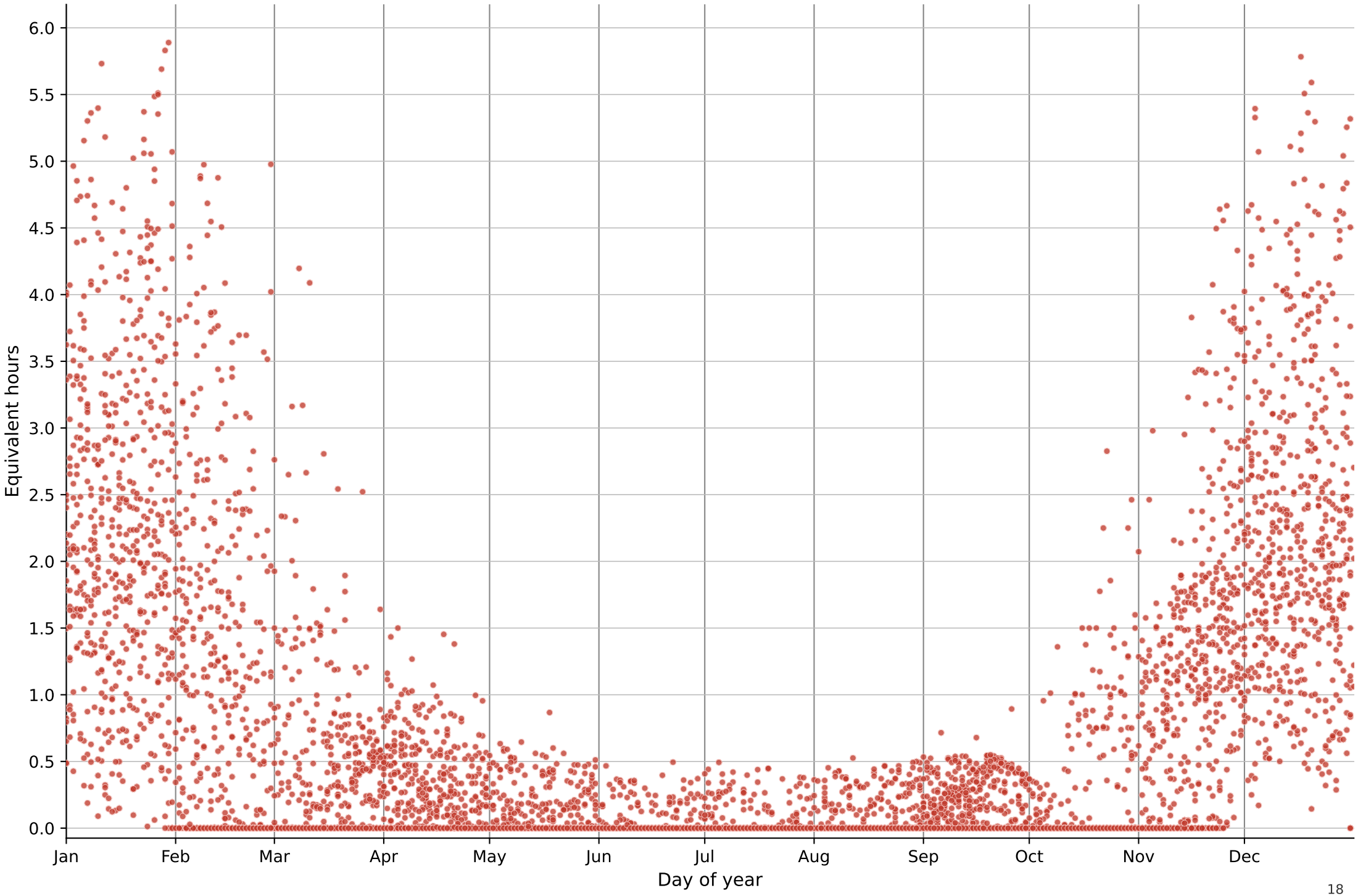
Highest combined yield hour: 2016-05-15 12:10 UTC 26,396.4 W (0.638 W/Wp) of 41,390 Wp installed. Use this hour to size battery charge power.

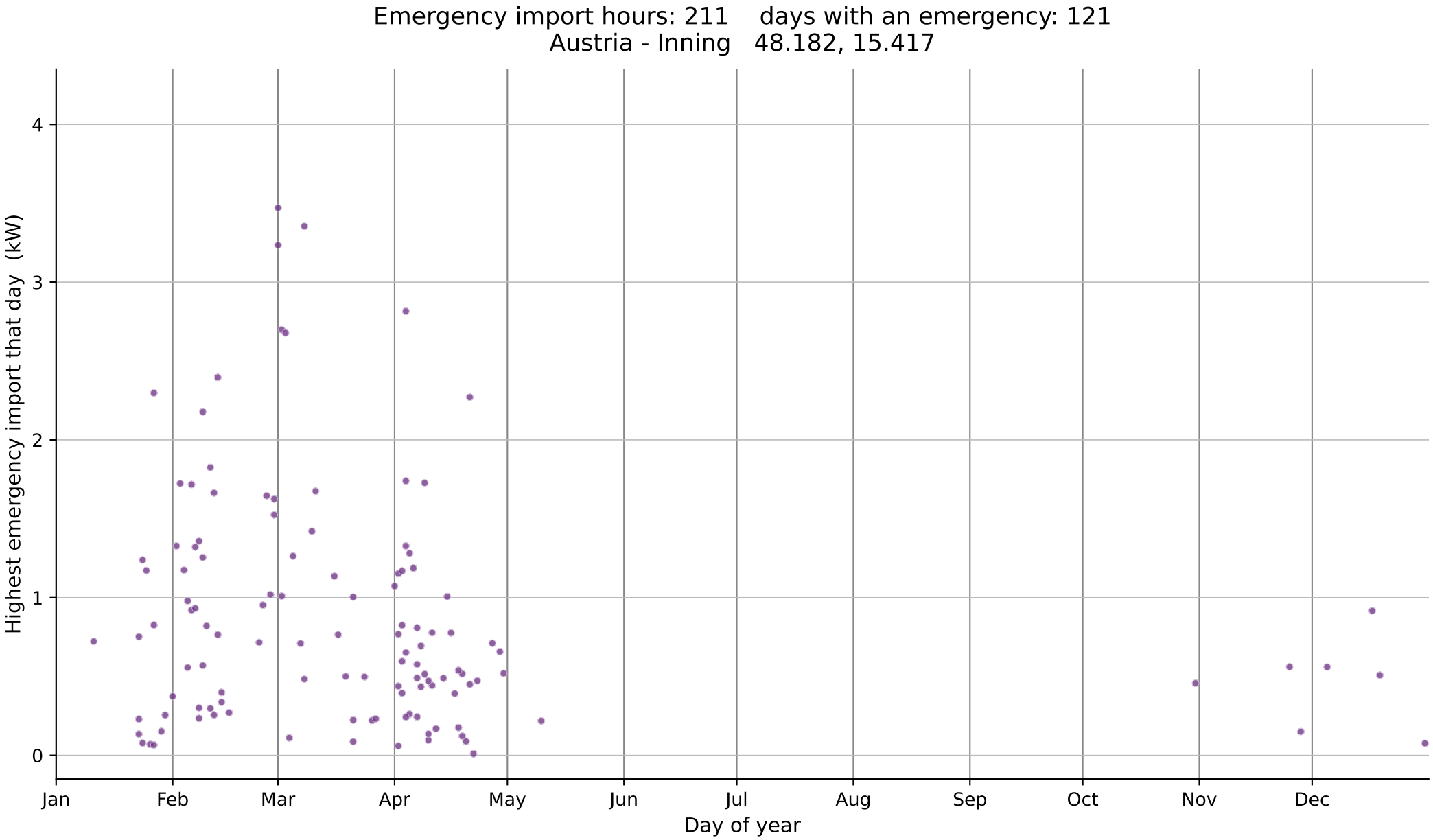
Monthly and yearly total yield (kWh)
Austria - Inning 48.182, 15.417

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	share central strucure west p 8°/90° 20,460 Wp	All together
January	Maximum	352.68	25.23	25.23	5.62	23.10	622.93	1,036.58
	average	253.64	18.29	18.29	4.15	17.08	469.30	780.75
	minimum	192.81	14.22	14.22	3.22	13.43	371.18	618.06
February	Maximum	553.71	34.00	34.00	8.22	28.11	1,025.23	1,665.08
	average	449.02	28.61	28.61	7.49	24.62	838.63	1,376.98
	minimum	327.93	24.35	24.35	6.69	22.49	615.02	1,038.51
March	Maximum	1,113.39	139.08	56.20	14.49	52.24	2,075.08	3,430.84
	average	839.69	111.66	49.08	12.97	47.33	1,581.71	2,642.43
	minimum	654.63	83.28	42.43	11.36	40.91	1,222.68	2,075.07
April	Maximum	1,488.40	298.38	72.30	24.93	93.97	2,786.37	4,752.54
	average	1,188.00	238.16	65.95	22.80	84.27	2,237.60	3,836.77
	minimum	935.83	187.80	58.33	19.13	69.12	1,770.60	3,042.56
May	Maximum	1,552.93	264.04	91.09	34.99	113.45	2,933.89	4,978.52
	average	1,331.89	229.81	83.95	30.10	101.03	2,513.77	4,290.55
	minimum	982.45	170.05	77.49	24.10	83.62	1,860.25	3,200.10
June	Maximum	1,753.66	254.25	98.25	35.46	143.28	3,295.06	5,572.08
	average	1,457.52	218.06	91.75	31.57	124.41	2,757.00	4,680.31
	minimum	1,174.96	180.59	83.68	27.49	105.48	2,231.86	3,810.78
July	Maximum	1,706.42	268.23	96.72	34.89	124.10	3,217.23	5,437.78
	average	1,485.03	235.41	89.09	31.56	110.53	2,805.94	4,757.57
	minimum	1,103.61	173.81	80.15	25.74	85.15	2,088.65	3,558.50
August	Maximum	1,418.83	275.17	79.90	28.35	102.58	2,663.17	4,553.38
	average	1,264.60	245.38	69.46	25.71	93.15	2,388.66	4,086.96
	minimum	1,101.14	211.18	61.15	22.81	84.50	2,089.81	3,589.20
September	Maximum	1,125.43	207.56	57.06	16.85	58.18	2,125.85	3,581.37
	average	931.05	170.64	48.91	15.04	52.95	1,753.67	2,972.26
	minimum	751.23	139.67	41.01	13.22	46.33	1,411.88	2,411.51
October	Maximum	734.70	39.26	39.13	9.03	32.97	1,436.28	2,276.84
	average	585.91	34.17	34.07	8.01	29.69	1,109.95	1,801.80
	minimum	403.85	29.90	29.87	6.86	25.23	762.32	1,258.03
November	Maximum	360.26	22.49	22.49	5.27	19.59	672.20	1,096.21
	average	285.88	19.98	19.98	4.74	17.43	535.04	883.05
	minimum	217.55	18.50	18.50	4.22	15.26	410.24	685.03
December	Maximum	272.47	18.04	18.04	4.09	16.56	498.26	815.40
	average	206.03	14.54	14.54	3.38	13.77	381.16	633.42
	minimum	170.14	10.09	10.09	2.42	9.80	318.90	521.44
All years	Maximum	10,798.9	1,661.5	635.6	204.0	749.6	20,257.1	34,279.7
	average	10,278.3	1,564.7	613.7	197.5	716.3	19,372.4	32,742.9
	minimum	9,753.0	1,472.9	597.2	191.8	684.5	18,395.7	31,154.7

Highest combined yield hour: 2016-05-15 12:10 UTC 26,396.4 W (0.638 W/Wp) of 41,390 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
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
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 = 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	150	633	1,910	2,655	2,844	3,207	3,284	2,847	2,274	1,412	378	152	18,525
month average	73	378	1,370	2,075	2,387	2,715	2,830	2,507	1,807	1,020	241	58	17,460
month minimum	17	90	833	1,431	1,773	2,264	2,009	2,097	1,374	513	119	9	16,037
day Maximum	26.6	67.7	122.6	130.4	136.7	140.4	139.1	130.8	129.9	106.3	43.1	13.1	140.4
day average	2.3	13.4	44.2	69.2	77.0	90.5	91.3	80.9	60.2	32.9	8.0	1.9	47.8
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Import from grid													
month Maximum	1,246	784	378	126	43	19	21	37	76	166	718	1,306	4,092
month average	849	343	120	79	27	9	11	20	56	53	372	835	2,775
month minimum	522	57	33	49	8	3	3	5	21	0	200	399	2,036
day Maximum	70.7	59.7	50.4	18.0	10.4	5.9	5.9	6.3	10.7	33.9	56.0	69.4	70.7
day average	27.4	12.2	3.9	2.6	0.9	0.3	0.3	0.7	1.9	1.7	12.4	26.9	7.6
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
Total energy used for house													
month Maximum	1,952	1,758	1,349	861	660	508	484	512	590	818	1,195	1,856	11,384
month average	1,438	1,228	1,057	715	586	460	433	448	525	699	938	1,297	9,824
month minimum	1,060	895	830	563	504	400	401	398	448	590	796	988	8,927
day Maximum	96.0	89.1	82.4	48.1	29.8	24.4	20.5	22.1	25.8	46.7	66.9	85.6	96.0
day average	46.4	43.5	34.1	23.8	18.9	15.3	14.0	14.4	17.5	22.5	31.3	41.8	26.9
day minimum	21.4	19.9	18.3	11.5	11.0	11.0	10.9	10.9	10.9	13.9	17.3	21.0	10.9

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

Energy by price
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export													
month Maximum	8	43	182	270	297	319	342	302	249	143	23	8	1,958
month average	4	26	135	214	257	289	308	275	203	96	14	3	1,825
month minimum	1	7	72	140	194	244	255	242	147	30	7	1	1,681
day Maximum	1.8	7.9	16.9	15.8	15.8	16.9	16.8	16.1	16.8	16.1	4.8	0.8	16.9
day average	0.1	0.9	4.4	7.1	8.3	9.6	9.9	8.9	6.8	3.1	0.5	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	319	205	109	29	11	5	5	9	21	41	176	342	1,043
month average	211	88	34	20	7	2	3	5	15	13	88	203	688
month minimum	125	13	9	12	2	1	1	1	6	0	46	93	497
day Maximum	19.0	16.8	14.0	4.4	1.9	1.5	1.5	1.6	1.9	8.6	14.7	19.6	19.6
day average	6.8	3.1	1.1	0.7	0.2	0.1	0.1	0.2	0.5	0.4	2.9	6.6	1.9
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	59	53	54	37	21	13	11	11	19	22	42	50	340
month average	46	41	35	25	13	9	8	9	13	16	38	45	299
month minimum	44	38	18	17	10	7	5	7	10	0	38	44	271
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	368	259	163	60	29	15	15	18	36	63	218	392	1,368
month average	257	129	69	45	20	12	11	14	27	28	127	248	988
month minimum	170	51	28	30	13	8	5	9	18	0	84	137	797
day Maximum	19.0	16.8	14.0	4.4	1.9	1.5	1.5	1.6	1.9	8.6	14.7	19.6	19.6
day average	6.8	3.1	1.1	0.7	0.2	0.1	0.1	0.2	0.5	0.4	2.9	6.6	1.9
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	-162	-8	129	225	284	309	331	290	222	132	-63	-129	1,127
month average	-252	-104	66	169	237	277	297	261	175	67	-112	-245	837
month minimum	-367	-248	-35	86	177	230	241	228	116	-8	-208	-392	341
day Maximum	1.8	7.9	16.9	15.8	15.8	16.9	16.8	16.1	16.8	16.1	4.8	0.8	16.9
day average	-6.7	-2.2	3.3	6.5	8.1	9.5	9.9	8.7	6.3	2.7	-2.5	-6.5	3.1
day minimum	-19.0	-16.8	-13.5	-3.2	-1.1	0.0	0.0	0.0	-1.3	-8.6	-14.7	-19.6	-19.6

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	150	633	1,910	2,655	2,844	3,207	3,284	2,847	2,274	1,412	378	152	18,525
month average	73	378	1,370	2,075	2,387	2,715	2,830	2,507	1,807	1,020	241	58	17,460
month minimum	17	90	833	1,431	1,773	2,264	2,009	2,097	1,374	513	119	9	16,037
day Maximum	26.6	67.7	122.6	130.4	136.7	140.4	139.1	130.8	129.9	106.3	43.1	13.1	140.4
day average	2.3	13.4	44.2	69.2	77.0	90.5	91.3	80.9	60.2	32.9	8.0	1.9	47.8
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 high price hours													
month Maximum	0	60	511	1,018	1,193	1,244	1,340	1,196	982	412	29	0	7,428
month average	0	17	352	822	1,037	1,141	1,242	1,097	796	251	5	0	6,760
month minimum	0	0	134	590	805	975	1,089	1,011	522	23	0	0	6,235
day Maximum	0.0	25.4	55.5	61.0	59.8	63.6	64.0	63.9	64.8	58.7	13.6	0.0	64.8
day average	0.0	0.6	11.4	27.4	33.5	38.0	40.1	35.4	26.5	8.1	0.2	0.0	18.5
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
Export during medium price hours													
month Maximum	42	187	461	590	631	748	753	603	481	302	54	25	4,042
month average	22	131	333	464	498	604	614	523	373	175	33	8	3,780
month minimum	6	52	227	338	343	459	429	462	247	88	17	1	3,521
day Maximum	6.2	15.8	22.4	23.5	32.3	35.0	34.3	26.2	23.5	16.1	5.2	2.3	35.0
day average	0.7	4.7	10.7	15.5	16.1	20.1	19.8	16.9	12.4	5.6	1.1	0.2	10.3
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Export during low price hours													
month Maximum	130	406	997	1,057	1,081	1,242	1,212	1,123	830	754	322	140	7,462
month average	51	229	685	789	852	970	974	886	637	593	203	51	6,920
month minimum	10	33	416	466	625	748	491	612	499	402	95	4	6,230
day Maximum	20.9	43.9	57.3	58.7	69.9	65.4	63.3	58.7	57.7	59.3	37.8	12.1	69.9
day average	1.6	8.1	22.1	26.3	27.5	32.3	31.4	28.6	21.2	19.1	6.8	1.6	18.9
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

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

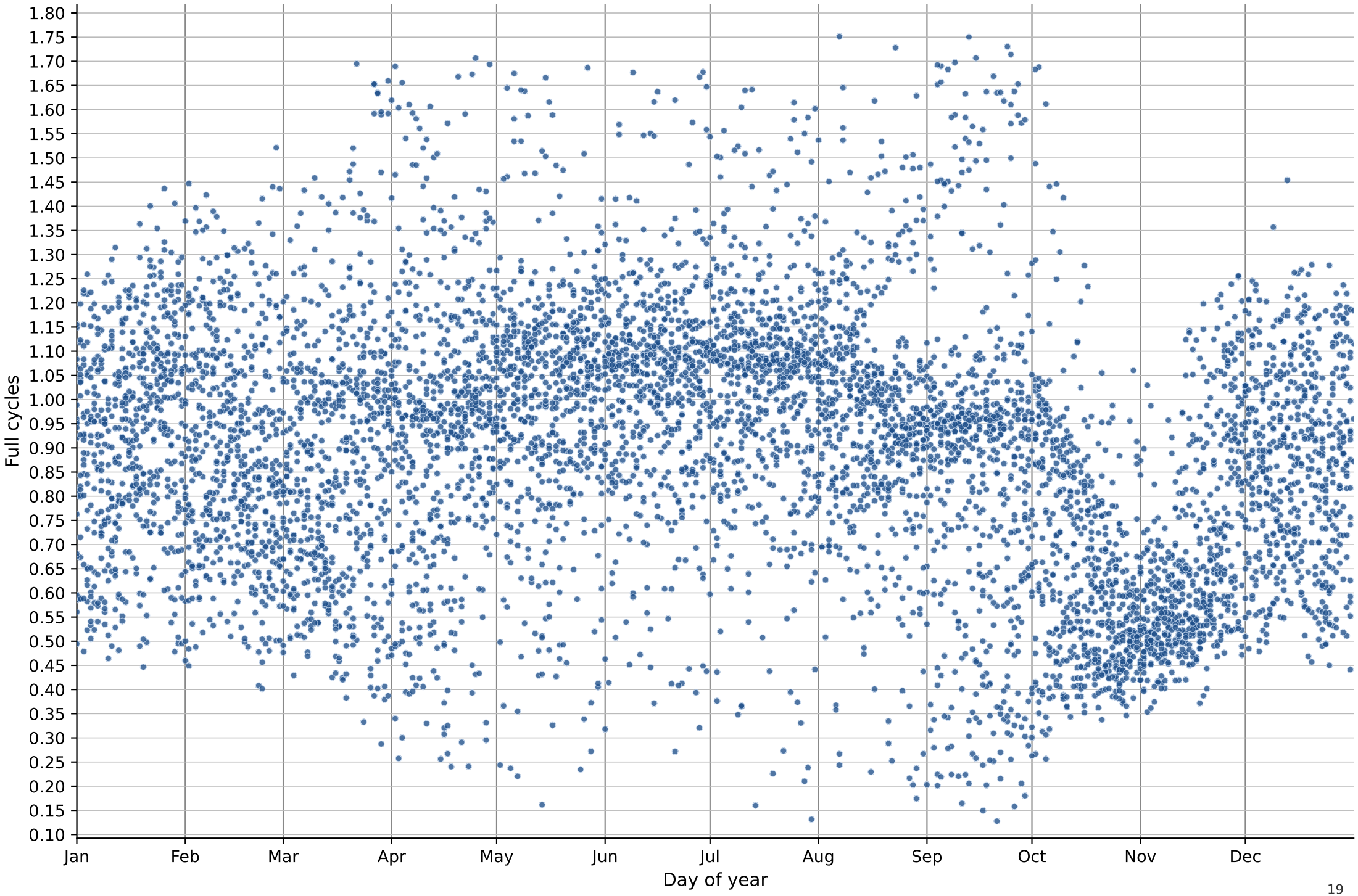
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	1,592	1,417	997	524	313	175	143	171	257	470	857	1,505	7,297
month average	1,085	907	706	379	241	128	94	108	193	352	601	947	5,740
month minimum	708	577	479	230	161	70	61	59	119	244	459	638	4,849
day Maximum	82.3	76.5	70.5	36.8	18.6	13.1	9.4	11.0	14.7	35.5	55.6	73.2	82.3
day average	35.0	32.1	22.8	12.6	7.8	4.3	3.0	3.5	6.4	11.3	20.0	30.6	15.7
day minimum	10.1	8.7	7.1	0.5	0.0	0.0	0.0	0.0	0.0	2.9	6.2	9.7	0.0
Cooling													
month Maximum	0	0	0	0	0	0	1	2	0	0	0	0	3
month average	0	0	0	0	0	0	0	0	0	0	0	0	0
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.4	1.2	0.7	0.0	0.0	0.0	0.0	1.2
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	50	51	43	37	37	33	31	32	32	38	38	41	441
month average	43	39	41	36	35	32	30	30	31	37	38	39	431
month minimum	42	38	41	33	33	30	29	29	29	35	37	39	425
day Maximum	4.3	2.7	1.9	1.3	1.3	1.3	1.2	1.2	1.2	1.3	1.3	2.3	4.3
day average	1.4	1.4	1.3	1.2	1.1	1.1	1.0	1.0	1.0	1.2	1.3	1.3	1.2
day minimum	1.3	1.2	1.1	1.0	1.0	1.0	0.9	0.9	0.9	1.0	1.1	1.2	0.9
Direct electric													
month Maximum	1,032	906	489	116	7	0	0	0	1	63	364	947	3,145
month average	548	430	238	43	1	0	0	0	0	19	155	418	1,853
month minimum	225	127	64	2	0	0	0	0	0	0	46	152	1,068
day Maximum	64.1	58.3	52.3	18.8	2.8	0.0	0.0	0.0	0.8	17.6	37.4	55.0	64.1
day average	17.7	15.3	7.7	1.4	0.0	0.0	0.0	0.0	0.0	0.6	5.2	13.5	5.1
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

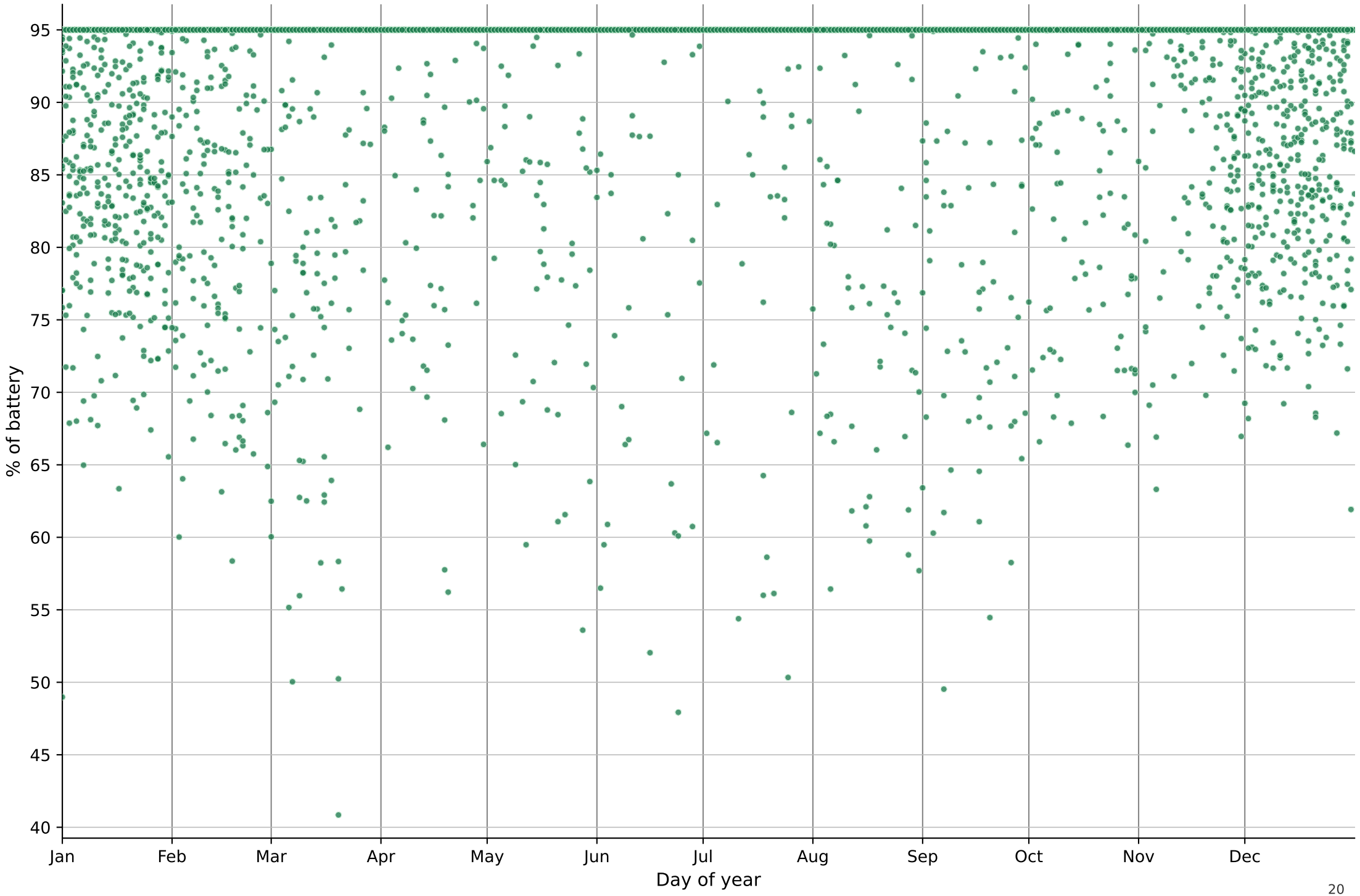
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

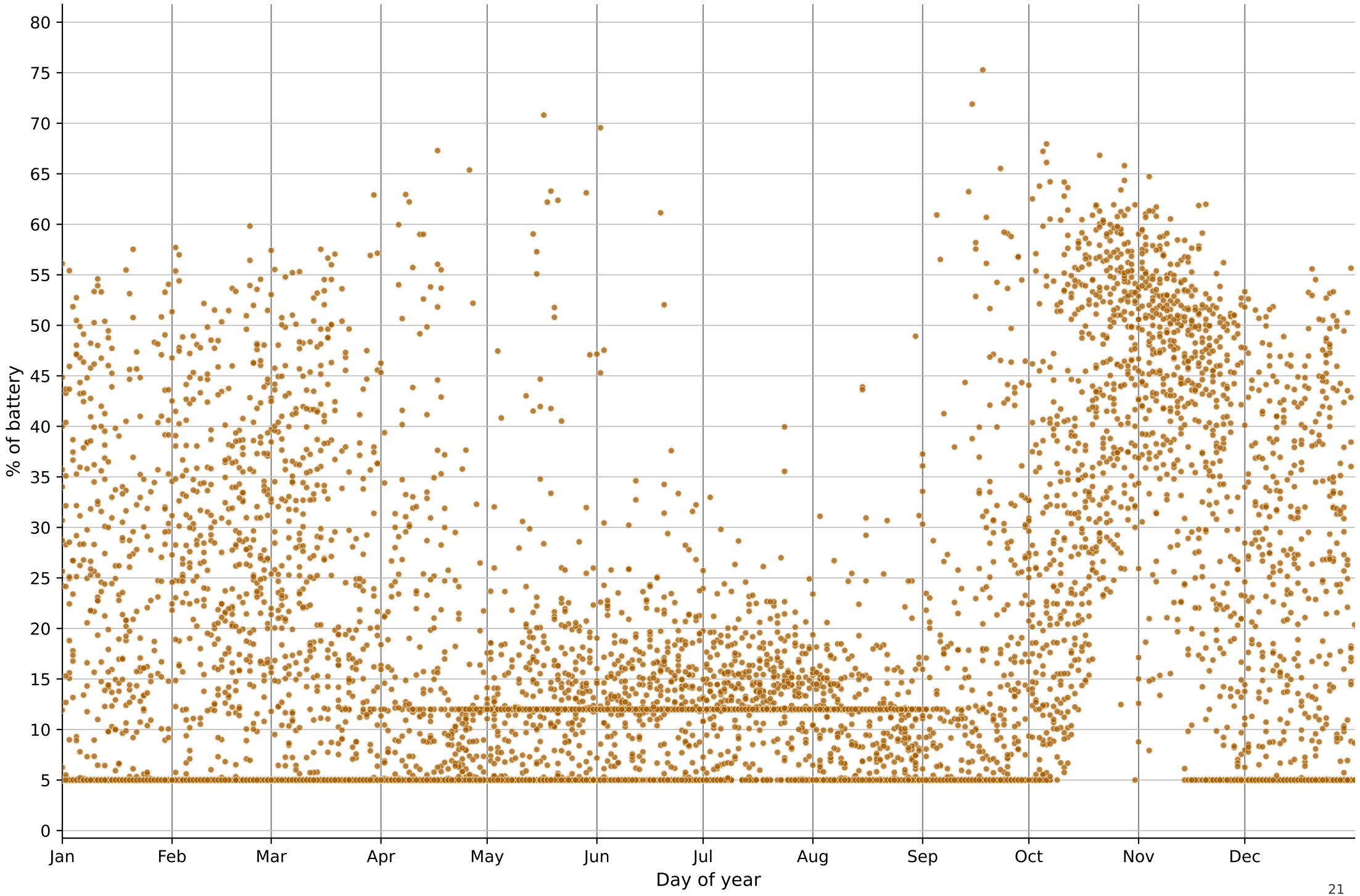
Battery
Austria - Inning 48.182, 15.417

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	0	28	431	1,514	1,564	1,834	1,728	1,317	823	78	1	0	8,065
month average	0	11	242	1,019	1,227	1,400	1,380	1,046	589	48	0	0	6,963
month minimum	0	0	100	678	736	952	940	775	356	19	0	0	6,250
day Maximum	0.0	9.6	38.0	120.6	126.2	135.8	124.7	111.0	82.2	13.9	0.5	0.0	135.8
day average	0.0	0.4	7.8	34.0	39.6	46.7	44.5	33.8	19.6	1.6	0.0	0.0	19.1
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
Full cycles													
month Maximum	35	31	31	30	33	32	33	31	28	23	26	34	343
month average	29	25	27	28	31	31	32	30	26	20	20	27	327
month minimum	22	19	25	25	27	29	30	29	22	16	17	21	315
day Maximum	1.4	1.5	1.7	1.7	1.7	1.7	1.6	1.8	1.8	1.7	1.3	1.5	1.8
day average	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	0.9	0.7	0.7	0.9	0.9
day minimum	0.4	0.4	0.3	0.2	0.2	0.3	0.1	0.2	0.1	0.3	0.4	0.4	0.1
Charge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	4
month average	0	0	0	0	0	0	0	0	0	0	0	0	4
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	4
day Maximum	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.2	0.5
day average	0.1	0.2	0.3	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	0.2	0.2	0.3
day average	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.1	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

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
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Aug
Sep
Oct
Nov
Dec
Day of year


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


Battery min charge state per day (45 kWh = 100 %)
Austria - Inning 48.182, 15.417
% of battery
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