

Battery Condition Analysis Report

This report summarises battery temperature patterns, thermal deltas, and cell-voltage deltas over the selected analysis window. Values are calculated by grouping observations into defined bucket ranges and computing the percentage distribution of occurrences during **CHARGING** and **DISCHARGING** modes.

- **Battery Max Temperature Distribution** buckets reflect absolute maximum temperature observed per timestamp.
- **Temperature Delta Distribution** uses $(\text{max} - \text{min})$ pack temperature per timestamp.
- **Voltage Delta Distribution** uses $(\text{max} - \text{min})$ cell voltage per timestamp.

Fleet-level summaries aggregate all vehicles and show the proportional time spent in each bucket. Vehicle-level pages present the same distributions for each vehicle separately.

Fleet Charging Stress Conditions

Metric	<20%	20-30%	30-40%	>40%
max temp>35 degrees	12, 20, 25, 27, 29, 30, 32, 33, 42, 46	11, 14, 15, 18, 31, 6, 7, 9	28	13, 16, 19, 3
DeltaT > 5 deg	13, 18, 25, 28, 29, 30, 31, 32, 33, 42, 46, 9	11, 14, 19, 20, 6, 7	15, 16, 27	12, 3
DeltaV > 20 mV	11, 13, 14, 15, 16, 18, 20, 25, 28, 29, 3, 30, 31, 32, 33, 42, 46, 6, 7, 9 12, 27		19	none

Fleet-Level Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	13.51	17.38	<2	15.08	21.70	0-10	41.70	80.91
28-32	24.96	50.82	2-5	63.20	71.70	10-20	40.60	13.60
32-35	33.57	27.77	5-8	21.35	6.32	20-30	5.42	2.41
35-40	25.73	3.59	>8	0.37	0.27	>30	12.28	3.08
>40	2.23	0.44						

Battery Max Temperature Distribution %		Temperature Delta Distribution %		Voltage Delta Distribution %	
Buckets	Fleet Overall%	Buckets	Fleet Overall%	Buckets	Fleet Overall%
<28	15.45	<2	18.39	0-10	61.31
28-32	37.89	2-5	67.45	10-20	27.10
32-35	30.67	5-8	13.84	20-30	3.92
35-40	14.66	>8	0.32	>30	7.68
>40	1.34				

Vehicle 11 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	1.86	6.60	<2	2.45	12.49	0-10	35.39	79.74
28-32	21.56	48.23	2-5	65.56	81.61	10-20	49.87	15.83
32-35	41.30	39.68	5-8	31.81	5.90	20-30	4.45	2.31
35-40	34.47	5.46	>8	0.19	0.00	>30	10.28	2.12
>40	0.80	0.03						

Vehicle 12 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	1.78	10.97	<2	1.69	12.16	0-10	23.31	76.62
28-32	30.14	52.67	2-5	47.45	66.74	10-20	48.41	16.93
32-35	44.00	30.90	5-8	45.82	19.31	20-30	13.82	3.71
35-40	18.98	4.23	>8	5.04	1.80	>30	14.45	2.74
>40	5.10	1.23						

Vehicle 13 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	0.08	1.00	<2	36.46	64.91	0-10	44.84	78.82
28-32	6.48	25.71	2-5	61.53	34.48	10-20	43.43	14.34
32-35	33.67	50.86	5-8	1.99	0.61	20-30	1.87	3.92
35-40	54.05	20.77	>8	0.02	0.00	>30	9.86	2.92
>40	5.72	1.65						

Vehicle 14 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	4.21	7.68	<2	1.19	7.59	0-10	28.87	79.45
28-32	20.20	53.00	2-5	65.73	80.46	10-20	55.35	15.55
32-35	45.43	35.98	5-8	33.06	11.94	20-30	6.52	2.84
35-40	30.16	3.35	>8	0.02	0.00	>30	9.27	2.16
>40	0.00	0.00						

Vehicle 15 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	4.84	14.93	<2	1.63	11.38	0-10	34.64	82.14
28-32	22.12	48.72	2-5	54.96	76.23	10-20	47.17	13.59
32-35	36.64	28.96	5-8	42.83	12.05	20-30	6.86	1.56
35-40	32.03	5.60	>8	0.57	0.34	>30	11.33	2.70
>40	4.36	1.79						

Vehicle 16 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	0.41	3.80	<2	1.50	6.44	0-10	20.20	71.93
28-32	10.51	40.67	2-5	58.93	85.51	10-20	59.92	21.17
32-35	30.43	49.42	5-8	39.23	8.04	20-30	6.70	2.34
35-40	49.13	5.54	>8	0.34	0.01	>30	13.18	4.56
>40	9.52	0.57						

Vehicle 18 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	2.09	8.37	<2	2.02	18.37	0-10	24.30	79.42
28-32	18.23	62.99	2-5	75.33	77.73	10-20	52.39	16.11
32-35	37.77	24.32	5-8	22.62	3.89	20-30	9.44	2.02
35-40	36.83	4.30	>8	0.04	0.00	>30	13.88	2.45
>40	5.07	0.01						

Vehicle 19 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	0.85	8.94	<2	0.99	13.16	0-10	7.91	67.34
28-32	7.10	55.97	2-5	75.91	79.55	10-20	53.43	25.47
32-35	25.74	34.19	5-8	23.07	7.28	20-30	24.80	4.06
35-40	66.30	0.91	>8	0.03	0.01	>30	13.86	3.13
>40	0.00	0.00						

Vehicle 20 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	31.07	34.99	<2	10.39	24.85	0-10	58.32	85.06
28-32	34.83	50.13	2-5	65.88	69.20	10-20	27.64	11.75
32-35	24.83	14.15	5-8	23.73	5.94	20-30	2.83	1.56
35-40	9.27	0.73	>8	0.01	0.01	>30	11.22	1.62
>40	0.00	0.00						

Vehicle 25 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	34.56	21.12	<2	14.59	8.22	0-10	54.07	84.41
28-32	34.10	57.49	2-5	66.50	80.53	10-20	29.98	10.99
32-35	20.99	20.95	5-8	18.89	11.24	20-30	5.25	1.62
35-40	10.35	0.43	>8	0.01	0.02	>30	10.70	2.98
>40	0.00	0.00						

Vehicle 27 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	14.43	14.27	<2	8.44	9.44	0-10	31.23	76.26
28-32	33.73	61.69	2-5	54.11	75.17	10-20	42.99	16.41
32-35	40.68	23.92	5-8	37.43	15.38	20-30	9.01	3.07
35-40	11.16	0.12	>8	0.02	0.00	>30	16.78	4.26
>40	0.00	0.00						

Vehicle 28 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	11.23	6.25	<2	69.78	58.81	0-10	66.31	81.08
28-32	13.86	48.06	2-5	29.01	40.87	10-20	20.47	11.83
32-35	37.61	40.33	5-8	1.19	0.30	20-30	1.21	2.30
35-40	35.04	4.99	>8	0.03	0.02	>30	12.00	4.79
>40	2.26	0.37						

Vehicle 29 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	3.80	28.67	<2	40.07	33.33	0-10	52.20	80.10
28-32	30.01	44.79	2-5	57.77	65.97	10-20	25.27	12.63
32-35	49.04	23.44	5-8	2.13	0.66	20-30	1.39	2.63
35-40	16.00	2.89	>8	0.02	0.03	>30	21.14	4.65
>40	1.14	0.22						

Vehicle 3 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	0.61	3.50	<2	6.99	26.65	0-10	22.29	80.73
28-32	8.32	54.73	2-5	45.25	66.16	10-20	58.59	12.48
32-35	26.98	33.07	5-8	47.74	7.18	20-30	5.09	2.44
35-40	56.55	8.65	>8	0.02	0.00	>30	14.02	4.35
>40	7.53	0.05						

Vehicle 30 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	44.31	58.98	<2	49.61	51.21	0-10	19.72	88.96
28-32	52.29	35.87	2-5	33.47	46.27	10-20	63.11	5.72
32-35	3.40	5.16	5-8	16.91	2.51	20-30	2.61	1.89
35-40	0.00	0.00	>8	0.02	0.01	>30	14.56	3.43
>40	0.00	0.00						

Vehicle 31 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	4.71	7.90	<2	31.54	29.29	0-10	64.83	81.20
28-32	26.22	65.76	2-5	66.47	70.20	10-20	20.12	11.39
32-35	43.11	21.43	5-8	1.97	0.50	20-30	1.11	2.56
35-40	24.80	4.77	>8	0.02	0.02	>30	13.94	4.85
>40	1.16	0.14						

Vehicle 32 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	59.62	32.12	<2	12.34	20.85	0-10	69.00	89.48
28-32	28.57	60.63	2-5	83.62	77.04	10-20	24.59	8.87
32-35	11.81	7.25	5-8	4.02	2.11	20-30	2.15	1.11
35-40	0.00	0.00	>8	0.02	0.01	>30	4.26	0.54
>40	0.00	0.00						

Vehicle 33 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	6.75	14.96	<2	8.69	15.00	0-10	51.60	84.28
28-32	45.45	54.92	2-5	77.40	80.47	10-20	30.35	11.69
32-35	38.31	29.91	5-8	13.89	4.53	20-30	3.34	1.38
35-40	8.73	0.21	>8	0.02	0.01	>30	14.71	2.64
>40	0.76	0.00						

Vehicle 42 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	69.16	40.77	<2	10.21	23.40	0-10	79.17	90.50
28-32	24.64	55.20	2-5	87.66	75.84	10-20	9.06	6.50
32-35	5.22	4.03	5-8	2.13	0.75	20-30	0.56	0.63
35-40	0.98	0.00	>8	0.00	0.00	>30	11.21	2.38
>40	0.00	0.00						

Vehicle 46 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	7.48	46.65	<2	31.56	28.11	0-10	45.59	90.90
28-32	34.38	35.71	2-5	67.84	71.70	10-20	42.79	4.48
32-35	52.34	17.60	5-8	0.59	0.17	20-30	1.55	2.77
35-40	5.79	0.04	>8	0.01	0.02	>30	10.08	1.84
>40	0.00	0.00						

Vehicle 6 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	2.74	10.11	<2	0.43	2.78	0-10	50.80	77.04
28-32	25.53	44.82	2-5	72.50	83.95	10-20	36.06	16.10
32-35	39.86	36.06	5-8	25.11	9.28	20-30	3.11	2.16
35-40	24.20	4.89	>8	1.96	4.00	>30	10.03	4.70
>40	7.68	4.12						

Vehicle 7 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	1.09	7.25	<2	3.60	15.77	0-10	33.54	77.29
28-32	23.71	53.08	2-5	67.89	74.24	10-20	49.00	16.96
32-35	43.51	35.20	5-8	28.48	9.99	20-30	6.51	3.19
35-40	31.51	4.47	>8	0.03	0.00	>30	10.96	2.56
>40	0.18	0.00						

Vehicle 9 — Battery Condition Summary

Battery Max Temperature Distribution %			Temperature Delta Distribution %			Voltage Delta Distribution %		
Buckets	Charging	Discharging	Buckets	Charging	Discharging	Buckets	Charging	Discharging
<28	3.05	9.91	<2	0.67	4.83	0-10	41.08	78.13
28-32	22.07	57.95	2-5	72.90	89.27	10-20	43.74	15.94
32-35	39.50	31.95	5-8	26.40	5.90	20-30	4.53	3.43
35-40	35.38	0.19	>8	0.02	0.00	>30	10.65	2.51
>40	0.00	0.00						