

Hybrid Assistant Report

Info	
Car model	Prius C
VIN	JTDKDTB36C1-----
Odometer	140,116
Generated at	08/11/2018 15:11:09
Version	HA:243 HR:73

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[Trip summary](#)

Time	
Start	08/11/2018 15:02:54
Finish	08/11/2018 15:06:18

Trip					
	Total	EV	%	No Fuel	%
Distance	0.00 km	0.00 km	0%	0.00 km	0%
Time	3:23	2:32	64%	2:32	75%
Moving	0:00	0:00	NaN%	0:00	NaN%

Speed	
Average	0 km/h
Moving Average	NaN km/h
EV Average	0 km/h

Max	0 km/h
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Environment	
Start SOC	42.75%
End SOC	43.14%
Avg Ambient Temperature	11°C
Altitude Delta	4

Trip summary values are detailed by Time, Moving and EV.

Time is the total trip time.

Moving stats regards only the fraction of time while the car was not standing still.

EV stats are accounted only when the petrol engine is stopped.

No Fuel sums EV driving with the petrol engine running without fuel like coasting at high speed or driving down a slope.

Device info

Phone	
Manufacturer	LGE
Model	LG-H870DS
Product	lucye_global_com
Android SDK	26
Hostname	G6
Screen	1440x2672
Scale	4

OBD	
Connection type	Bluetooth
Model	Vgate iCar 1/G-EZTB-OBDDROID Goliton POWER2
MAC Address	00:1D:A5:00:1D:9F
Name	ELM327 v1.5
Manufacturer	OBDII to RS232 Interpreter
Firmware	?

Requests per second	
Average	5
Start	6
End	3
Delta	-3
Min	1
Max	15

Sampling	
Start time	08/11/2018 15:02:54
End time	08/11/2018 15:06:18

Duration	3:23
Samples	163
Average	1.27 sec
Standard deviation	0.82 sec
Disconnections	0
Corrupted frames	0/1,606

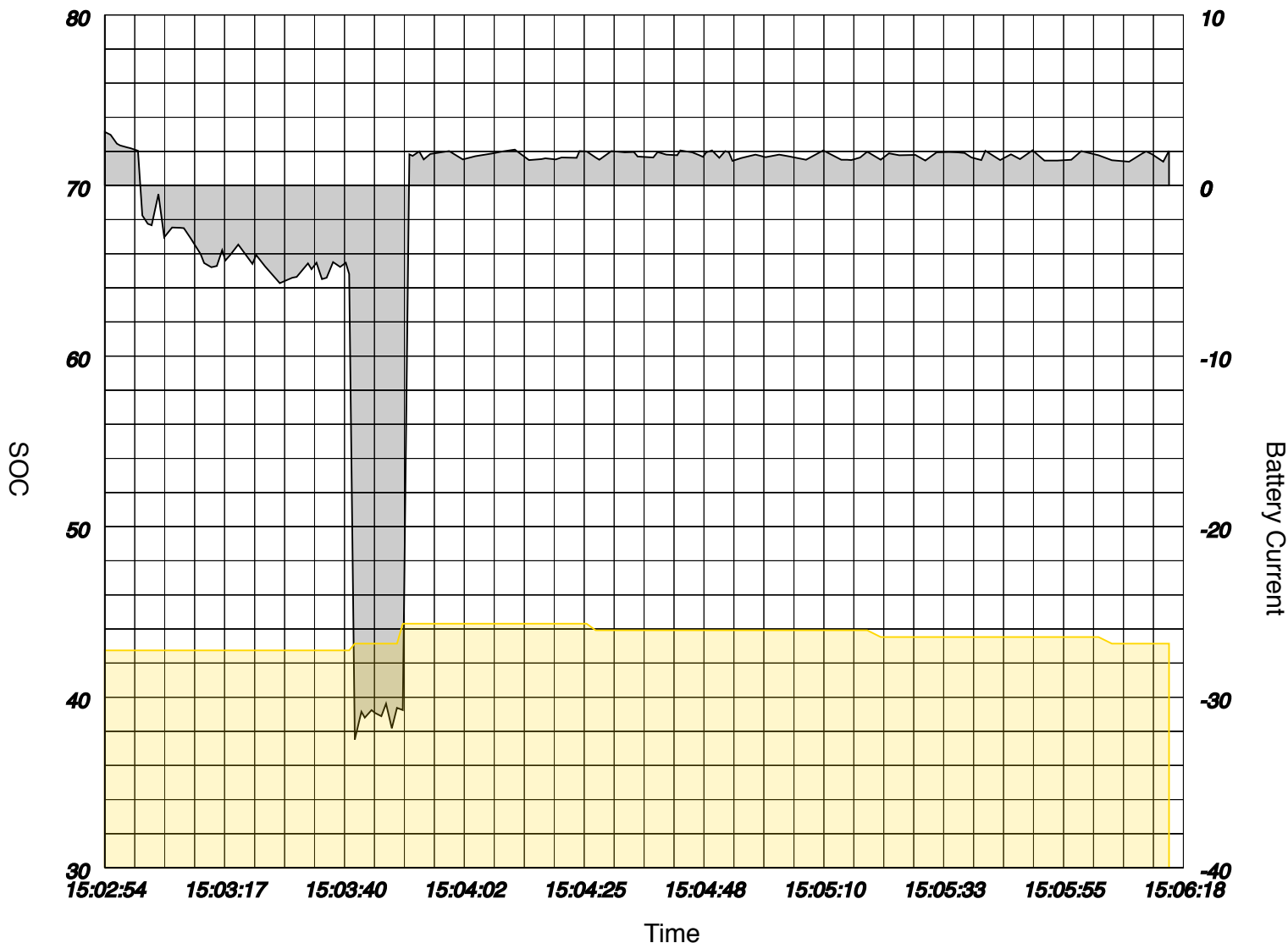
Information about phone and OBD adapter.

The sampling average is the time taken for reading all sensors, in seconds: the lowest, the fastest Hybrid Assistant will run.

Speed is mainly affected by OBD adapter and by other apps running on the phone.

SOC Statistics

SOC



— **SOC**
— **Battery Current**

SOC	
Average	43.46%
Start	42.75%
End	43.14%
Delta	0.39%
Min	42.75%
Max	44.31%
Standard deviation	0.58%

Variations	
Difference from optimum	-16.54%
SOC gained from brakings	0.00%
SOC gained from coasting	0.00%
Total SOC gained	0.00%
SOC charged by ICE	1.57%

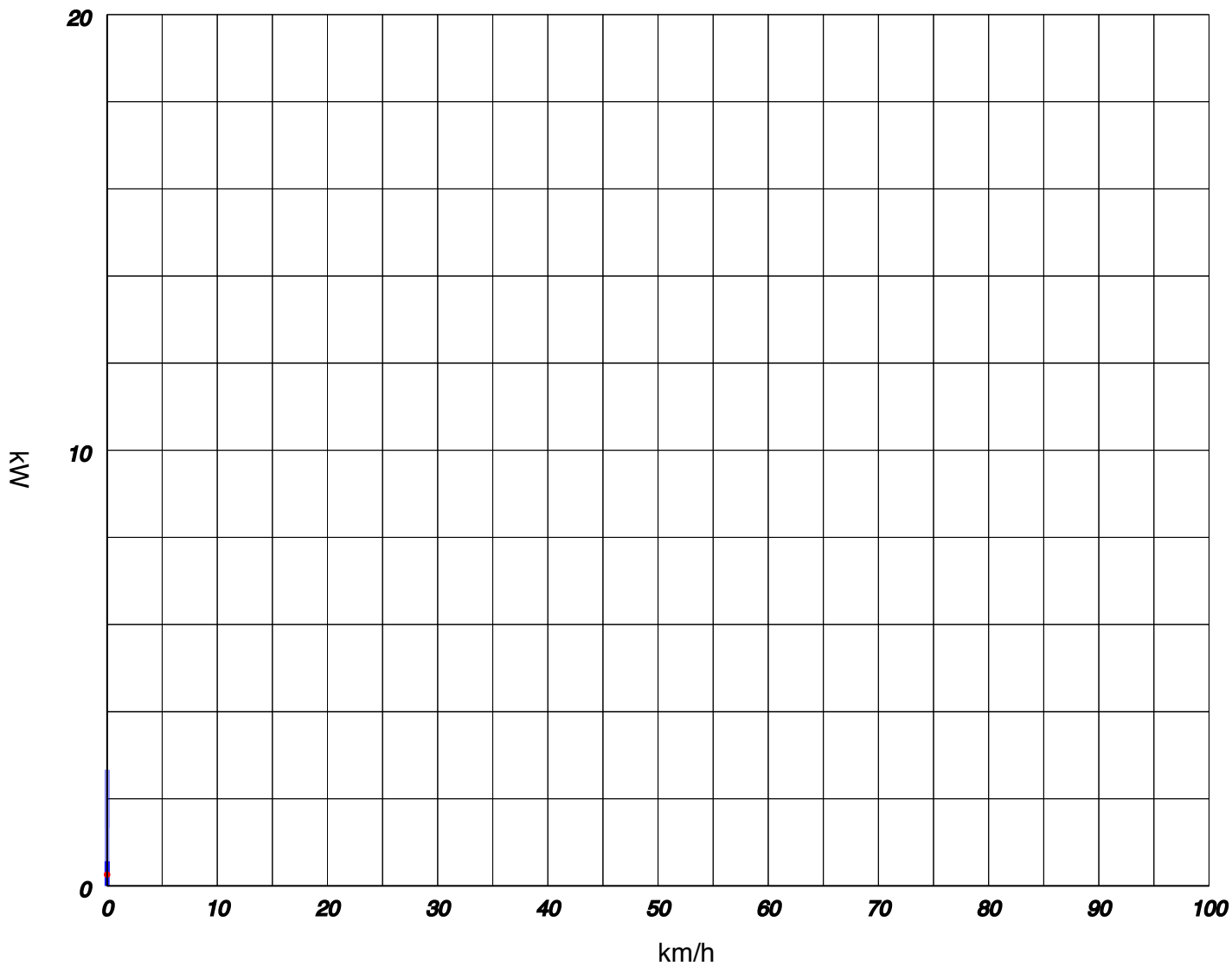
High Voltage Battery Statistics

Levels		
	Current	Voltage
Avg	-2.14 A	151.45 V
Min	-32.48 A	147.00 V
Max	3.14 A	163.00 V

Power			
	Power	Charge Limit	Discharge Limit
Avg	-0.307 kW	-14.000 kW	11.500 kW
Start	0.465 kW	-14.000 kW	11.500 kW
End	0.212 kW	-14.000 kW	11.500 kW
Min	-5.316 kW	-14.000 kW	11.500 kW
Max	6.649 kW	-14.000 kW	11.500 kW

Energy	
Total energy from the battery	0.012 kWh
Total energy to the battery	0.021 kWh
Battery energy balance	0.009 kWh
Average services consumption	0.345 kW

Average Power Usage

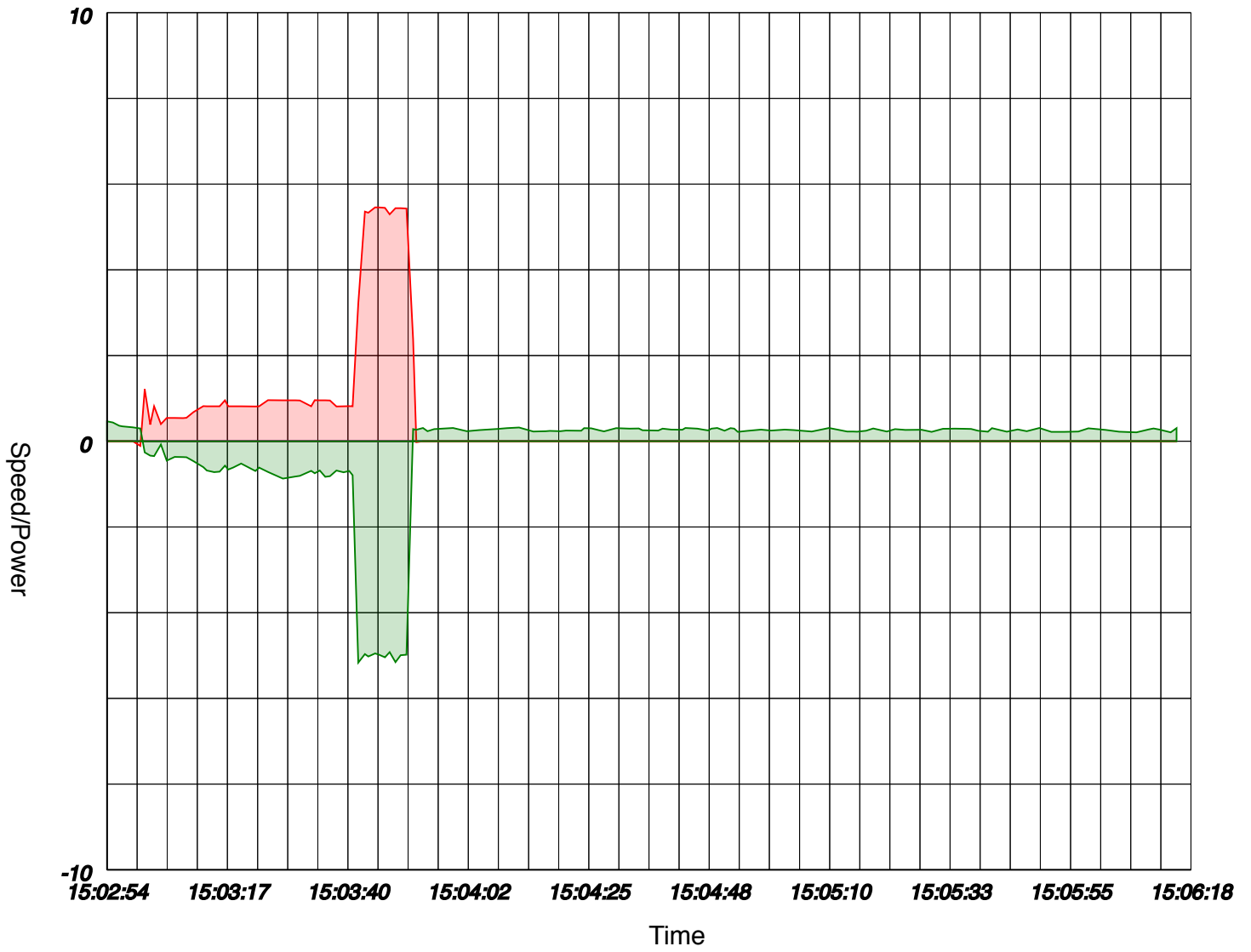





Plot of power required to keep a given speed.

Values are collected only when a constant speed is maintained long enough to have a consistent reading, so a trip with many different speeds may not gather enough data to plot.

Since required energy is heavily influenced by road slope, you should drive on a plain road to have a correct reading.

Power Distribution



-  **Speed**
-  **Engine power**
-  **HV Battery Power**

Energy Balance

Speed

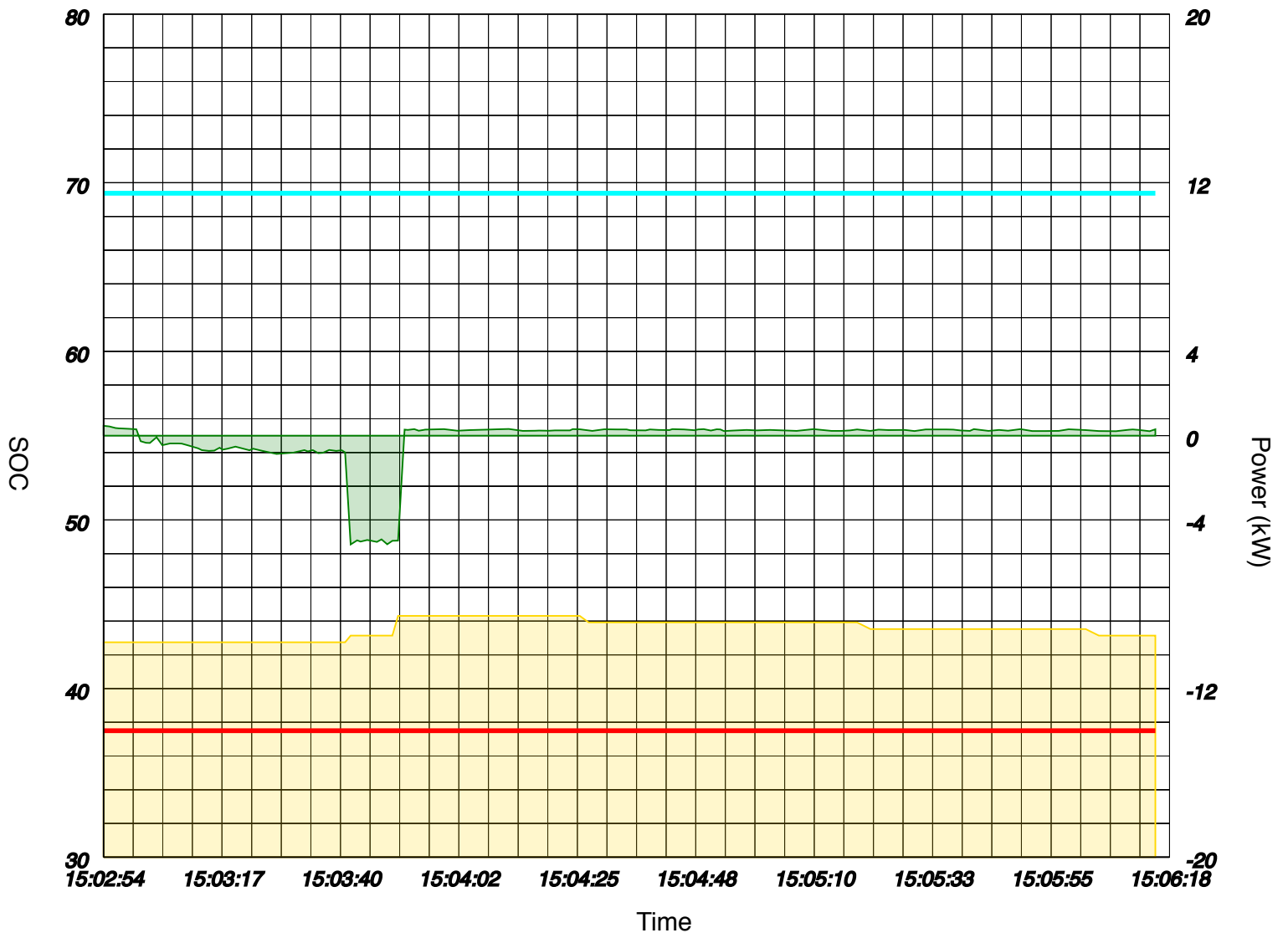
Energy (kWh)

15:02:54 15:03:17 15:03:40 15:04:02 15:04:25 15:04:48 15:05:10 15:05:33 15:05:55 15:06:18

Time

 ***Speed***
 ***Energy***

CCL and DCL



- SOC**
- Battery Discharge Current Limit**
- Battery Charge Current Limit**
- HV Battery Power**

Charge and discharge kW limits for the battery.
 These values may change with battery level and temperature.
 When the battery is nearly full, charge limit is reduced.
 On low temperatures, charge and discharge limits are reduced to preserve battery life.

[High Voltage Battery Health](#)

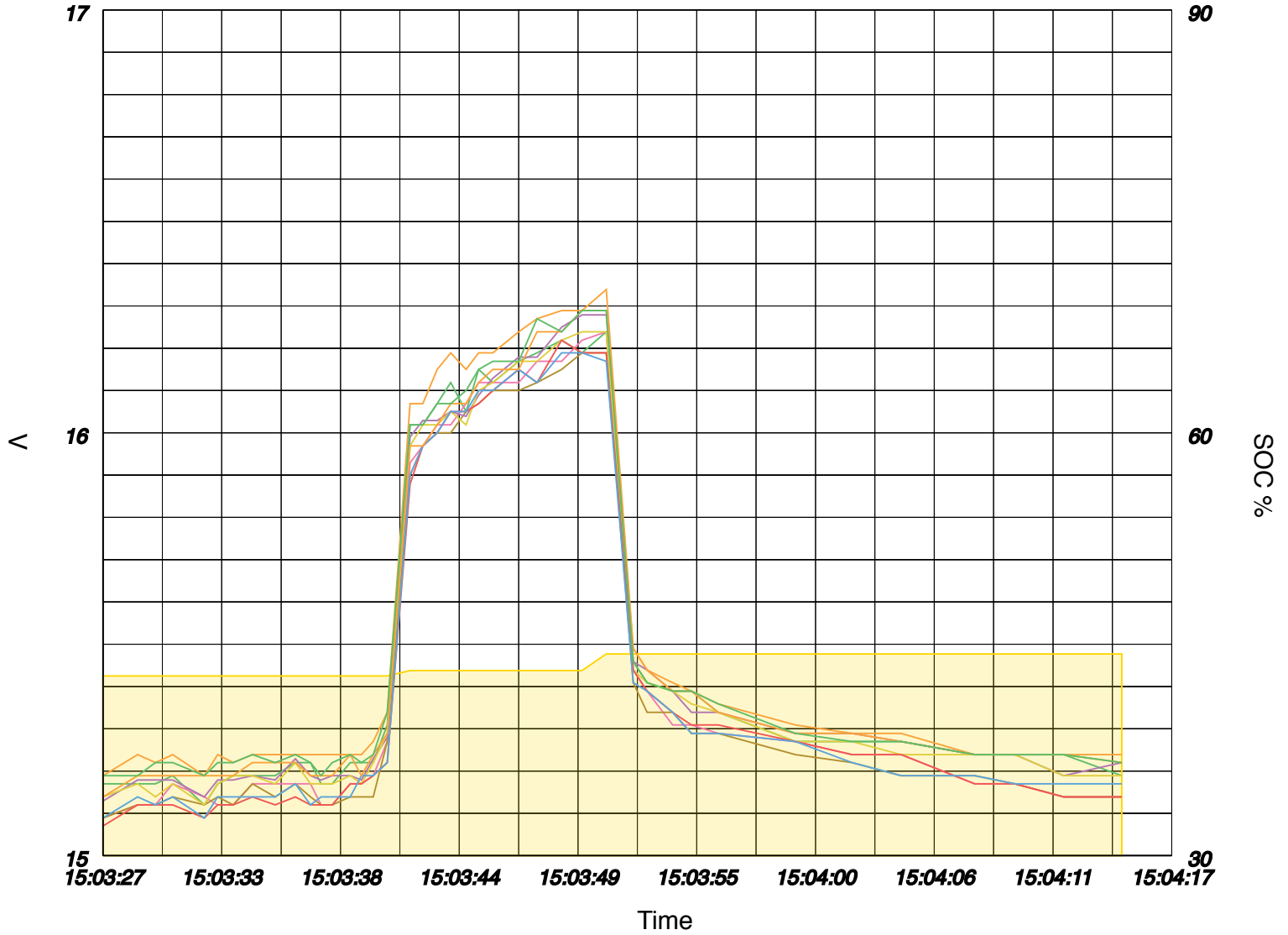
Be sure to follow the guideline for [HV Check](#) as specified on the official website.

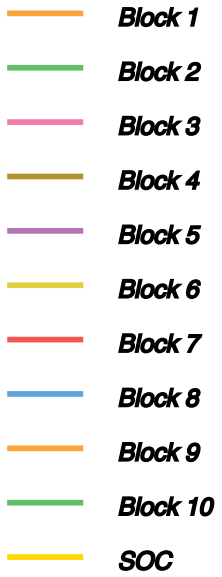
Note: Statistics from this paragraph are limited to the HV Check time span, not the whole trip

HV Battery	
Number of Blocks	10
Number of samples	42
Average sample time	1.17

Start time	08/11/2018 15:03:27
End time	08/11/2018 15:04:17
Duration	0:49

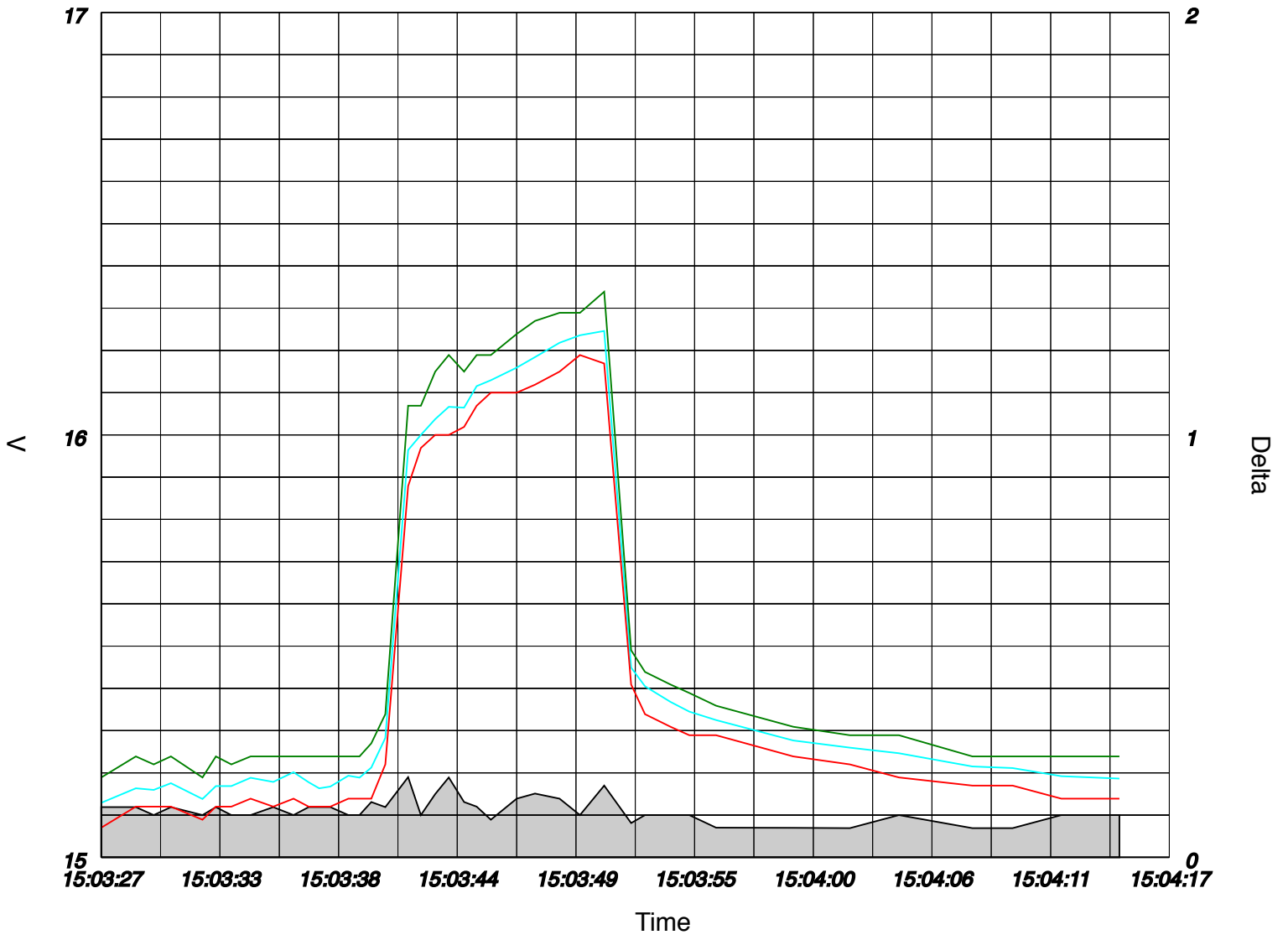
Block values





Voltage value of each battery block.
A block behaving differently from the others may indicate a degraded element.

Voltage Delta



— **Max**
— **Average**
— **Min**
— **Delta**

Min, max and average voltage values are plotted.

Average value should be halfway between min and max; a bias over one value may indicate an unbalanced battery.

Voltage delta between highest and lowest block is also plotted on the bottom of the chart.

Blocks stats						
Block	Min	Max	% Time @ Min V	Avg Bias	Max Bias	Avg Local Delta
1	15.19	16.34	0.00	0.00	0.03	0.10
2	15.12	16.24	0.00	0.05	0.10	0.09
3	15.09	16.24	0.00	0.09	0.17	0.06
4	15.09	16.19	0.00	0.10	0.19	0.07
5	15.13	16.28	0.00	0.05	0.14	0.07
6	15.12	16.24	0.00	0.06	0.14	0.05
7	15.07	16.22	0.00	0.10	0.19	0.05
8	15.09	16.19	0.00	0.09	0.17	0.07
9	15.14	16.29	0.00	0.04	0.13	0.08
10	15.19	16.29	0.00	0.02	0.12	0.05

Statistics for each battery block.

- Min: minimum observed value.
- Max: maximum observed value.
- % Time @ Min V: time percentage the given block was the lowest of the battery; high values may indicate a weak block.
- Bias: difference from the highest block.
- Local Delta: how much a block differs from its immediate neighbours.

Global stats	
Minimum observed battery voltage	151 V
Maximum observed battery voltage	162 V
Minimum observed block voltage	15.07 V
Maximum observed block voltage	16.34 V
Maximum Delta	0.19 V
Average Delta	0.11 V
Minimum observed current	-33.02 A
Maximum observed current	2.10 A
Minimum observed SOC	42.7%
Maximum observed SOC	44.3%
Delta SOC	1.6%
Energy	13mAh
Estimated Capacity	0mAh
Note	Low accuracy: repeat test with at least 10% SOC uninterrupted discharge

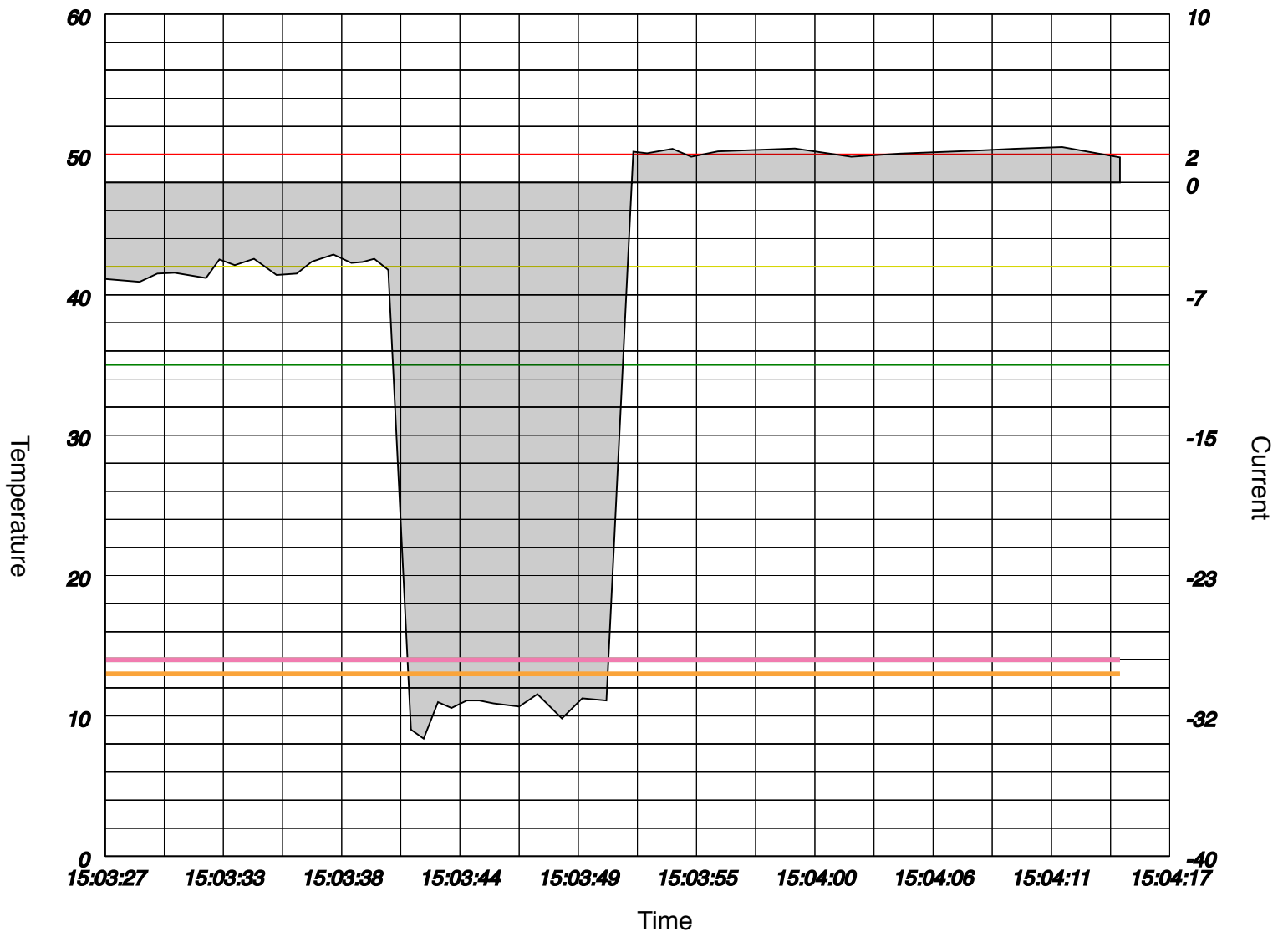
Delta Thresholds	
Threshold	Consecutive Samples
0.2	0
0.45	0
0.7	0
0.95	0
1.2	0









Maximum delta value between highest and lowest block is the most important parameter for battery health: high delta values suggests a weary battery.

Delta values are significant only when repeated over a long time: the table counts consecutive samples where delta value is over the indicated threshold.

Low counts are not an indication of a fault while high counts may be.

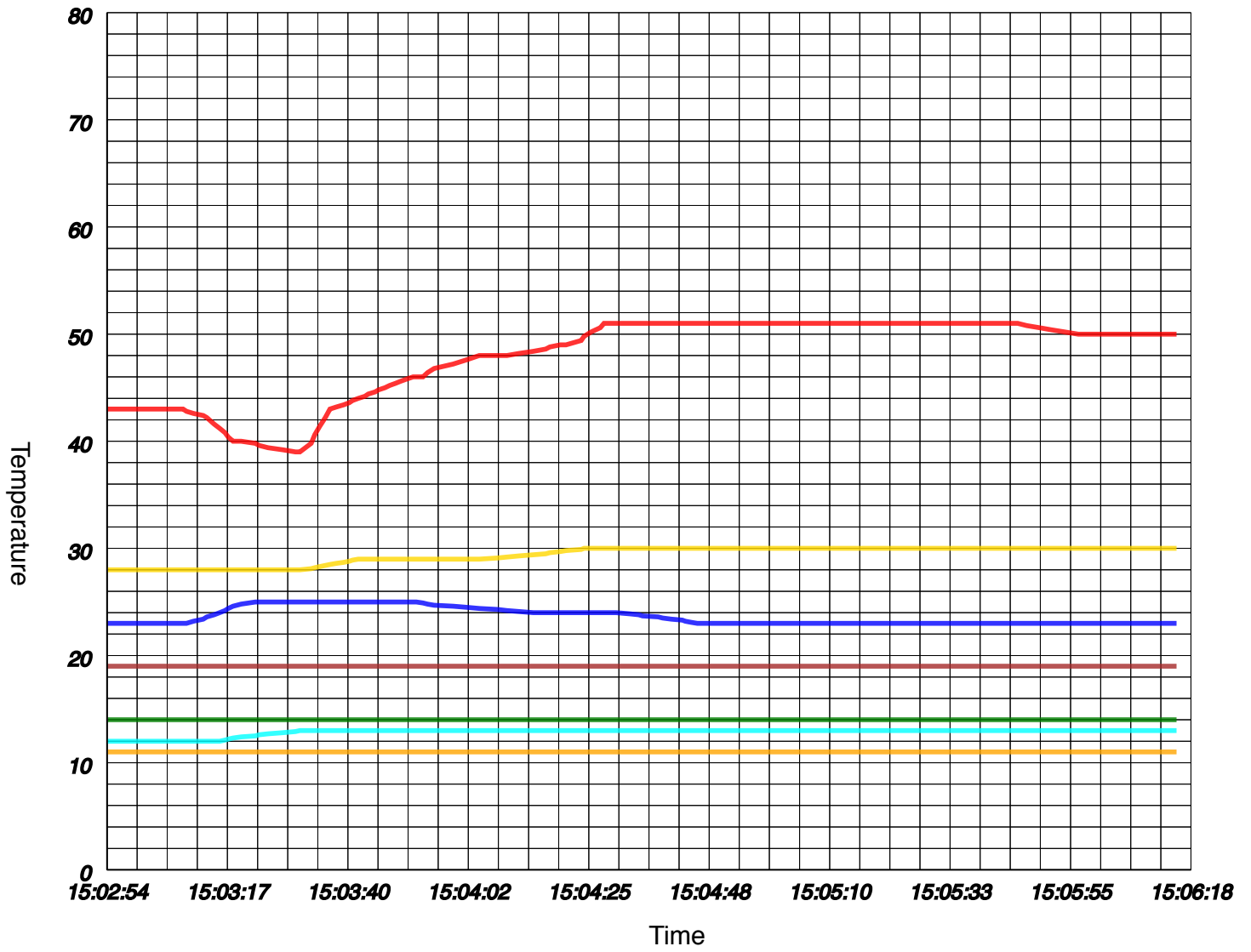
HV Battery Temperature



-  **Sensor 1**
-  **Sensor 2**
-  **Sensor 3**
-  **Battery Inhaling Temperature**
-  **Battery Current**
-  **Critical**
-  **EV disable**
-  **Fan start**

Temperature

Powertrain Temperature



- **Engine Coolant Temperature**
- **Inverter Temperature**
- **Battery Temperature**
- **MG Temperature**
- **Battery Inhaling Temperature**
- **Room Temperature**
- **Ambient Temperature**

Temperature					
	Ambient	Room	Coolant	Inverter	MG
Avg	11°C	19°C	47°C	23°C	29°C
Min	11°C	19°C	39°C	23°C	28°C
Max	11°C	19°C	51°C	25°C	30°C

Time to reach given temperature	
Coolant Temperature	Time
40°C	0:13 sec
50°C	2:46 sec

HV Battery Temperature Sensors				
Sensor	In	1	2	3
% Max	-	0%	99%	99%
Max	13°C	13°C	14°C	14°C
Avg	12°C	13°C	14°C	14°C

Min	12°C	13°C	14°C	14°C
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Temperatures for each car component.

Engine coolant temperature is the water temperature, while inverter and MG is the actual component temperature.

For inverters and MGs, only the most significant value among all components is shown.

HV Battery has multiple sensors: usually the inner ones are higher than the outer ones. % Max shows time percentage the specified sensor was the highest of the pack.

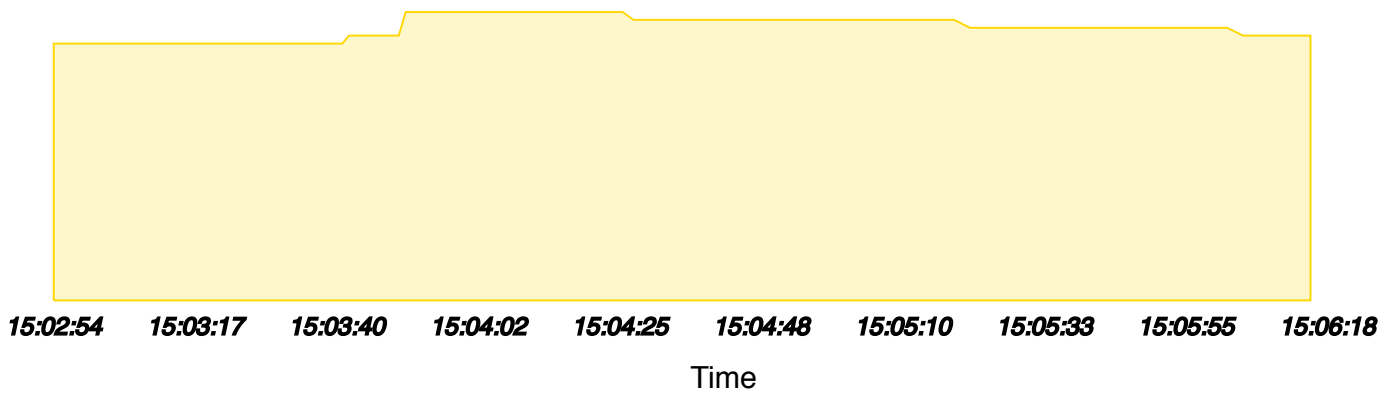
Trip

Altitude	
Avg	42
Start	40
End	44
Min	40
Max	44
Upward	0
Downward	0
Altitude Delta	4

Speed

Speed

SOC



Speed
SOC

Speed	
Average	0 km/h
Moving Average	NaN km/h
EV Average	0 km/h
Max	0 km/h

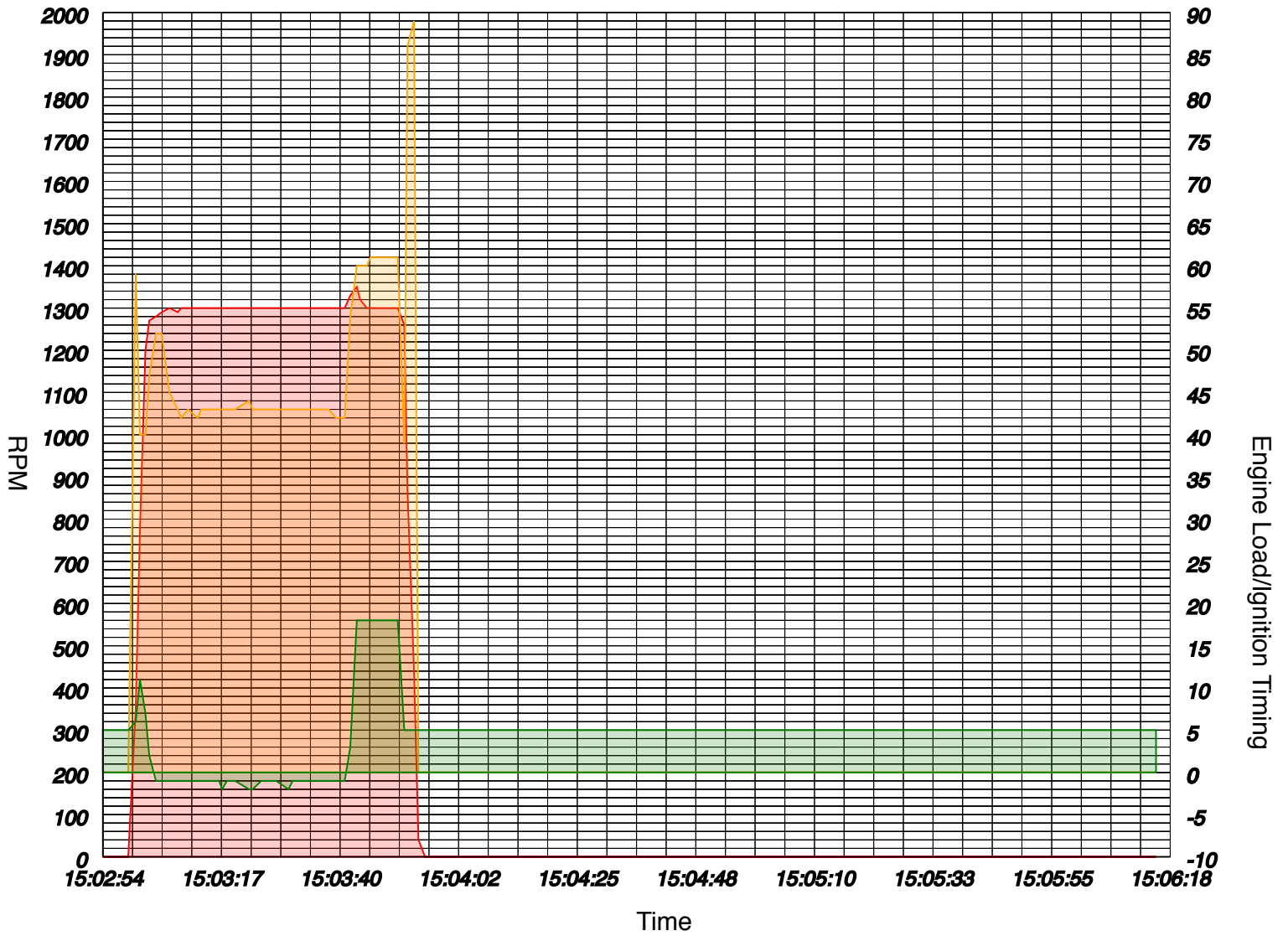
Engine



	RPM	Load	Power	Timing
Avg	1,212	49%	1.773kW	5°
Max	1,350	89%	5.458kW	18°
Min	-	-	-	-2°

Ignitions

Total	1
Inefficients	0

RPM



-  ***RPM***
-  ***Engine Load***
-  ***Ignition Timing***

Instant Fuel Consumption

Speed

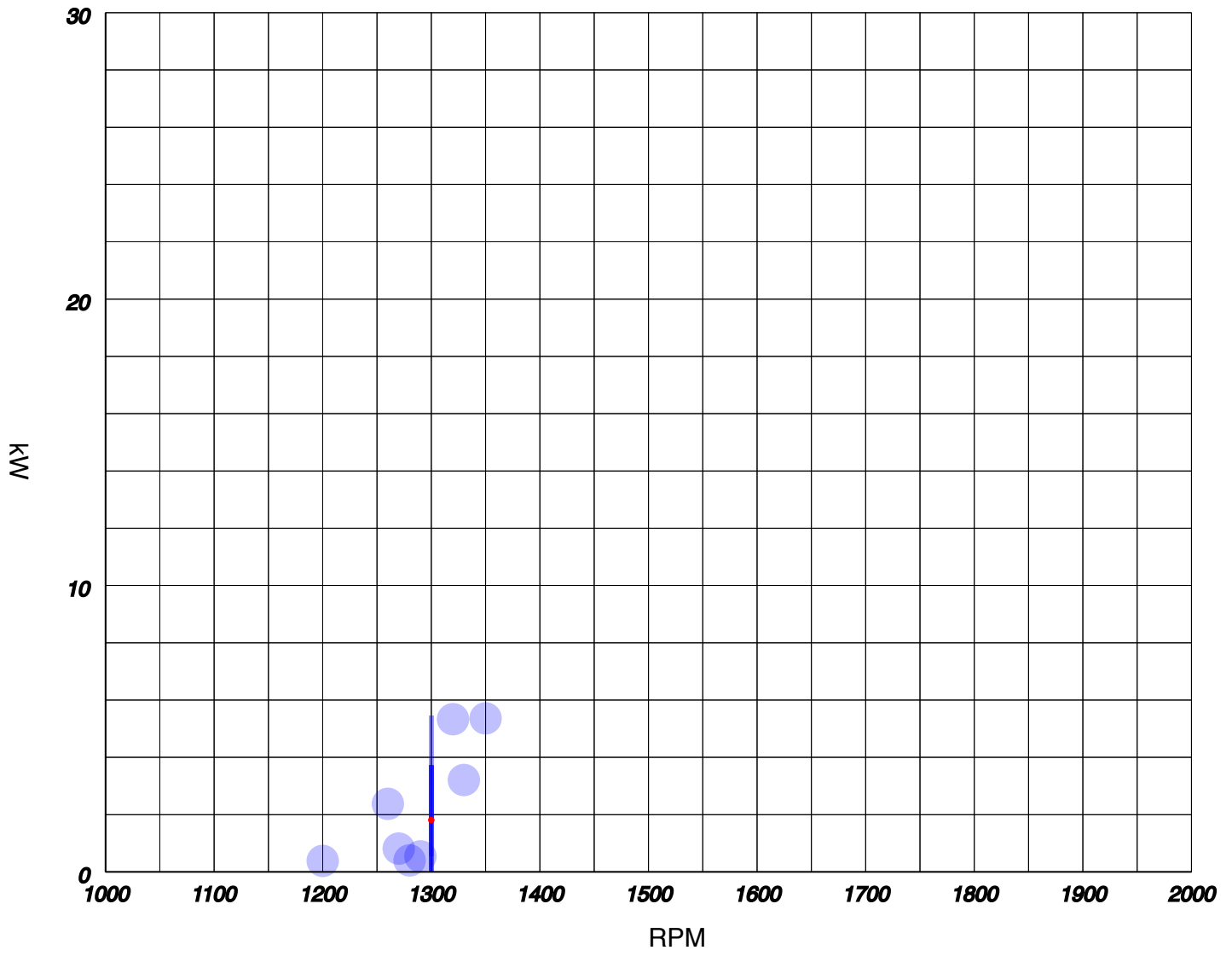
Instant Fuel Consumption

15:02:54 15:03:17 15:03:40 15:04:02 15:04:25 15:04:48 15:05:10 15:05:33 15:05:55 15:06:18
Time

 **Speed**
 **Instant Fuel Consumption**

Energy	
Energy from the petrol engine	0.02 kWh

Power Map



RPM Scatter Chart

km/h

1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000
RPM

Engine		
State	%	Longest Time
ICE Running	36%	0:51 sec
ICE Spinning	1%	0:01 sec
ICE Off	65%	2:27 sec

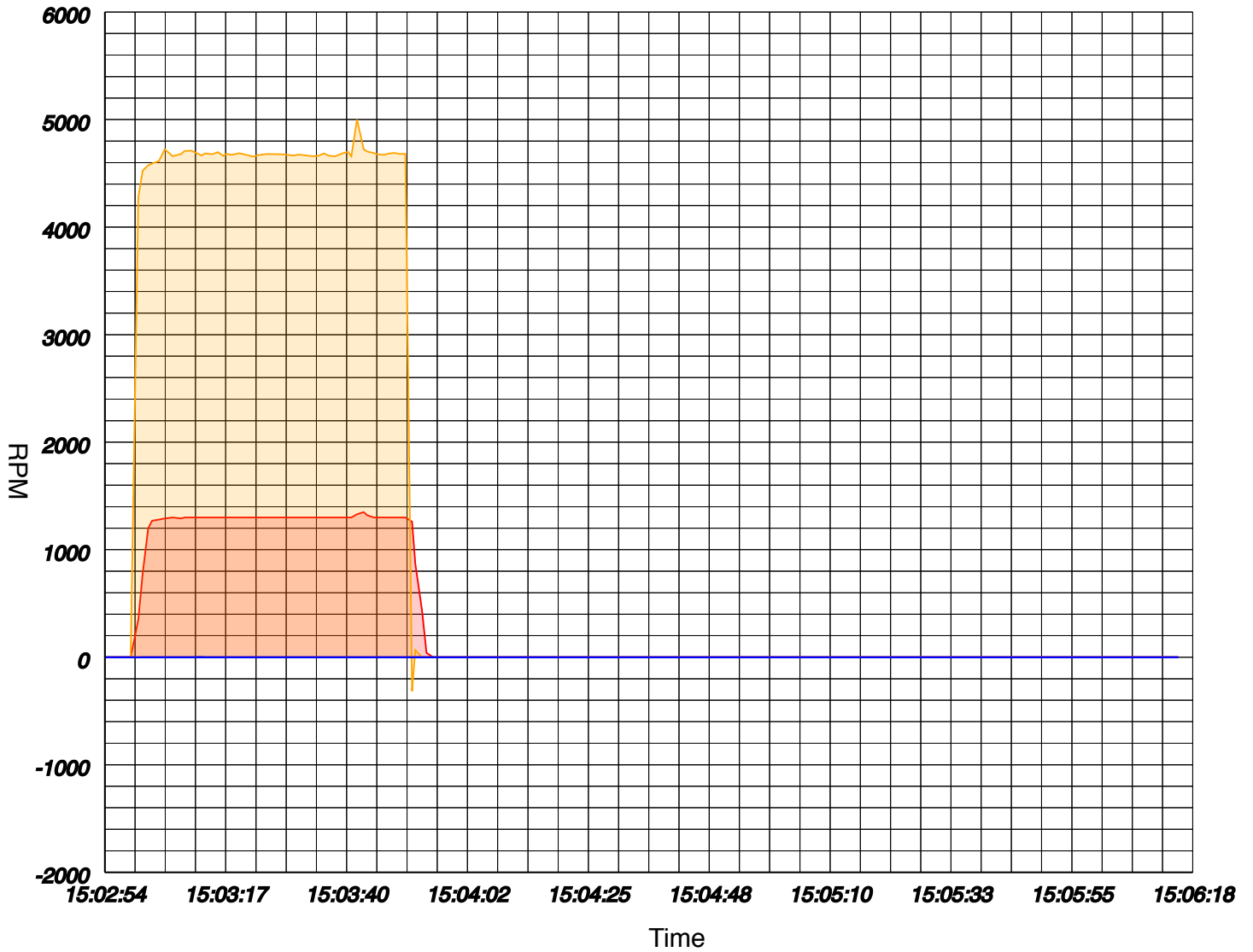
EV Statistics	
Trip Length	0.00 km
EV Range	0.00 km
Excessive EV events	0




EV States		
State	%	Longest Time
EV	64%	2:27 sec
EV traction	0%	0:00 sec
Excessive EV	0%	0:00 sec

PSD

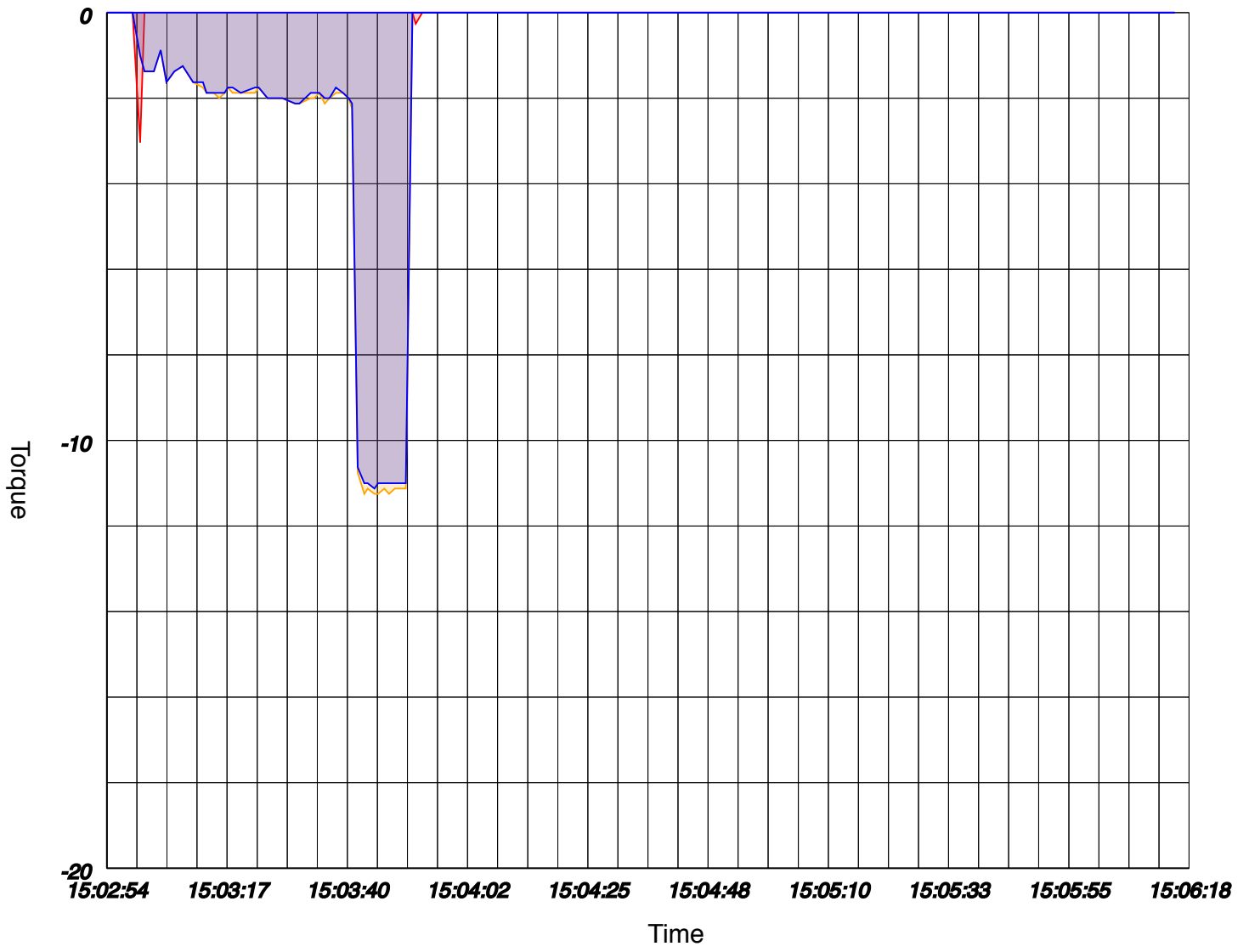
	ICE	MG1 RPM	MG2 RPM	MG1 Torque	MG2 Torque
Avg	1,212	4,266	0	-4Nm	-4Nm
Max	1,350	5,001	2	0Nm	0Nm
Min	0	-316	-2	-11Nm	-11Nm

RPM



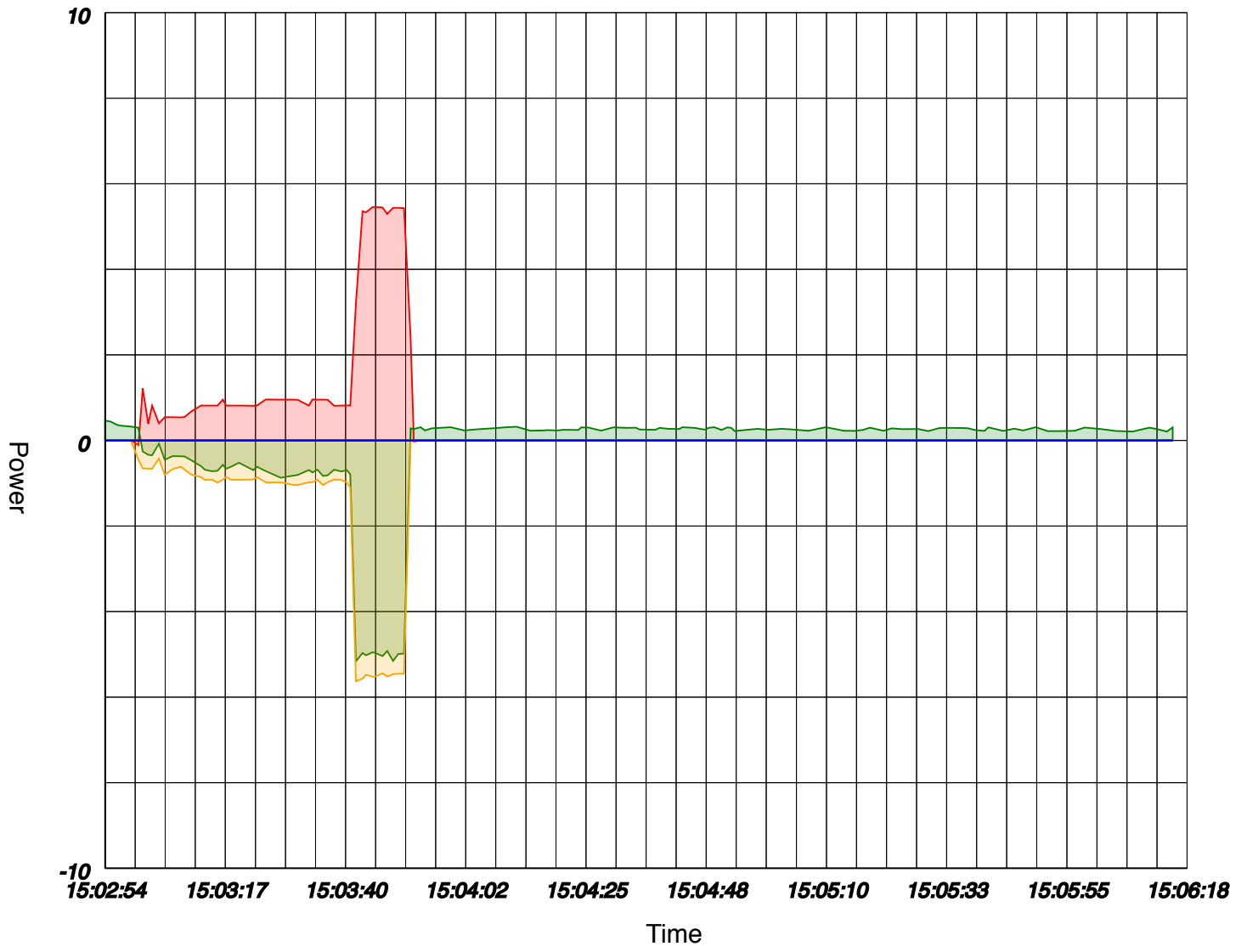
-  **RPM**
-  **MG1 RPM**
-  **MG2 RPM**





Torque



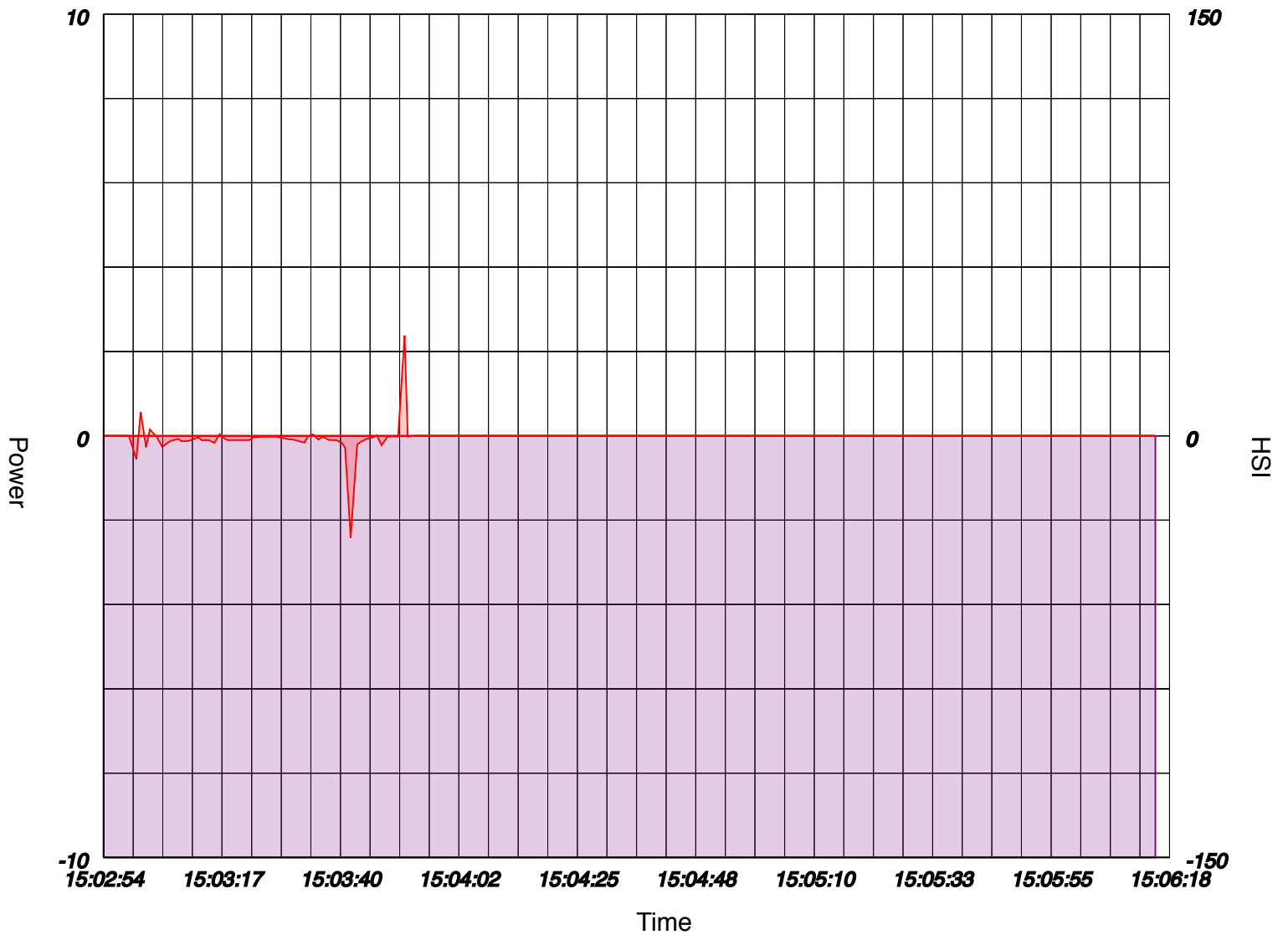
-  ***Engine Torque***
-  ***MG1 Torque***
-  ***MG2 Torque***

Power



-  ***Engine power***
-  ***HV Battery Power***
-  ***MG1 Power***
-  ***MG2 Power***

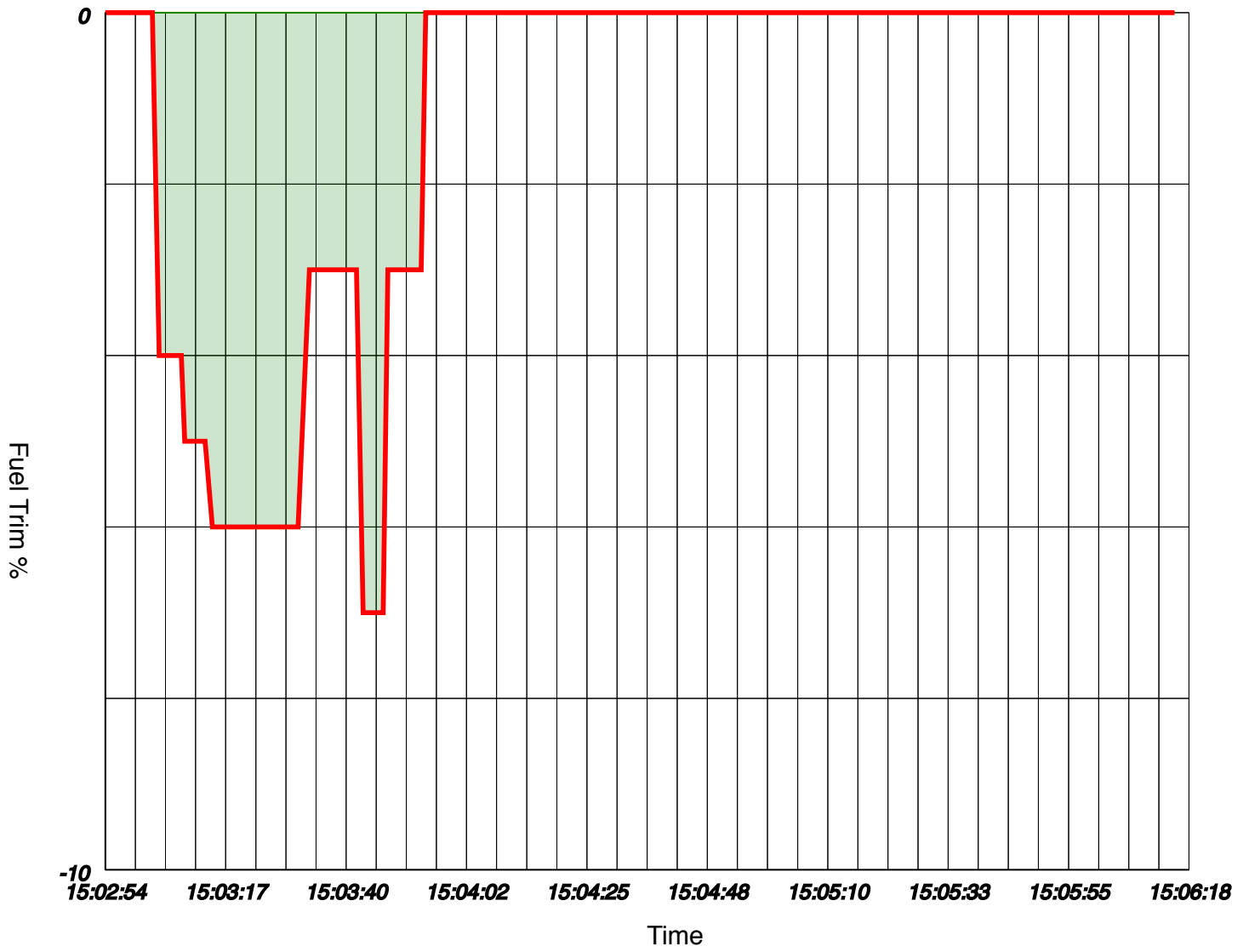
Combined power






 *Combined power*
 *Hybrid System Indicator*

Fuel Trims

Fuel Trim

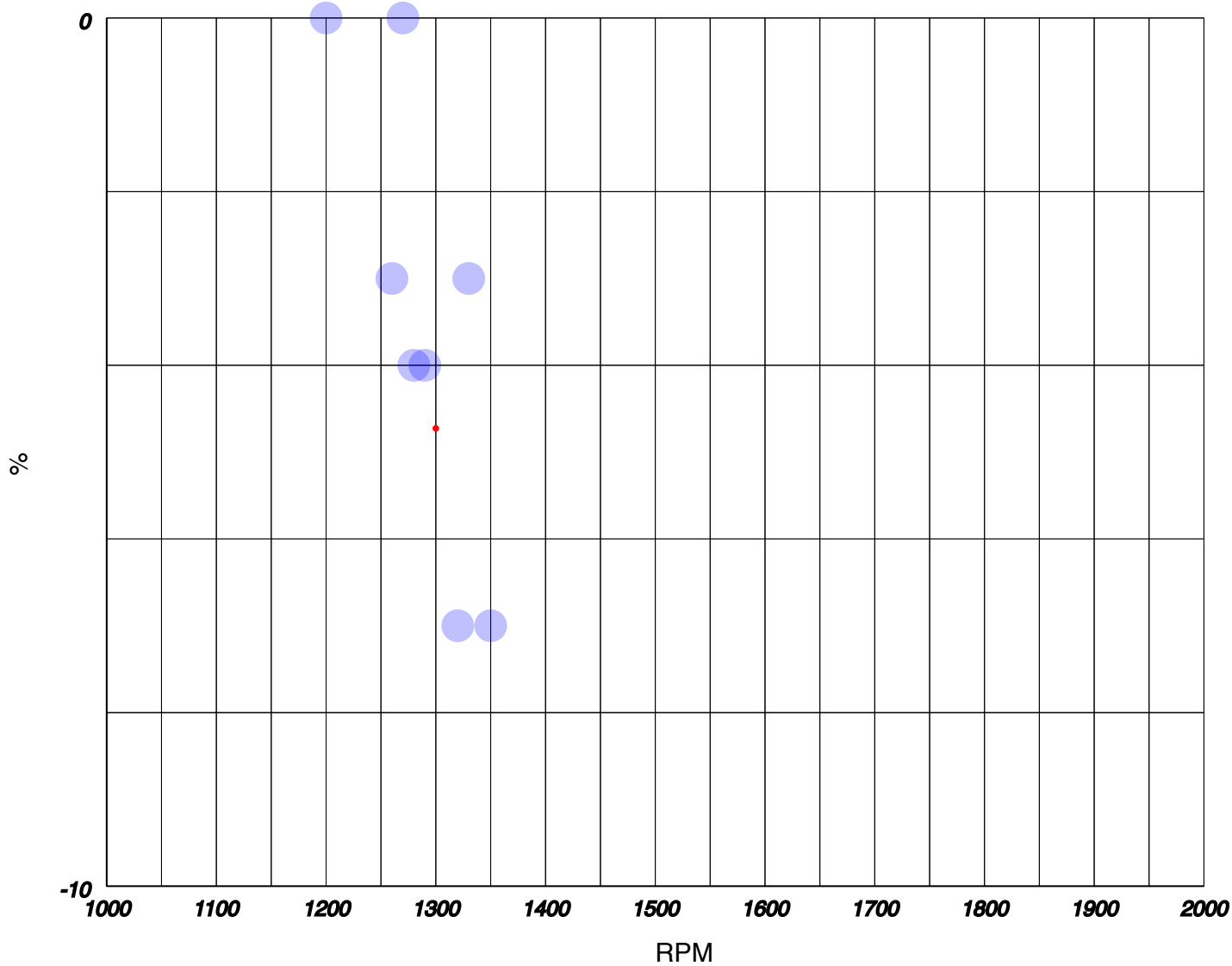


-  *Long Term Fuel Trim*
-  *Short Term Fuel Trim*
-  *Effective Fuel Trim*

[Fuel Trims](#) are the percentage of change in fuel over time.

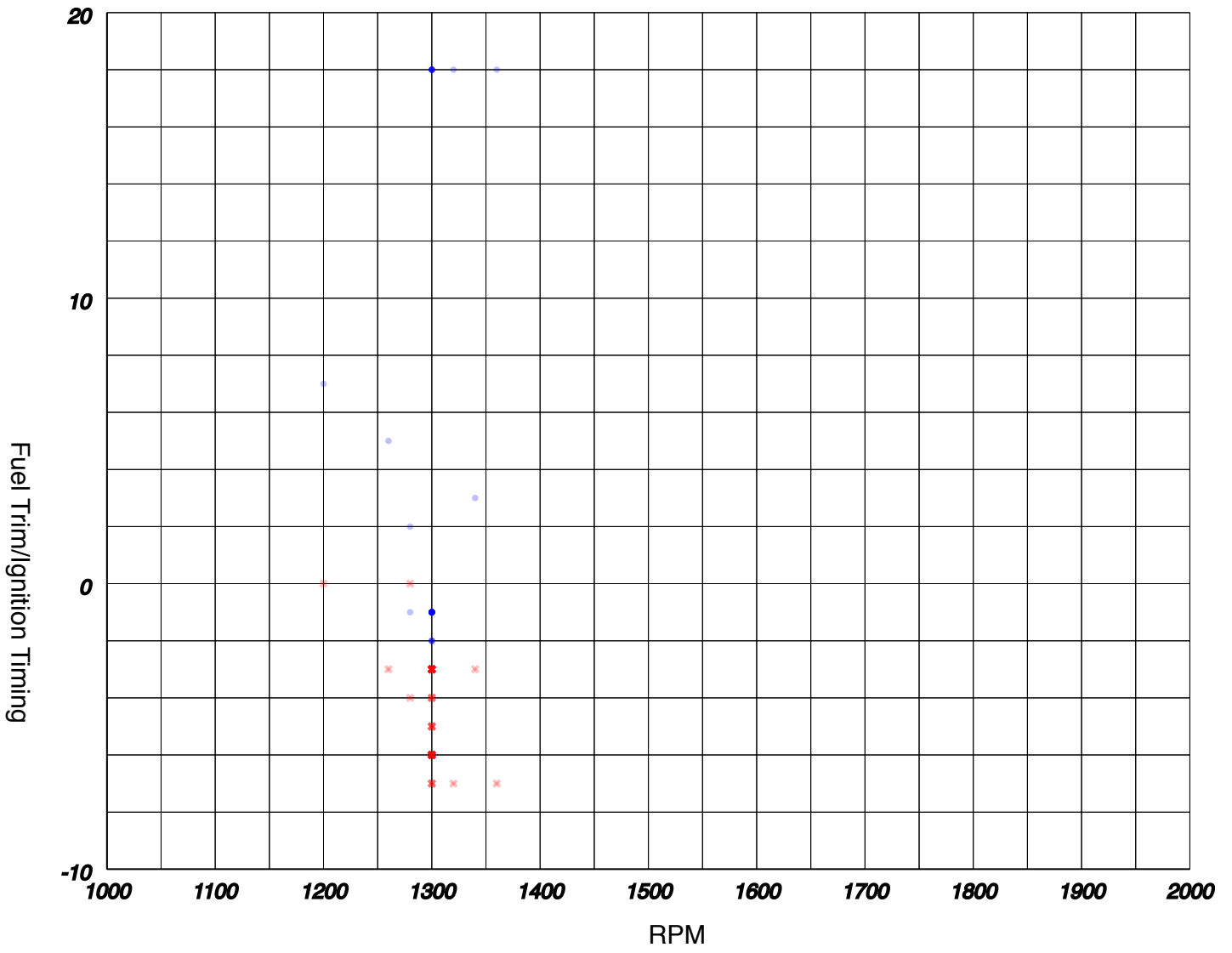
The engine control unit keeps proper air:fuel ratio by fine-tuning the amount of fuel going into the engine.

Fuel Trim Map



For each RPM value of the petrol engine, the applied Fuel Trim plotted as a dot. This map can be used to verify LGP-operating engines working condition.

RPM/Fuel Trim/Ignition Timing



- **Ignition Timing**
- **Effective Fuel Trim**

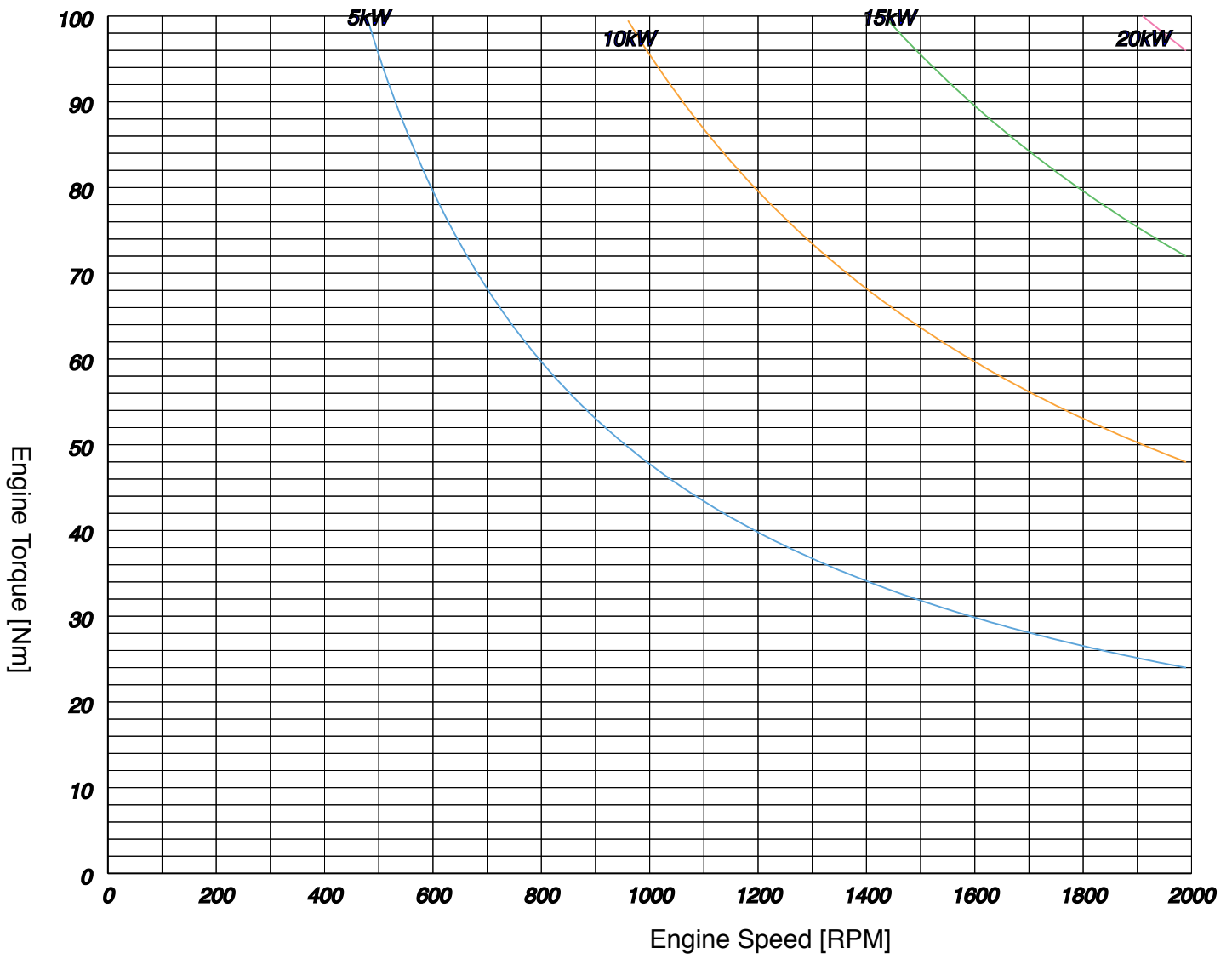
Fuel Trim and Ignition Timings are plotted at various RPM values.
This map can be used to verify LGP-operating engines working condition.






Fuel Trim			
	Short Term	Long Term	Effective
Avg	-1%	0%	-1%
Min	-7%	0%	-7%
Max	0%	0%	0%

BSFC Statistics

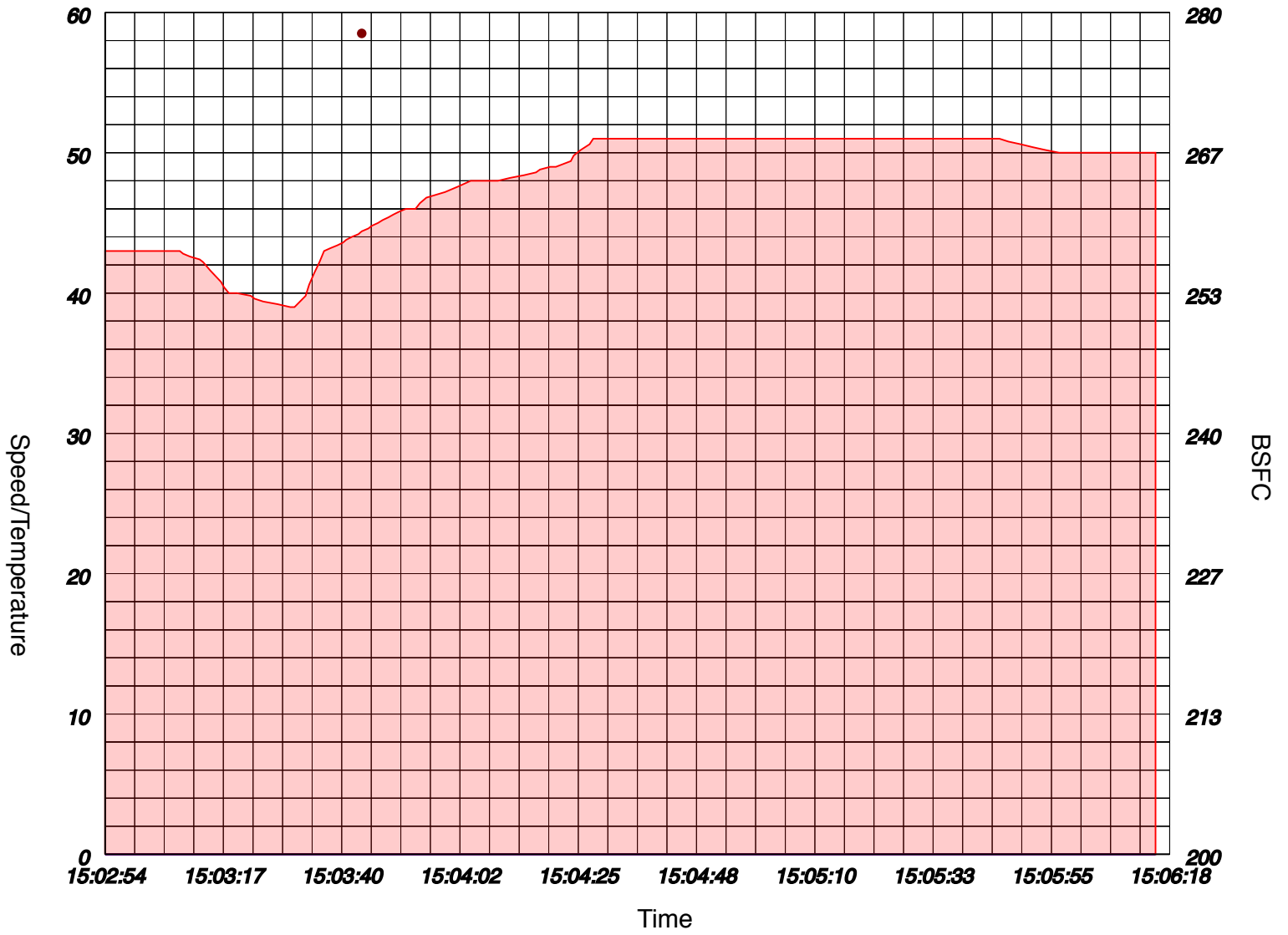
Brake specific fuel consumption (**BSFC**) is a measure of the fuel efficiency of an engine that burns fuel And produces rotational Power.

BSFC



-  **Engine Off**
-  **Low Efficiency**
-  **Medium Efficiency**
-  **High Efficiency**
-  **Best Efficiency**

BSFC Absolute Value



-  **Speed**
-  **Engine Coolant Temperature**
-  **BSFC**

The average BSFC value is plotted with a colored dot.
Range of BSFC excursion is plotted with a green line, so the shorter the line is, the more precise the BSFC value.

Instant BSFC/Fuel Consumption

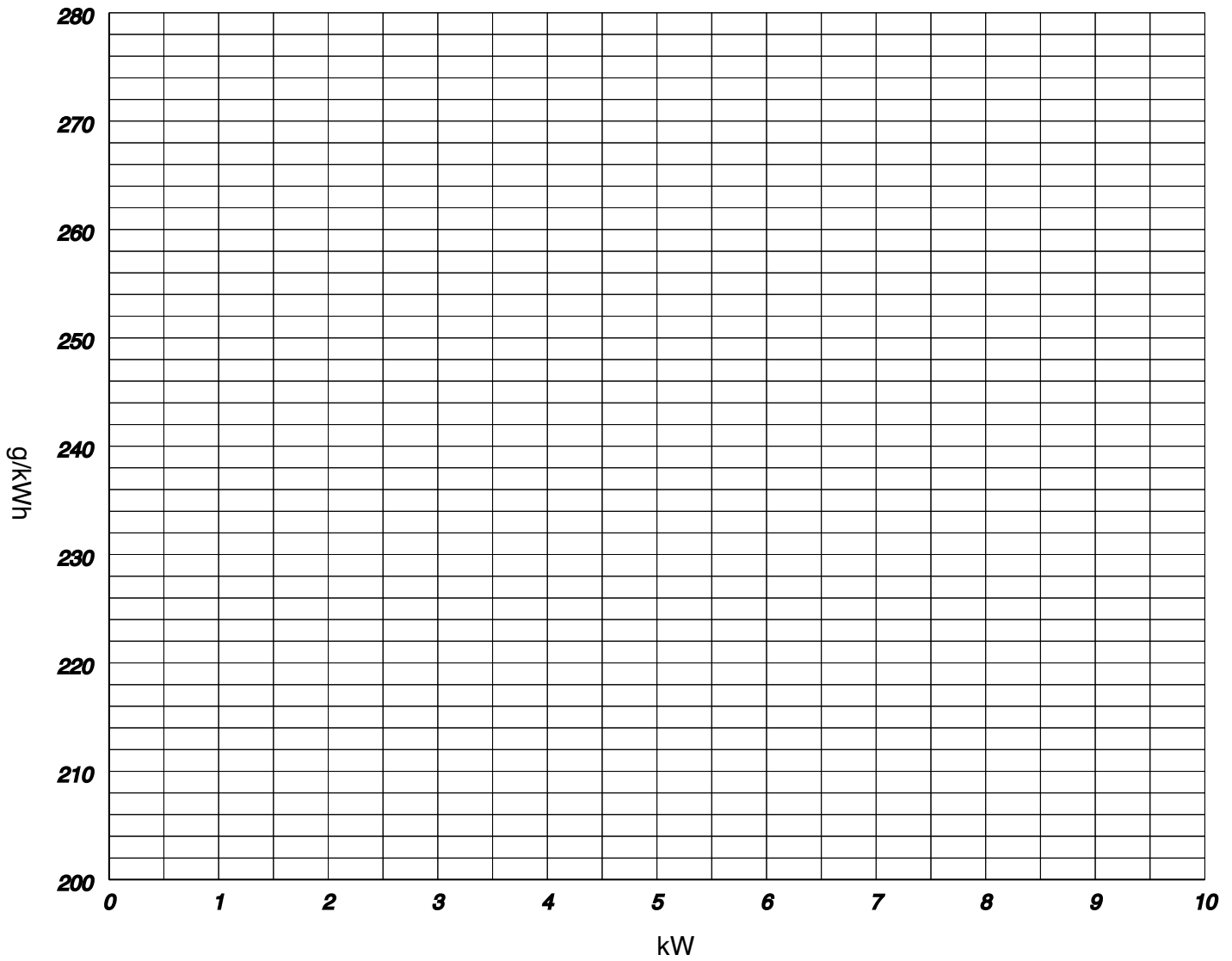
Speed

Instant Fuel Consumption

15:02:54 15:03:17 15:03:40 15:04:02 15:04:25 15:04:48 15:05:10 15:05:33 15:05:55 15:06:18
Time

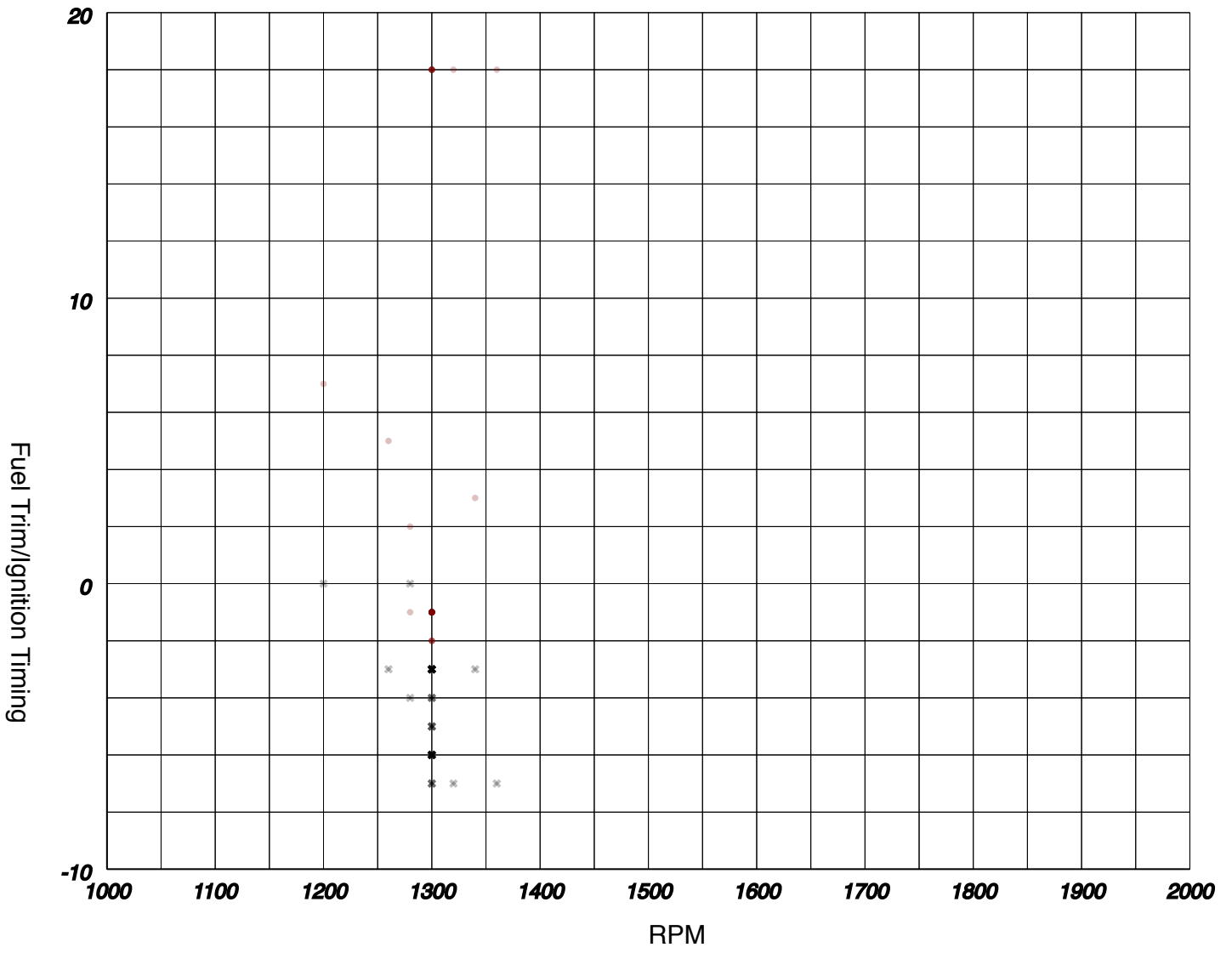
 **Speed**
 **BSFC**

BSFC for kW



For each kW range of the petrol engine, the produced BSFC value is plotted as a dot. Light colored range depicts full value excursion, while darker color plots standard deviation from average. Values are collected only when engine is at working temperature.

RPM/Fuel Trim/Ignition Timing/BSFC



— **BSFC**
— **Effective Fuel Trim**

Fuel Trim and Ignition Timings are plotted at various RPM values. Ignition Timings values are painted with the BSFC value obtained at that specific point. This map can be used to verify LGP-operating engines working condition.

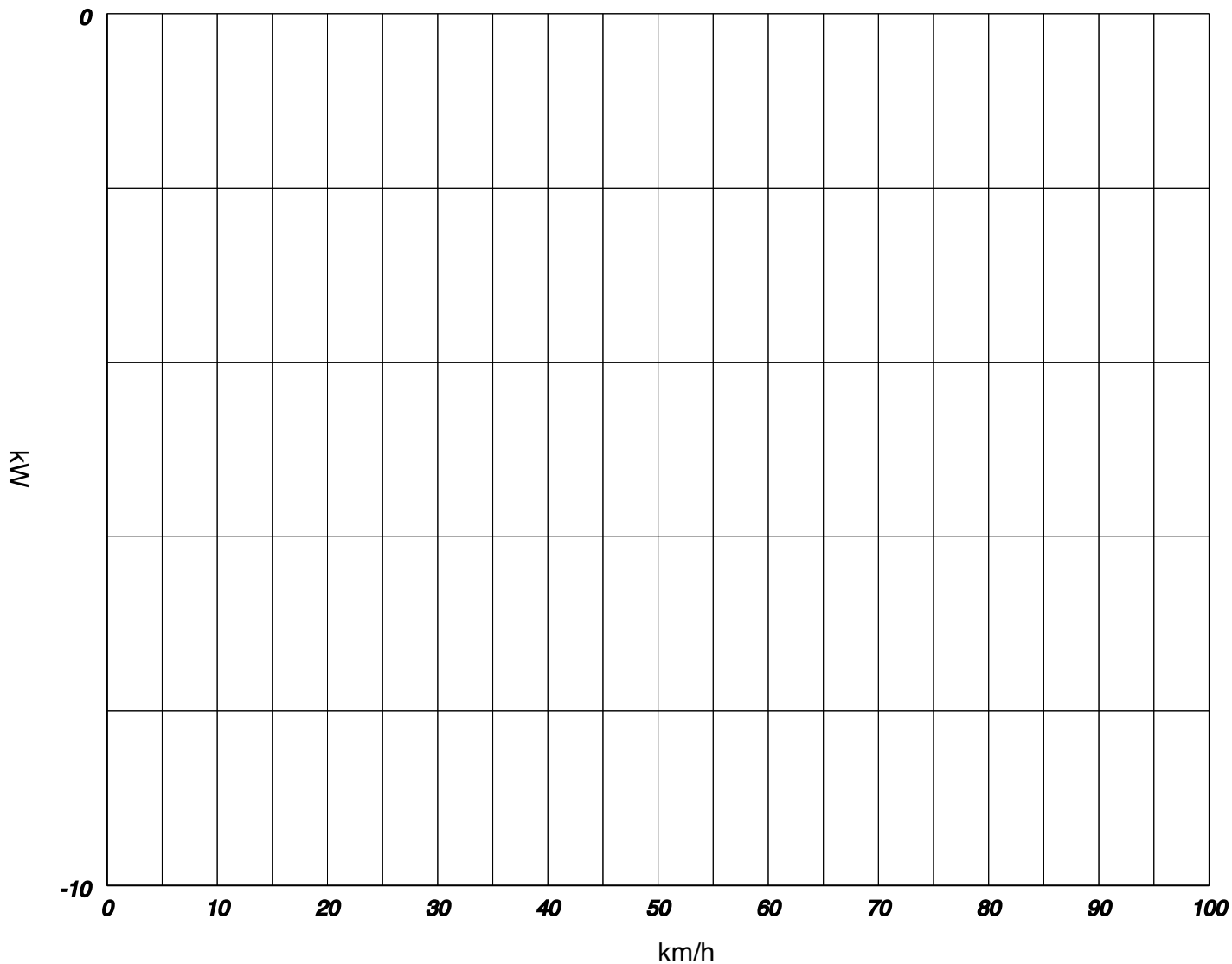
BSFC	
Average	1,286
Standard deviation	1,114

Braking

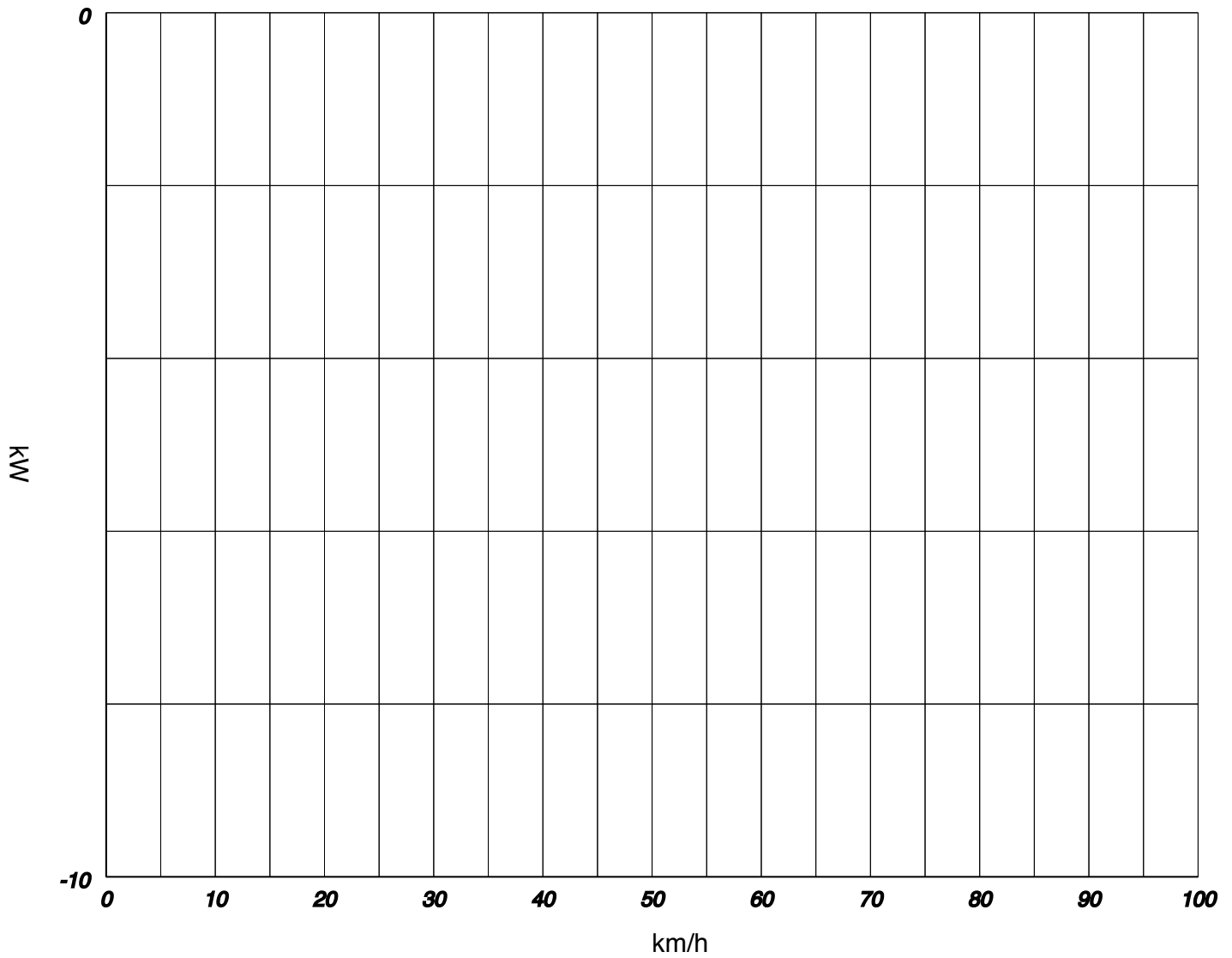
Brakings	0
Good Brakings	0
Bad Brakings	0
Mixed Brakings	0
Braking Efficiency	0.00 %

Braking while moving	0%
Longest brake event	0:00 sec
Total energy recovered by braking	0.000 kWh

Recovery by braking



Recovery by coasting



Car Driving

State	%	Longest Time
Pulse	0%	0:00 sec
Glide	0%	0:00 sec
Approximate Glide	0%	0:00 sec
Coasting	1%	0:01 sec
Heretical	1%	0:00 sec
Accelerator pressed	0%	0:00 sec
Accelerating	0%	0:00 sec
Moving	0%	0:00 sec

Car operational state statistics during the trip.

States are expressed as percentage over the entire trip time and longest time span the state persisted.

- Pulse: accelerating with nearly all ICE power given to traction.

- Glide: cruising with no electrical or mechanical traction (exact evaluation using [Hybrid System Indicator](#)).
- Approximate Glide: cruising with no electrical or mechanical traction (approximate evaluation).
- Coasting: cruising with no accelerator or brake applied.
- Heretical: cruising with MG1 electric motor providing traction.
- Accelerator pressed: accelerator pedal is pressed, even if not actually accelerating.
- Accelerating: car speed is increasing.
- Moving: car is not stopped.

Power Meter		
Zone	%	Longest Time
PWR	0%	0:00 sec
Upper ECO	0%	0:00 sec
Lower ECO	100%	3:25 sec
CHG	0%	0:00 sec

Notes

Point size on scatter charts is proportional to number of samples: a small, well defined dot represent a higher confidence value than a bigger, faint dot.