



Vehicle	Battery Electric Vehicle
Date of first registration	17/12/2015
Range	121 km (EPA test)
Battery Specifications	
Capacity	24 kWh
Battery Voltage	360 V
Battery	Lithium-ion Battery
Cell Type	Laminate type, Pouch Cells
Cathode Active Material	LMO (LiMn ₂ O ₄) with LNO (LiNiO ₂)
Anode Active Material	Graphite
Capacity	32,5 Ah
Nominal Voltage	3,75 V
Battery Modules	48
Cells per module	4
Energy Density	157 Wh/kg
Battery Weight	~180 kg
Battery Price	7.000 €
State of charge (SOC)	68,0 %

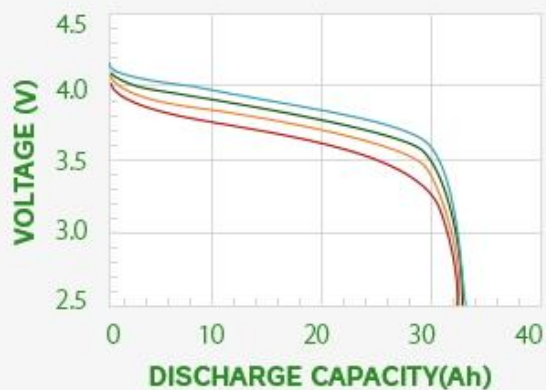


Cell Specifications

Cell performance

Example of discharge profiles (25°C, BOL)

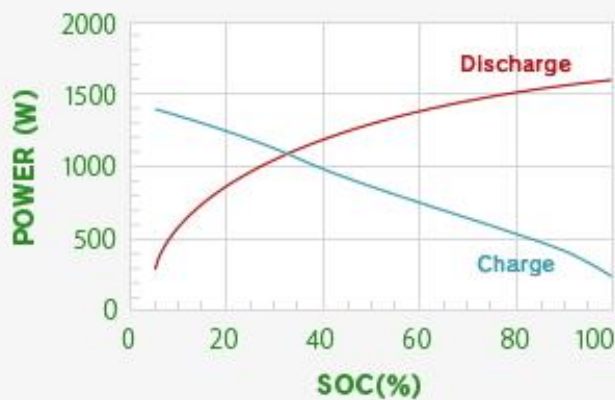
— 90A — 60A — 1C — 1/3C



BOL (Beginning of Life)

UN test results

Example of charge-discharge characteristics (25°C, BOL)



BOL (Beginning of Life)

BATTERY

STATUS BEFORE FIRE TEST



Battery Pack before fire test.



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WE SIMPLY BLOCK FIRE



Detail of a battery module (constructed with a 4-cell configuration).

FIRE TEST SPECIFICATIONS

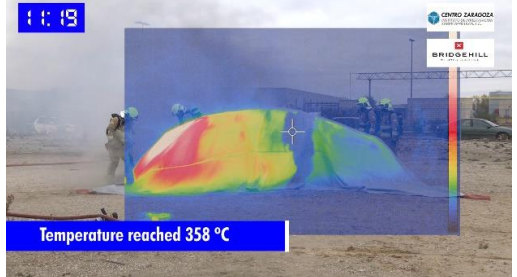
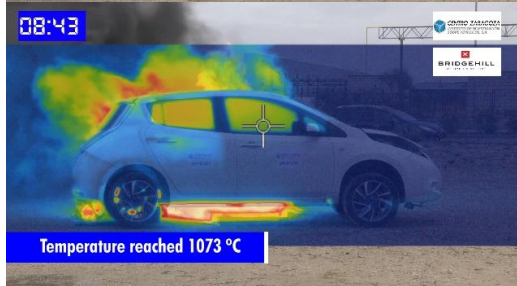
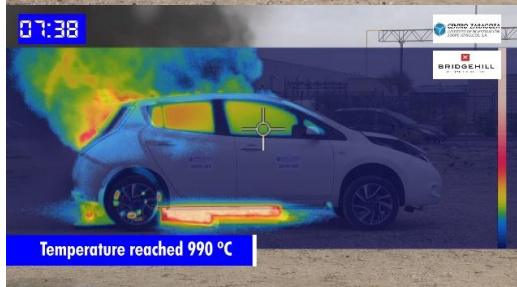
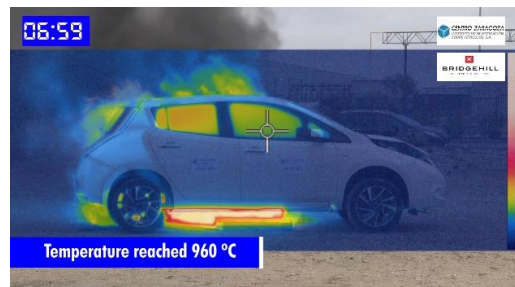
Place and date	Zaragoza, 05.12.2019
Vehicle under test	Battery Electric Vehicle

TEST	
Vehicle	Vehicle only with high voltaje battery
Fire	Ignition Burners (fossil fuel)
Method to extinguish the fire	Bridgehill Car Fire Blanket
Temperature monitoring	Thermal Imaging Infrared Camera: FLIR T640
Thermal Imaging Infrared camera distance	13.7 m
Ambient Temperature	7.1 °C
Average Wind Speed	2.5 m/s
Maximum Wind Speed	8.9 m/s
Maximum Temperature reached	~1000°C
Time to start Battery Thermal Runaway	~8 min
After removing the blanket	
Amount of water to extinguish the fire	400 l

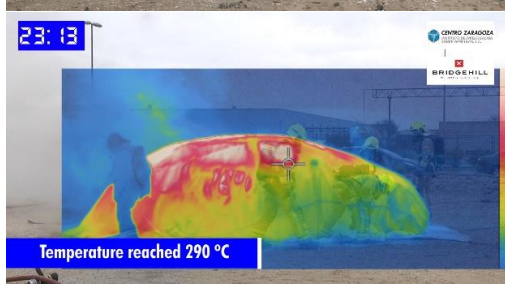
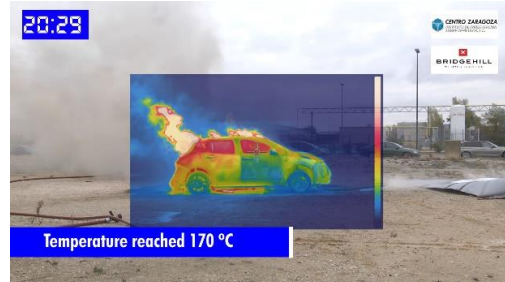


ELECTRIC VEHICLE FIRE TEST

FIRE TEST FRAMES



ELECTRIC VEHICLE FIRE TEST



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