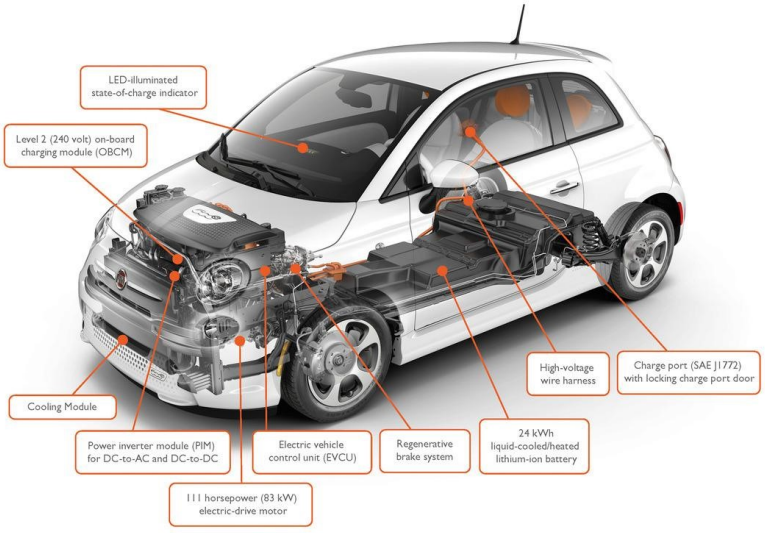
Electric Vehicles (EVs) and Winter

November 18, 2021

With the recent descent into winter in Saskatchewan, it's appropriate to think about EV performance in this season.

I've driven this 2015 Fiat 500e since July, 2018, summer and winter. It lives outside because my garage space is also my wood shop. The Level 2 charger is mounted just inside the large garage door and the door closes on it when I am charging the car.

This car has a 24 kWh battery with an EPA-rated range of 135 km. Its practical range in summer is about 120 km, meaning that I have a few kilometers of range left when I get home. This summer range is under urban driving conditions or with some highway driving at 95 km/hr or so. Faster speeds will reduce the range as will driving at night with the headlights on. This practical range assumes some use of air conditioning.



In the winter, this changes considerably. This morning after sitting in the cold at -10 C but being charged to 100% overnight, the range indicator showed 91 km (67% of EPA-rated range) and I believe it. From my experience, at -35 C I would expect to get a range of 65 km (50% of EPA-rated range) in my Fiat. The battery pack has a heater that would have been called upon to heat the battery this morning, using its own energy, because I have the vehicle charger timer set to shut off at 6:00 a.m. I may change this so that battery warming can be done using energy from my house service rather than the battery.

Driving on today's icy roads was no problem with the snow tires I have on all four wheels. Of course, I had to be careful but spinning a bit on acceleration reminded me that braking will be just as slippery and so I drove accordingly. Snow tires are a must in winter as they provide much better traction than summer tires owing to their low temperature properties of staying relatively soft and thus improving friction contact with the road. Their tread pattern also feeds water out of the contact patch with the road surface to reduce hydroplaning. At temperatures above -10 C, slip (spinning) at the tire-ice interface generates heat that can melt the ice and create a thin water film that the tire planes on. This results in very low traction and can result in loss of control of the vehicle.

EVs work just fine in winter but you need to be mindful of reduced range. They perform well on snow and ice with snow tires. Drop in to our showroom and take one for a test drive to see. We have snow tires on two of our EVs.