

# Makarská by Nissan Leaf

## Introduction

The first electric vehicle I bought was in Canada in spring 2015. It was a basic model Leaf, 24 kWh, without the option of rapid charging, more or less just for a city use.

Our experience with driving and maintenance was good. So when Nissan announced increasing battery capacity to 30 kWh, I couldn't resist buying the new Leaf. The salesman recommended that I purchase except the quick charge option also the option to connect to mennekes charging stations. As will be evident later, it paid off because some places provide only mennekes charging.

What's the best way to put a new electric vehicle to test? Take it on a long trip. Since I travel the Brno-Makarská route quite often, I said to myself why not that one.

## Preparation

Nothing much, but it's better to be ready

The "nothing much" subheading means that I went through three or four smart phone apps and located as many charging stations along my route as possible. Unfortunately, I got satisfied with only obtaining the addresses and didn't verify if the charging stations were still in use. I didn't even try to get more details. I somehow trusted in the Leaf navigation itself, which was my biggest mistake! Relying solely on an online system is indeed foolish. Surprisingly the worst problem I experienced with this lack of knowledge was in Austria. When searching stations dozens appeared; however, less than 50% were available. That was worse than if no charging stations appeared because I wasted the car battery just by trying to get to them. Oh well, next time I'll be smarter.

## The Czech Republic

No charging necessary

Except for the initial charging at home before my departure, I didn't need to charge in the Czech Republic. I drove to Vienna and assumed that I would make the 200 km, which the 30kWh batteries promise.

Not exactly the case. As we all know, the battery range depends on the efficiency of the driver and the topography of the terrain. The first was under my control, the later was in my favor (Brno is elevated at least 20 meters above Vien). From my departing point of my garage, it was 60 meters :-)).



Photo 1: car display at the start (0 km driven, 212 km charged)

## Austria

Paid, paid, paid, just like their washrooms...

The subtitle might be a little exaggerated, but that's how I felt. Considering that my first stop was in a Nissan dealership in Wiener Neustadt, I expected a warmer welcome. At the end, I did receive a cup of coffee. And as an apology for their paid quick charging, I got a discount of 1 Euro. So in theory, I paid 6 Euros for a cup of coffee, which is not that bad.

Since it was my first quick charging, I was thankful for the professional oversight.

While the Leaf was charging, I went for a walk and found a free wifi in the local McDonald. There I browsed the internet, looking at some more maps. (Just as a side note, the toilets in McDonald were free, surprisingly). When after about 40 minutes I returned back to the Nissan dealership, everyone was pleasantly surprised that the Leaf was already charged.

Somehow, as a lay person, I was fascinated by quick charging. Nissan uses a CHAdeMO system (Charging de Move). With an empty battery, the charging happens with a voltage up to 125 A, and as the battery recharges, the voltage decreases until it gets so slow that it's better to terminate the charging. Sometimes the station itself stops the charging, even though the battery is not fully charged.

The display was showing 229 km. Maribor, where I planned on charging next, was 190 km. But the Wiener Neustadt – Maribor highway crept over a huuuge hill, on the other hand Maribor is at a lower elevation than Winner Neustadt. So what?

Stay tuned and see the pictures.



Photo 2: car display in Wiener Neustadt (driven: 177.1 km, charged: from 51 km to 229 km)



Photo 3: charging station display after 11, 19, and 38 minutes of charging. The charging current isn't very visible. You can see it at the bottom right in the light reflection 106, 106 and 16A.

## Slovenia

### Good standard

Driving up a hill was frightening. I was losing three kilometres of battery with every one kilometre driven. I slowed down and the cargo trucks (their drivers, that is) were thinking God knows what. They flashed their headlights at me and then started passing me. At the end I sped up and stayed behind the slowest one because I needed to conserve battery.

Before I took on a hill (750 meters above sea elevation) before Graz, I took a photo of my battery. At the end it was pretty good (see another picture). I successfully made it up the hill and reaped the benefits on the way down, even though I didn't pass very many cargo trucks. After all, I still wanted get to Maribor.

Fortunately, with 57 kilometres remaining, I still had quite a bit of charge. Since the next charging on my list required a card – and I wasn't able to obtain the card – I had to get to a different charging station. I didn't find it until my third attempt (oh the preparation) and my battery reached almost zero. The charging station was located at a hydro plant area. I entered the area through a gate where I received a charging card for free. This area is worth seeing even if you don't need to charge. As I was walking around, I even found probably company's tennis courts and wanted to buy some refreshment there. However, the club members insisted that the beer is on them. How can you not praise them...

After two consecutive charges, my battery reached almost 100%. Their charging station is setup to charge 40 minutes, after which my battery was at 90%. I started second round but didn't stay for the full interval. As we know already, the end is always slow. Nevertheless, 232 km is a full "tank" so hooray to Zagreb!



Photo 4: tachometer right before the hill top to Graz – OldTimer rest area (not Slovenia, but on the way there)



Photo 5: tachometer in Maribor while searching for a charging station – close to zero km left when found.

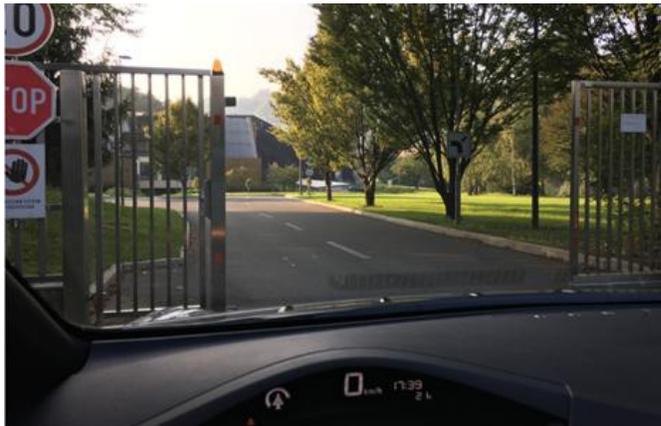


Photo 6: entrance to the hydro plant area company DEM (Dravské Elektrárne Maribor – river Drava hydroplant)



Photo 7: charging station in the hydro plant area



Photo 8: tennis courts and beer

## the first round



## the second round



Photo 9: the first and second round of charging



Obr. 10: Car display after charging in Maribor

## Croatia

### Pleasant surprise

I don't want to jump too much ahead, but I have to mention that the Nissan EV Connect app, which the Leaf navigation is probably based on, was showing that there were no charging stations around and reaching my destination wasn't possible. The Slovenian app wasn't covering Croatia much better (not surprisingly, they compete each other). Unfortunately, I couldn't find any Croatian app. Oh the preparation . . .

Well, I just want to say that my expectations weren't high so at the end I was pleasantly surprised. But let's start from the beginning.

### *Maribor - Zagreb*

The distance between Maribor and Zagreb is less than 150 km so actually no stress. There weren't very many hills either, most of the time on the highway. Easy. Nevertheless, I was conserving energy just in case. My battery could have had a higher charge before I got to the next charging station, but I didn't find the charging

station on my first attempt again. I wanted to go to the one that was the closest to my further destination (chargemap.com was showing 5 in the area). However, on two first addresses I tried I couldn't find anything similar to chargers. At that moment, I was already looking for a gas station where they would let me plug in to at least a regular 230 V. Fortunately, the third attempt was successful. My heart jumped with joy when I saw it.

It was a CHAdeMO quick charging station, close to the centre of Zagreb, not requiring any registration. (according a poster on it co-financed by the EU and the city of Zagreb). As you can see in the pictures, there was a park – perfect for a short walk – a concert building, and a beautiful cafe (which, at 11 pm, was just about to close though, anyway...).

I was this late because of my unsuccessful attempts at finding a charging station. This one wasn't easy to find either. The parking lot was huge and scattered all around the park. I even found a similar charging station there that required a registration. Fortunately I didn't spot that one until I was already charging. It was more than a good luck at that moment. Thanks to the short Maribor – Zagreb distance, I was done charging in 42 minutes.



Photo 11: Battery status on my arrival to the Zagreb's park charging station

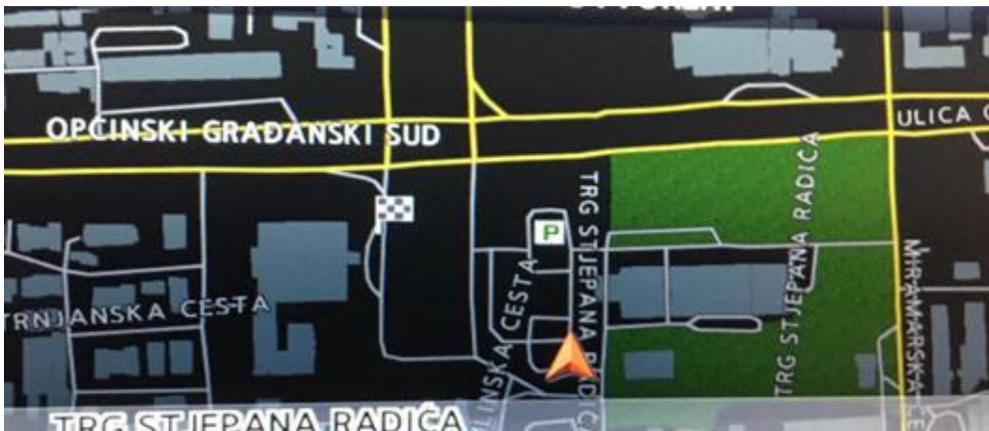


Photo 12: where it was



Photo 13: how it looked like



Photo 14: charging station screenshots



Photo 15: surroundings in the dark on an Iphone – a concert building “Dvorana Vatroslava Lisinského”



Photo 16: Vatroslav (vatrogasci = fire men)



Photo 17: paid charging station in the same parking lot



Photo 18: Battery after charging

### Zagreb - Gospić

With the battery being at 243 km, it looked promising. Could I make it without any more charging? Well, Connect EV Nissan was indicating that I couldn't. The Leaf navigation was displaying "no charging station in the requested area". Chargemap.com didn't look any better either. Gospić was 200 km. I would prefer charging once more in Karlovac to feel better, but even Chargemap didn't find anything there. Well, I wasn't going to take the longer route along the Slovenian shore (where there were some charging stations).

According to the maps (see picture 19), the shortest route was 191 km (that would take me 1 day 17 hours if I had to walk - funny). That route crossed Plitvice national park, which is a nice route we know from the time before the highway was there. This will save me some highway fees, but the hills ... so was it better to take the highway or not?

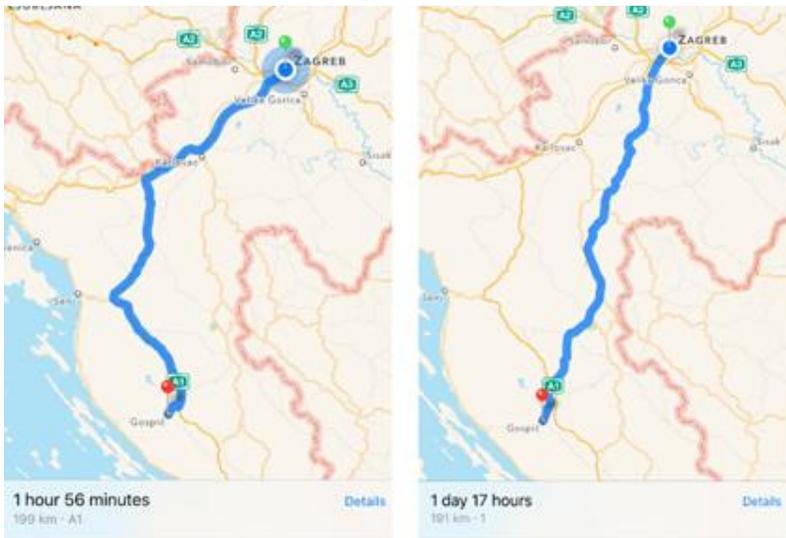


Photo 19: fast and shortest ways

Difficult decision. At the end, I setup Gospić's charger station address to Nissans' GPS and let calculate the ECO route by it. And – I'm led to the shorter way via Plitvičky :). Until Karlovac fine, but then after about ten kms long steady incline, I started to doubt my choice. What's more, it seemed that there were even more cargo trucks than on the highway, all of them going around 100 km/h, hill or not. In the beginning I tried to keep up, but the battery charge was telling me that there was no time for heroics. I settled on my 50 km/h. Any time a cargo truck approached me, I would turn into a rest area to let them pass me, time to time without stopping even, just slowing down, and continue on the 50 km/h.

It was a long night. 200 km in 4 hours – math works here :-). The last but five climbing, the battery was displaying that my charge was insufficient for reaching my destination. It was down the hill towards the highway which is not far from destination, but then – fifteen kilometres up a hill. Never ending. I didn't remember driving through that area ever before. No signs of civilization or even an electrical outlet. I remembered last one twenty kilometres back. But obviously it would be up the hill either way. So I just prayed. First, that I make it up this one hill. Second, that it's all downhill afterwards. I didn't even take a photo of my low battery :(.

And it was! Indeed all downhill! I almost felt like I was dreaming. I was expecting something up must be coming, but not, it was really all the way down (night mare for bosses a fortune for me :-). So the battery has been recharged to 36 km level when entering Gospić (see picture 20). Happy ending? Not entirely. No charging station available on the destination. I drove around twice, but nothing.

With 30 km left, I parked the vehicle and walked around to find it. It was 4 am, empty streets – a ghost town without a charging station, scary. I walked around till about 5 am when first cleaning ladies of pubs and bars began to wake up. At that point I took out my sleeping bag – which I had packed just in case – and fell asleep.

I woke up around 8 am at a corner of some church. Actually before eight, some kids were starting to pass my car and were looking surprisingly who it is sleeping on their route to school... :).

If you didn't know, Gospić is a town in which Nikola Tesla attended high school. Yes, that Tesla who built the first hydro plant on Niagara falls. I would have been very surprised if chargemap.com was wrong and there was no charging station there. The address looked trustworthy “Memorialni centar Nikola Tesla”. Indeed I found the building where Nikola Tesla studied together with some other buildings, residence, sports field, but no charging station. So I walked into the dormitory, found a janitor and asked him. Janitors know everything! He looked at me suspiciously, what I'm looking for at youth school: “what are you looking for actually???” I was trying with a broken tongue Croatian word for charger: “Puuniounioonica”. I showed an address on chargemap.com. “Ahh, Punionica you mean, you should have said so... There is one, go straight, then turn right, and then 6 km out of town!” I was thinking of my low battery and replied: “There are supposed to be three charging stations in Gospić”. “True”, he says. “There is one more here in town, about 1 km from here, next to a bicycle rental.

And there it was!

I walked around first to check what I'm getting myself into, tested the charging station (to see whether it's working and whether I can charge even without any card). I repeat – it was there! The battery statuses in Gospić see below.



Photo 20: battery status on arrival to Gospić (36 km) and morning at the charging station (27 km left).

Next pictures show the area, the actual charging progress, and things as usual. By the way, notice that the charging station isn't CHAdeMO – quick charging – but mennekes, which is understandable for a medium-size town. To get mennekes option incorporated into the Leaf, I had to wait for the vehicle for one month

longer. Now I was glad I did. Where would I end up if I didn't listen to the advice of one Nissan salesman? I won't name, but he is from Komin, CZ, and a cable to it from Mokra-Horakov, CZ. So happy ending. I got some sleep, charged the vehicle, and had 300 km left to the final destination.



Photo 21: Nikola Tesla „sveučilištē“ (high school)



Photo 22: Further schools



Photo 23. Further schools



Photo 24: Punionica (charger)



Photo 25: the same Punionica (close-up)

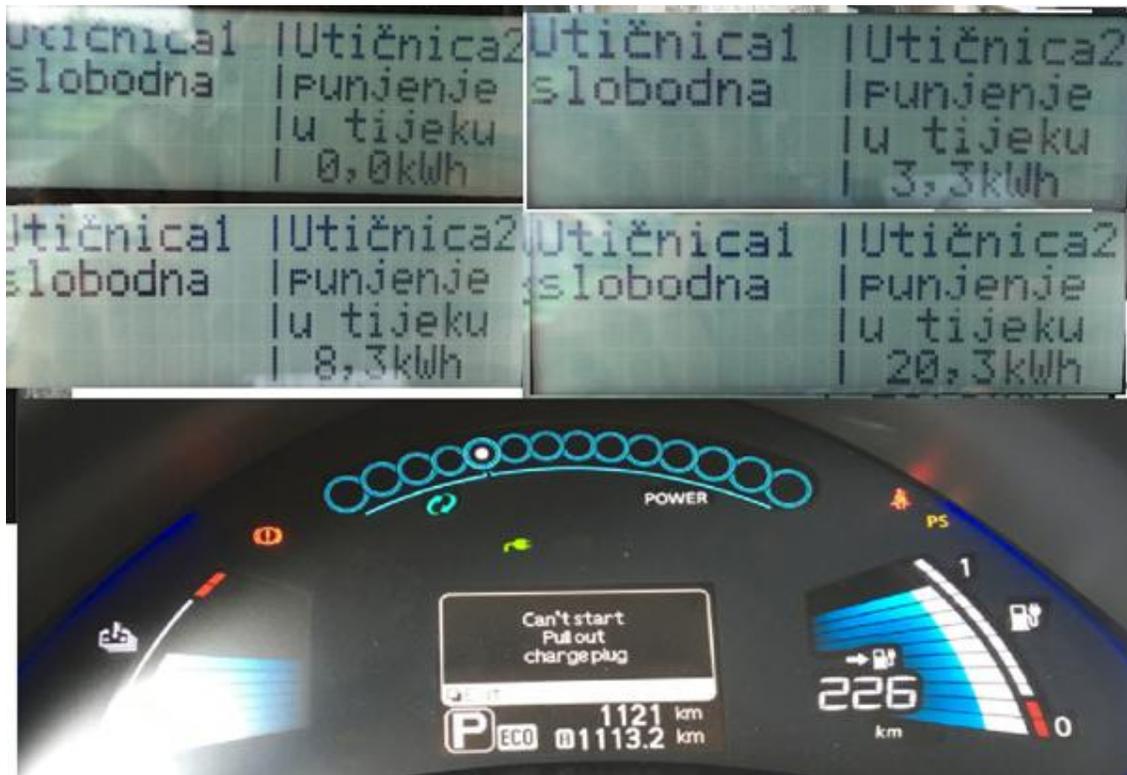


Photo 26: charging progress – the battery wasn't charged 100%, but I wasn't patient to full charge (not needed for next part).



Photo 27: more of Gospič – local little river



Photo 28: Gospić – tennis courts:)



Obr. 29: Theme park Nikola Tesla with charger (6km to Gospić)



Obr. 30: Memorial Nikola Tesla – post office – where you get “his” stamps

As is evident from the last photos, I decided to explore Gospić a bit before my departure. I had to visit Tesla's memorial, thematic park, and of course the charging station the janitor pointed me towards. I wanted to see if the charging station wasn't more convenient to access on the way. Probably not, but it was downhill. Also, with the possibility to visit the park, it will definitely be worth to charge there next time. The receptionist would even let me charge for free, but I wanted to reach my destination while it was still light outside. So I said thank you, took a few more photos, and left towards Sibenik.

### ***Gospić – Šibenik***

EV Connect Nissan showed nothing again – no charging stations available. Shit! Well, I know that it's not Nissan's fault. I have worked with numerous programmers and was testing for them and so I know it's not entirely their fault. They aren't allowed to explore anything; they are pretty much stuck behind a computer, outside of reality and have to listen their managers.

Fortunately, chargemap.com has some data about Sibenik. Also, Gospić-Sibenik is only 150 km so no drama here. One pleasant surprise – the charging station at the entrance to the Krk national park was a quick charging CHAdeMO – free! Such secrets! Nissan's software can probably only display expensive, paid charging stations. An expensive vehicle equals expensive maintenance. As I wrote in the beginning of this section – shit.



Photo 31: punionica in the Krk national park (punionica is from word fulfilling :-)



Photo 32: parking lot from the other side (out of thankfulness)

By the way, Nikola Tesla built a hydro plant on the Krk River. Its turbine is exhibited here. Nikola installed its bigger "sister" on the Niagara Falls.

### ***Šibenik – Makarska***

This was just a cherry on the cake – 135 km. Of course, I had to visit Split, so it ended up being 160 km. There are many charging stations in Split, but none on the Nissan Connect EV list. Croatia isn't their forte :-)

For the interested ones: a mennekes charging station can be found in the "City center" (shopping center) parking lot and a free card is for pick up at the info desk. Yes, I plug the vehicle in and went to get some refreshment in the food court.



Photo 33: charging in the City Center One shopping centre in Split

Here, I have to compliment Nissan, although not too much. Each charging location is automatically saved in a directory. However, it's not complete. When looking for charging stations, this directory doesn't display the saved data. That means that the next time I'm looking for charging stations, the navigation system will again say "the battery charge is too low to reach the final destination".

And finally the last photo. There is even a charging station for Tesla in Split. It looks really impressive. My Leaf looks quite insignificant next to Tesla, but both vehicles reach their final destination. If I remember correctly, the Tesla was from Sweden :-).



Obr. 34: Split, Dugo Polje, charging station for Teslas.

## Conclusion

What would need to happen in order to drive an electric vehicle without worry and stress? For me, it means a charging station at every gas station.

For example, every gas station shows the price for petrol, diesel, gas, bio diesel (ethanol), but no price for electricity. If you ask about electrical energy, at best you receive a sympathetic smile. At the same time, a hybrid vehicle is offered at pretty much every car dealership.

A 230/380V plug in even with charge meter could be offered without any significant costs at all gas stations. Of course, quick charging would be much more demanding, but there should be some at least along a highway nevertheless. (For now I'm aware of only one in the Czech Republic – a charging station E.ON in Vystrkov by Humpolec).

A final compliment:

Thanks to the support of green energy, there are many charging stations with an interesting touristic theme. Not that many here in the Czech Republic, but many more in Croatia as we could see – in Gospic, the center of Zagreb, or the Krk National Park. Let's be thankful for those! 😊

## DATIP s.r.o.

2016