

## Static charging of electric vehicles

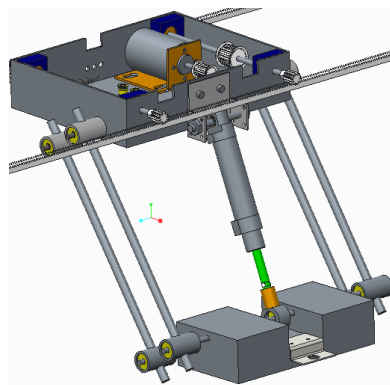
***Is it possible to take out the hassle of the manual interaction which is required in order to connect an electric vehicle to the power grid to charge it? The master thesis described in this article gives an example as to what such a system could look like.***

The emergence of different technologies for implementing electric road systems (ERS) is currently in full progress. With many of the large actors in the vehicle segment such as Volvo and Scania using a variety of approaches in order to find a viable system for supplying power to vehicles during operation. However for electric vehicles to be able to be competitive in relation to fuel powered modes of transportation, extensive infrastructure investments would have to be made before ERS technology is able to offer the range and geographical coverage necessary.

And while the ERS technology may not be at its most useful while in the progress of expansion, it poses an opportunity for an alternate application at this stage, namely *static charging*.

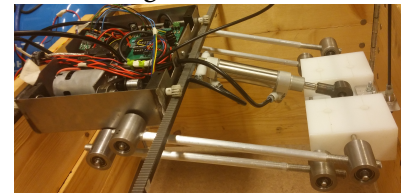
*Static charging* is intended to make use of the ERS

while it is not as widely spread as required to be useful for charging while driving, but rather by using strategically placed sections of ERS in places where vehicles frequently stops, this could make possible the use of ERS in its expansive phase to a much larger extent. For example in public transportation this could be used to make electric buses more viable by extending their range, which could have a positive effect on both issues regarding noise and pollution in urban settings.



The master thesis project covered in this article aims to investigate precisely that, the viability of such a system. The proposed solution consists of three separate contact mounted in a frame structure beneath the vehicle, these are then used in order to form a connection with a ERS when

one is available. A graphical representation can be seen in the picture on the top of this article and a picture of the actual test rig can be seen below.



What the project managed to show is that it is possible and also viable to use a rig similar to the one depicted. But as it turns out, you could probably do the same thing with a lot fewer moving parts, which of course is a lot more robust.

It would seem that the well established design philosophy of not making things more complicated than they need to be still holds true. But on the other hand, this result bodes well for the potential to utilize the emerging ERS technologies for *static charging* as it could probably be done using relatively non-complicated measures. In lieu of the necessary spread of ERS, *static charging* using the same technology seems to be a favorable opportunity in the mean time.