ALLIGATOR

energy interface

for semi-trailer trucks

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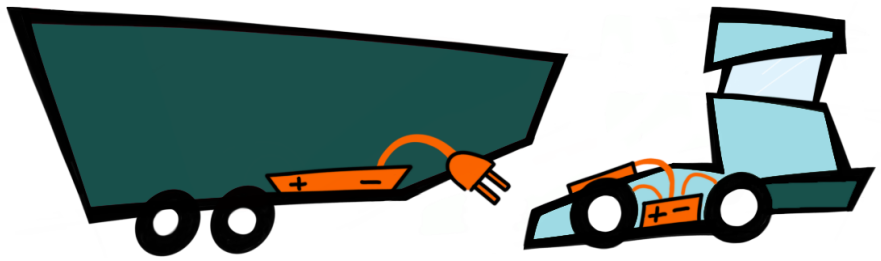
state of the art

According to the current state of the art, the transfer of pneumatic and electrical energy (24VDC / signals) between the tractor unit and the trailer is done using coiled cables/hoses.

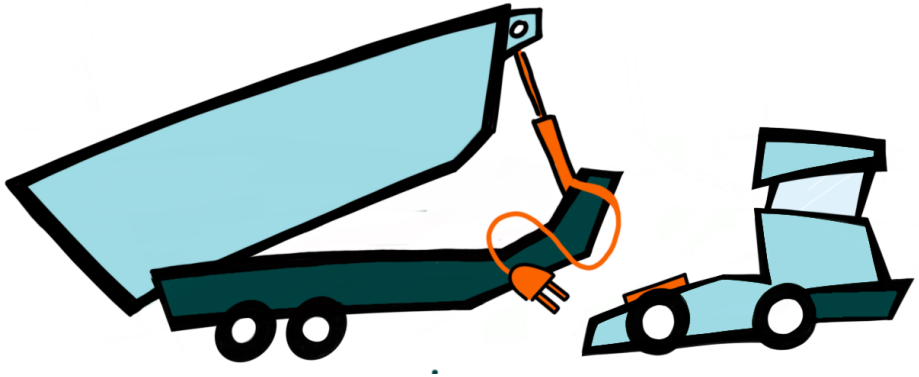
High-voltage lines of the electrical drive system (400 - 800VDC) cannot be implemented in this manner due to safety and other technical reasons.

This is the main reason why the trailer is currently not integrated into this network.

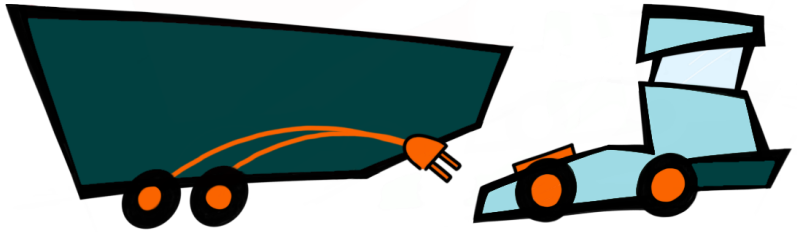
However, there are compelling reasons for implementing a high-voltage network that spans the entire semi-trailer truck.



charge and range optimization



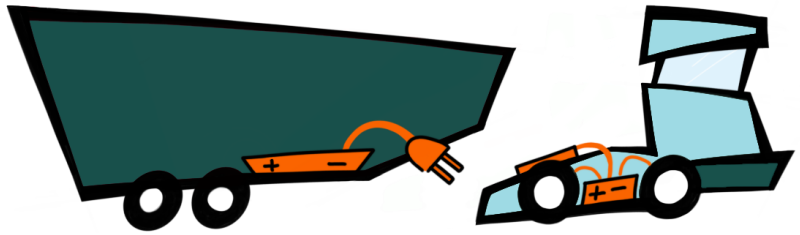
energy supply



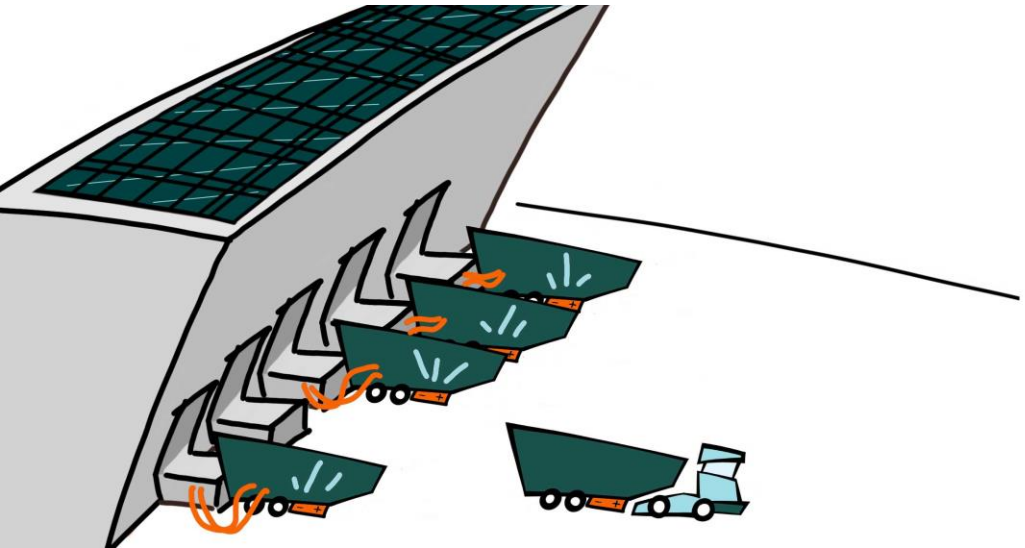
drive system extension

batteries on the trailer

On the trailer, not only are there additional opportunities to place batteries, but there is also the option to charge them independently from the tractor unit. This offers various advantages depending on the logistics operation:



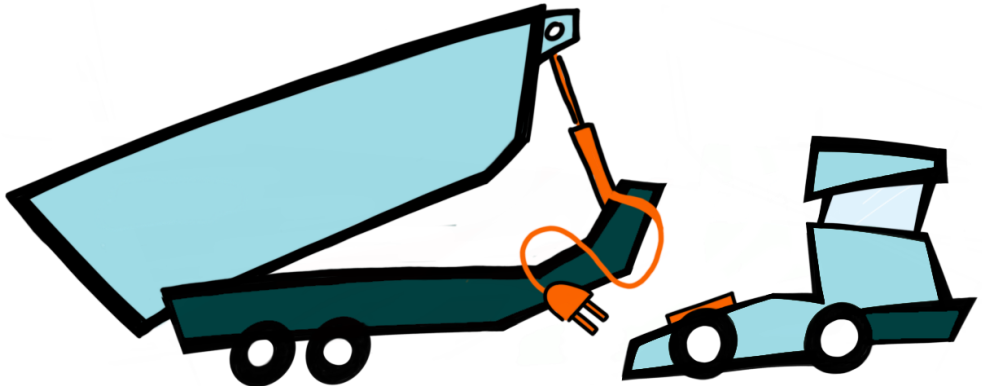
charge and range optimization



- Independent charging of the trailer from the tractor unit allows for more flexible charging times and reduces dependence on the availability of the tractor unit.
- The absence of a fast charging infrastructure reduces reliance on specialized charging stations and reduces potential higher energy costs.
- Better utilization of self-generated energy, such as solar power.
- The ability to charge independently eliminates waiting times for energy charging, which can accelerate the logistics process and increase efficiency.

power supply

In diesel-powered vehicles, energy is generated in the form of torque. In some applications, to power high-performance equipment on the trailer, this energy is converted into hydraulic pressure on the tractor unit.

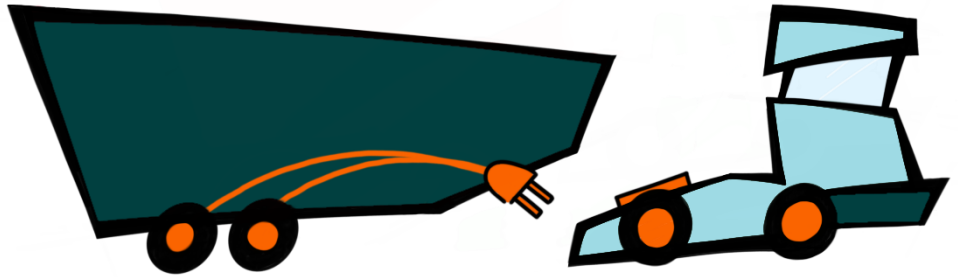


energy supply

With a high-voltage network, such a transformation can either be done directly on the trailer or may not be necessary at all. This means that, depending on the application, the energy can be used directly as electrical energy without the need for conversion. This can lead to efficiency improvements, weight savings, and other benefits.

drive system expansion

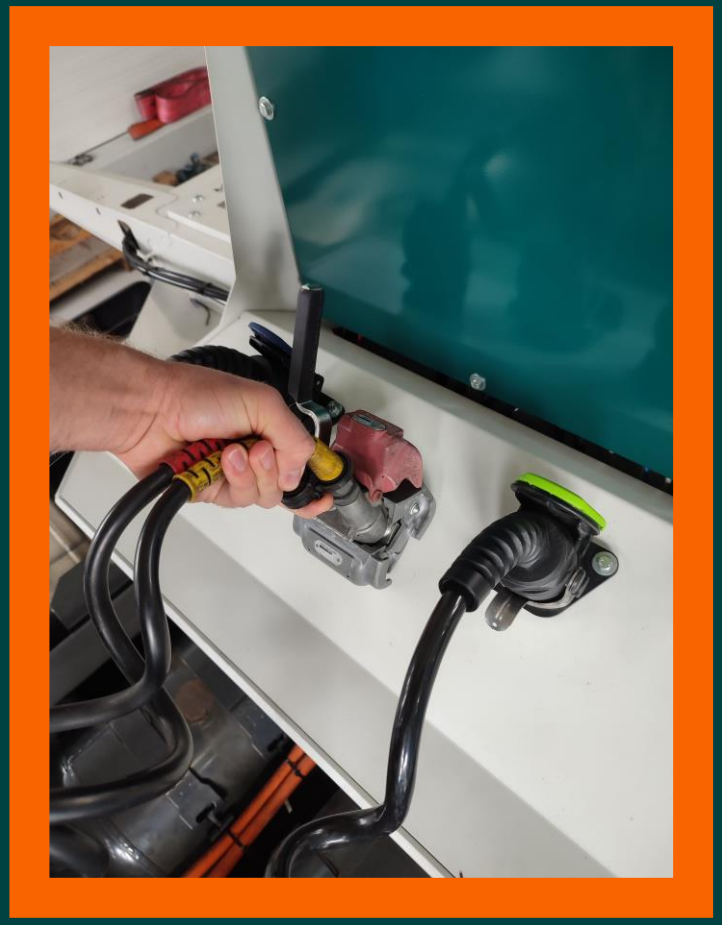
A significant portion of the **braking force is generated on the trailer**. By implementing a high-voltage connection that spans the entire semi-trailer truck, the trailer axles can be integrated into the drive system. This allows for **more energy to be recovered** during braking.



drive system extension

While this solution may require an initial investment, it would increase the range and reduce energy costs over the entire lifespan of the vehicle. This brings long-term benefits to the operation and cost-effectiveness of the vehicle.

connection speed



A pro require 5-10 minutes

One additional weakness of the current interface is that the connections are manually made. Depending on the logistics process, there may be frequent trailer changes, and the overall time required for the connections can become a significant cost factor.

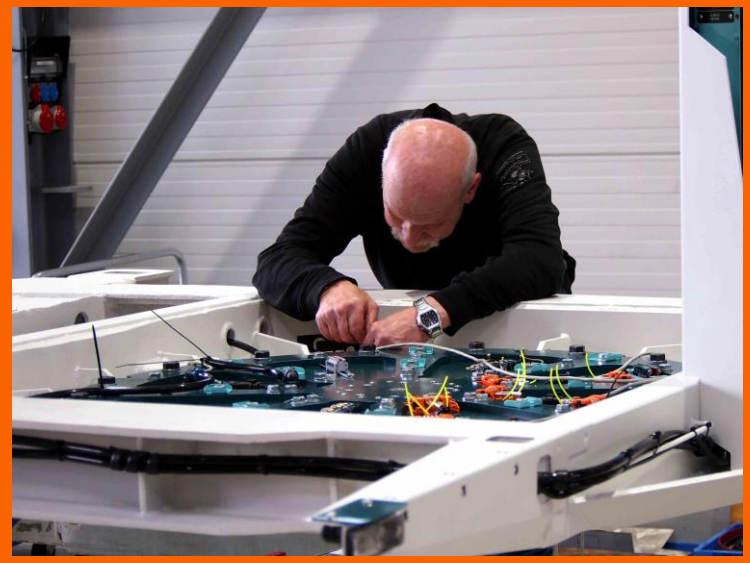
In contrast, our interface allows for fully automatic connections without any additional time loss.

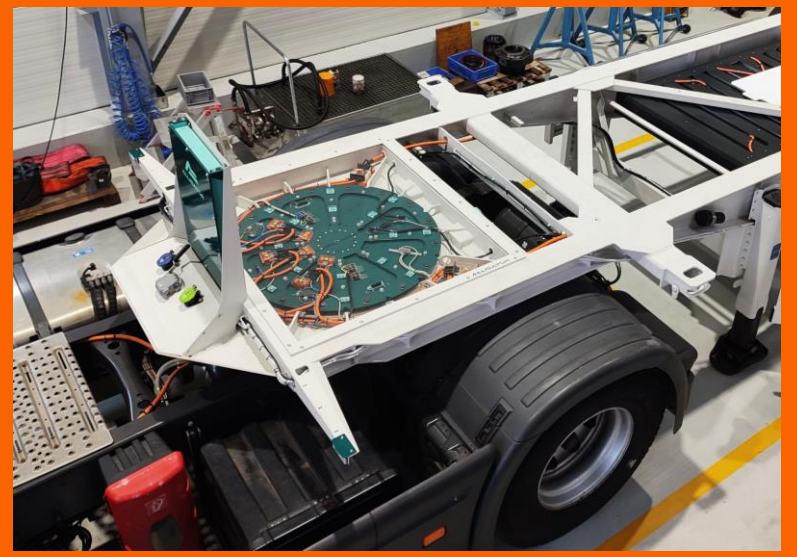
See for yourself! Here on this link

the solution

The Alligator energy interface enables a flexible and efficient connection of:

- Onboard power supply (24VDC)
- Signal exchange
- Pneumatics (brake systems)
- Interlock (high-voltage release)
- High voltage (2x 400-800VDC)





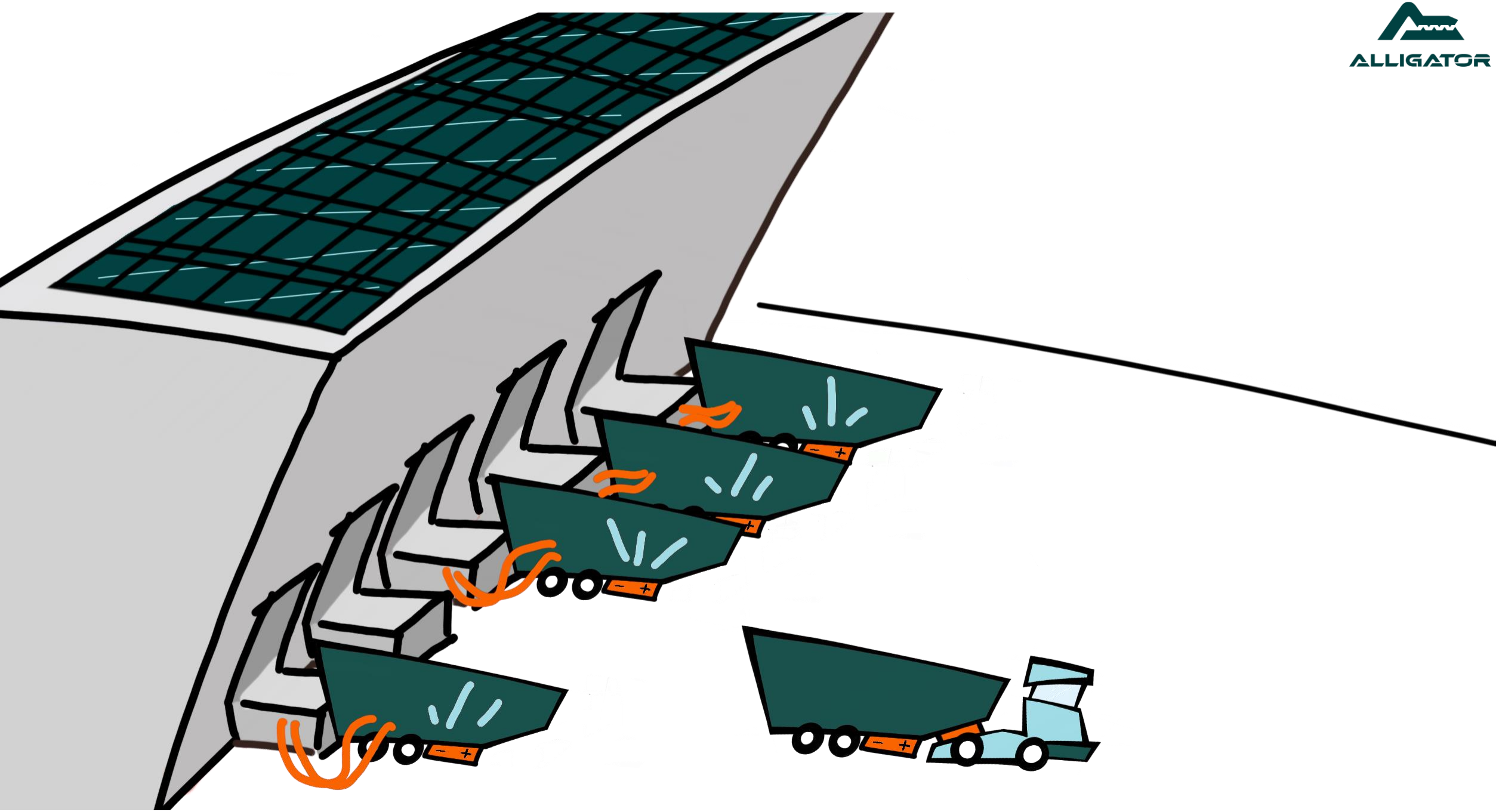
prototype and testing phases

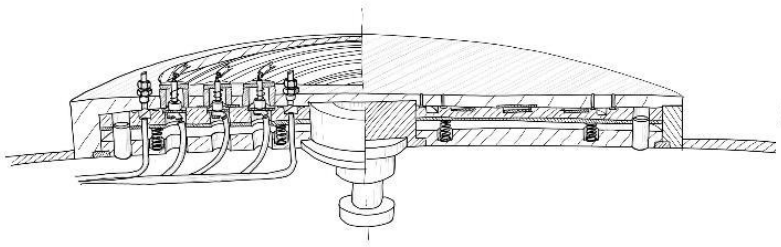
With the system that improves several drawbacks of a semi-trailer truck, we have already successfully completed several tests, including initial drives on Swiss roads.

See for yourself! Here on this link

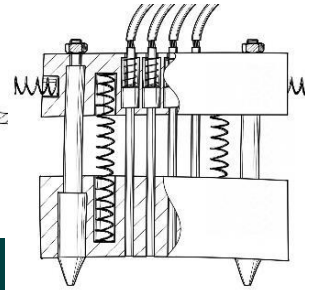
further steps

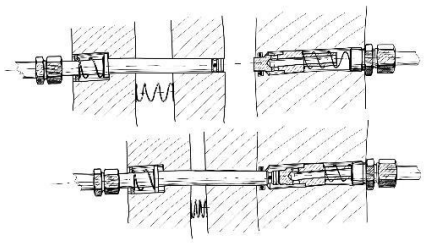
In the next step, we aim to integrate our product into a logistics operation. To make this possible, we are searching for pioneering companys in the field of decarbonizing freight transportation. A potential project could look like the following (see next slide).

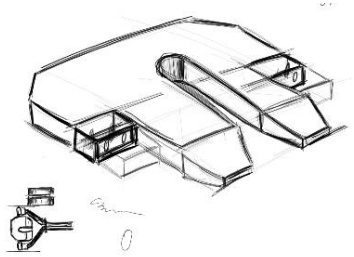


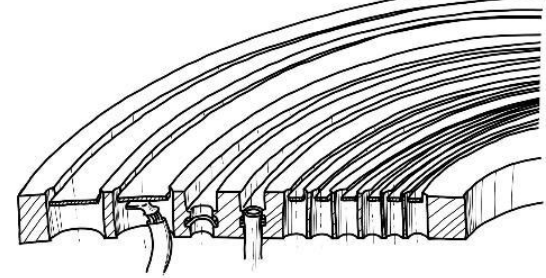


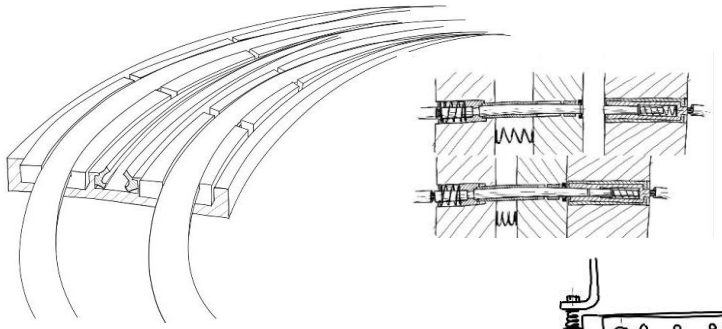
from the idea...

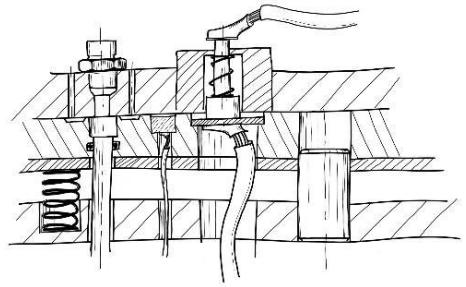


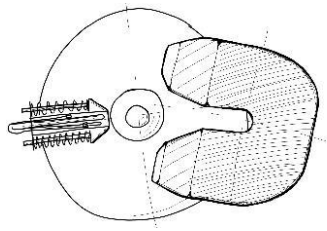


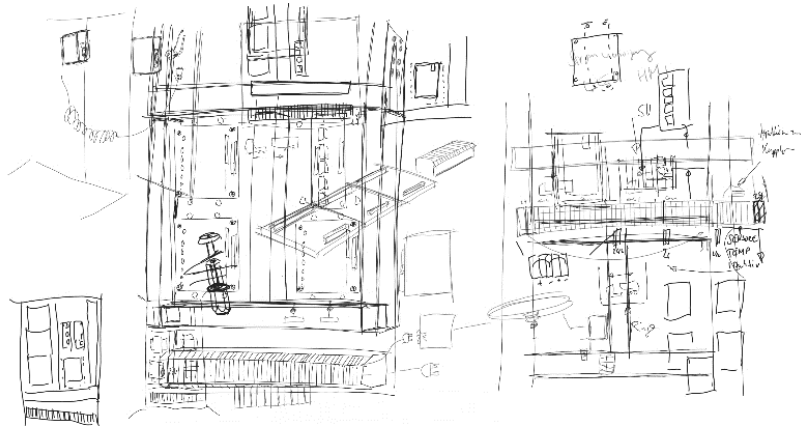




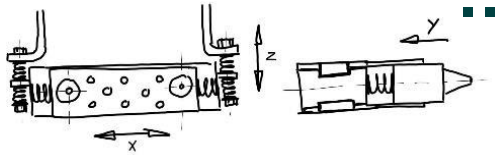


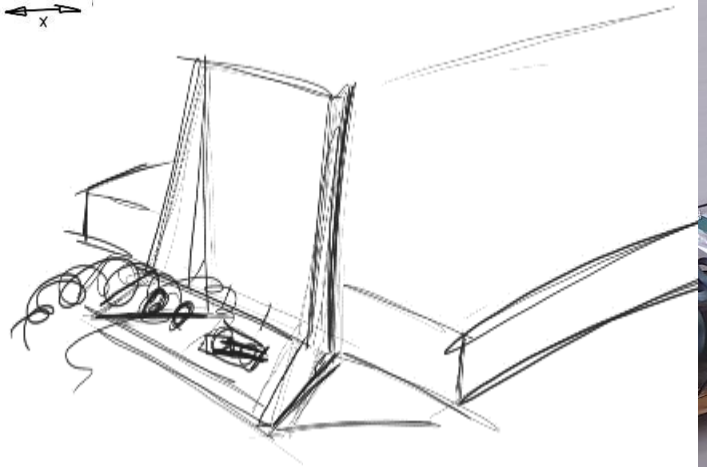


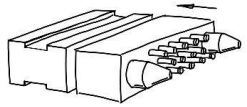




...to the product







Thank you very much!

I would be delighted to hear from you. Please do not hesitate to reach out to me if you have any further questions or concerns.
I am here to assist you.
Thank you again and best regards!

Michael Schacher

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