

# Cleaning system for electrode carriers

## Development of a cleaning concept for electrode trays as well as recommendation for piece carrier handling

### Graduate



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**Initial Situation:** In the battery industry, the use of electrode carriers for the transport and storage of electrodes has proven its worth. Wyon AG now has several thousand of these in circulation in production. These carriers are injection-moulded plastic parts whose internal geometry varies depending on the type of battery. In the various production stations, the cut-out electrodes are inserted into or removed from the carriers manually or automated. This can result in various particles getting onto the surface of the carrier, which promotes risk of defects or product faults in the finished batteries. The aim of this bachelor's thesis was to develop a functioning prototype that can be used to clean the carriers using a suitable cleaning process.

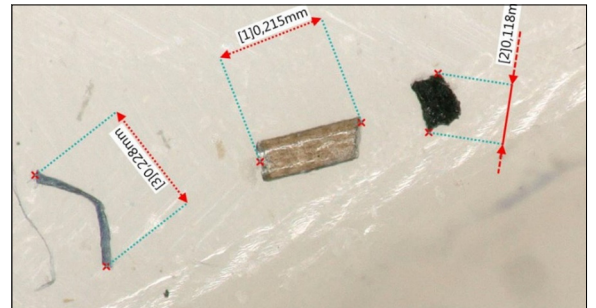
**Approach:** The research and preliminary tests have shown that particle removal in the order of magnitude from 10 to 300 micrometres is a challenging task. It was found that the size, shape and nature of the particles have a decisive influence on how they attach to the surfaces of the carriers. In addition, special physical effects have to be taken into account in this order of magnitude. After completion of the preliminary tests, a concept for a semi-automatic prototype was developed. This prototype contains a three-stage cleaning process. In addition to the design realisation, the concept was also manufactured and assembled. The prototype was then put into operation.

**Result:** In the subsequent functional test with various final tests, the selected concept was largely confirmed. Furthermore, recommendations for the optimisation of the carrier surface and for the handling of the carriers in the production process were made. This work provides a solid basis for the development of a fully automated cleaning system.

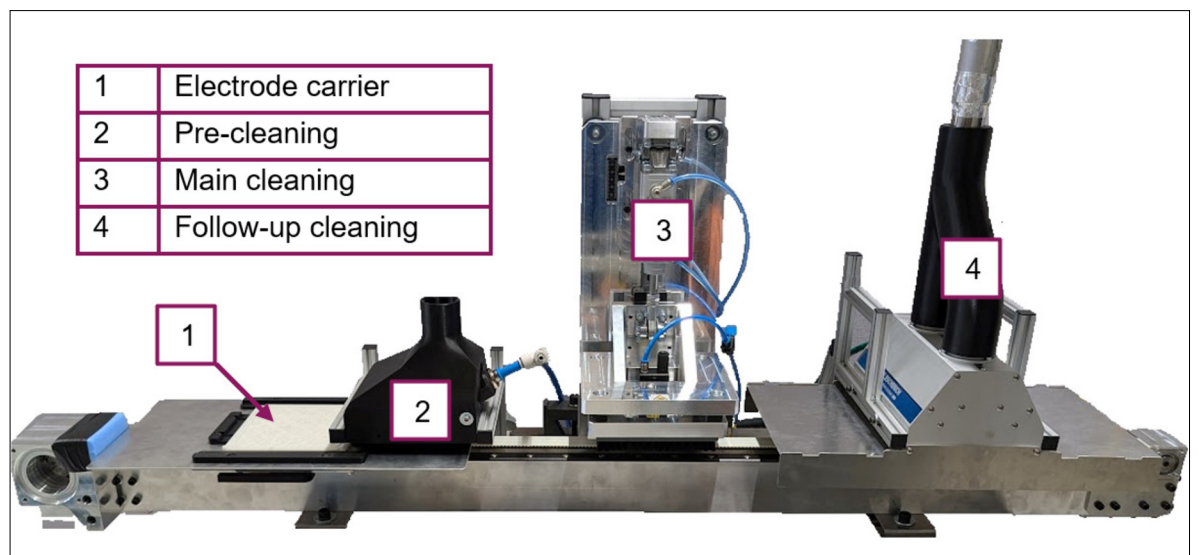
Application electrode carrier  
[www.wyon.ch](http://www.wyon.ch)



Different types of particles  
Own presentation



Semi-automatic prototype  
Own presentation



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Subject Area  
Mechanical  
Engineering