

Electrical conductivity measurements as a new method for an inline process control during ultrasonic metal welding

Experimental student work (**master thesis**)

Recommend for: [M.Sc. SSE](#), [M.Sc. Sustainable Materials](#)

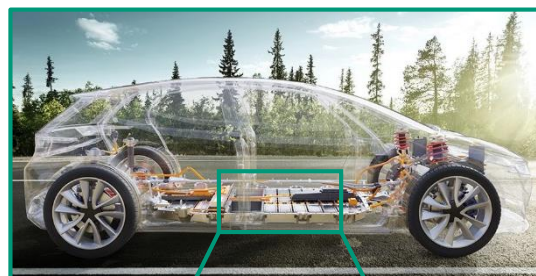


MA

In recent years, the use of lithium-ion batteries has risen sharply as more and more technology is powered by electricity instead of fossil fuels. In order to achieve a large enough storage capacity, several batteries are connected to form a battery pack. These connections are usually copper-copper or copper-aluminum connections and are often produced by ultrasonic metal welding. The process is an energy efficient, low temperature and solid state connection method. This is particularly important for sensitive technologies like batteries in electrical vehicles.

Therefore process control is a very important tool in the industry. It can help to save energy and resources and to maintain the best possible quality. Although the process is already widely used, there is no possibility of determining the exact moment the process is finished and of the desired quality. In order to make this process as efficient and controllable as possible, a new method is to be investigated. This will be based on the principle of the electrical conductivity of the metals involved.

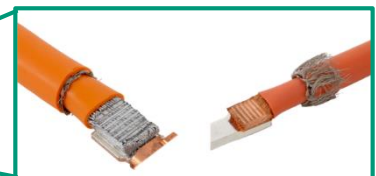
Copper and aluminum are very good conductors, hence the electrical conductivity of the connection is high. To use this as a process control tool, the changes in conductivity must be measured. The task of this work will therefore be to find a method with which the electrical conductivity can be measured during welding and implement this method into the ultrasonic welding process.



[Engineerlive]



[Rutronik-tec]



[Herrmannultraschall]

Starts: As soon as possible

Timeframe: According to examination regulations

More topics on request!

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