**Brankamp Monitoring: EV Applications  
Rotors, Stators, Hairpins, Laminations  
Machines: Punching Presses, Register Tools**

1. In one modern vehicle, there are up to 50 electric motors used in seats, wipers, window, sunroof, back door etc. In order to reduce the eddy current naturally produced by these motors, steel laminations are increasingly being used to produce rotors and stator componentry, as well as new hairpin technologies. These laminates, mainly used for blanking operations, are very hard and, thus, cause very hard vibrations. Additionally, while laminations for industrial motors have typically been made from steel between 0.35 and 0.5mm thick, it is not unusual to see 0.2mm thicknesses in high production operations, produced at speeds of 200 – 400 RPM.

These high-speed operations require special stamping tools, which contain several motors to control the action inside the tool. This leads to higher precision for the production of rotors and stators, but this additional complexity requires more monitoring to ensure quality of the process and the outcome.

1. 

Typical 3-lane rotor/stator stamping tool.

Slug detection with Marposs’ Brankamp monitoring system.