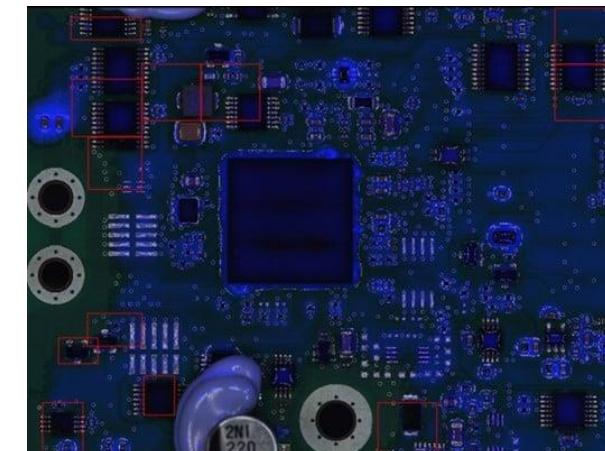
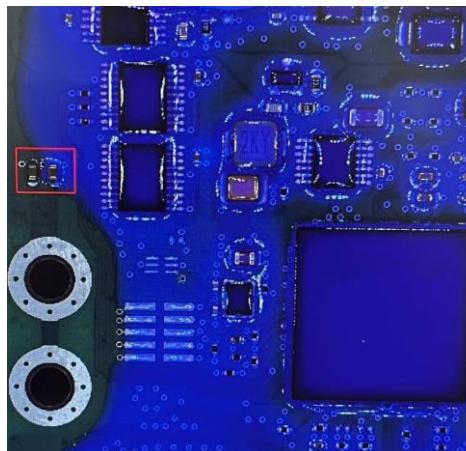
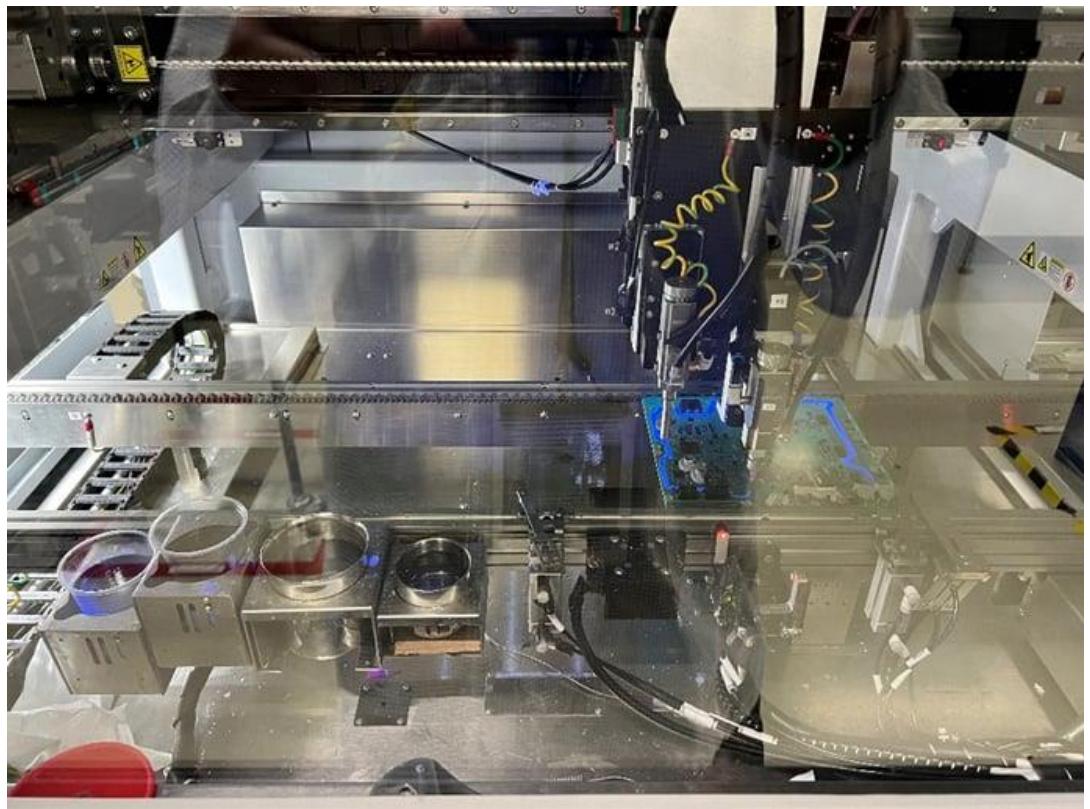


Coating – an unstable process of automated coating application

Bc. Jaroslav Potančok, Bc. Samuel Slepoda, prof. Ing. Alena Pietriková, CSc.
Ing. Tomáš Szombathy, Marelli Kechnec

In the automotive industry, the process of automated application of protective coatings is considered a critical technological operation in the production of electronic modules. The quality of the applied coating directly affects the reliability, service life, and functionality of electronics exposed to moisture, chemicals, vibrations, and temperature variations. Despite a high level of automation, this process remains sensitive to changes in technological parameters and may exhibit signs of instability.

The aim of this work was to analyze the automated coating process of electronic modules at the Marelli manufacturing plant and to identify the main factors that affect process stability and the quality of the applied coating.



The first image illustrates the automated application process of a protective coating on electronic modules in the automotive industry. The second and third images show insufficient and non-uniform application of the protective coating in a critical area of an electronic module. Such defects can lead to reduced protection of the printed circuit board and an increased risk of failures during operation. The defect detection was performed using an Automatic Coating Inspection (ACI) system, which compares the actual coating condition with a reference coating map.