

SE-8.3 Optimization of the process reliability of the ultrasonic crimping process by evaluating the mounting conditions for tubular cable lugs (S)

J. Seefried¹, T. Gläsel¹

¹Universität Erlangen-Nürnberg

One of the major and at the same time most critical process steps in the production of electric drives is the contacting process. The purpose of this contacting process is to join the stator windings mechanically and electrically with a contact element. An innovative and energy-efficient process is the ultrasonic crimping process, which combines the two process steps of stripping and contacting in one single process. This process is characterized by the transformation of oscillation energy into thermal energy caused by damping. Due to the direct heat generation within the cable lug and the oscillation coupled in, it shows major potentials relating to process stability, the contacting of high-frequency litz wires and anodized conductors. However, some disadvantages like the occasional occurrence of fatigue fractures in the tubular cable lugs and unclear dependencies reducing process reliability have to be investigated. The following paper presents possibilities to further optimize the ultrasonic crimping process and increase the process reliability. In this context, the mounting conditions of the tubular cable lugs as well as the process control during the process are considered. In order to evaluate the results obtained, the electrical and mechanical connection quality of the samples is determined.