

DAGA 2022

21st – 24th March 2022

Place:

Stuttgart, Germany

Title:

Acoustic Quality Control in End-of-Line Assembly of Electrical Connectors

Authors:

Fabian Kamp, Fabian.Kamp@head-acoustics.com

HEAD acoustics GmbH, Ebertstraße 30a, 52134 Herzogenrath

Thomas Welfers, Thomas.Welfers@voss.net

VOSS Incubator, Campus-Boulevard 30, 52074 Aachen

Abstract:

Efficient industrial production processes today demand increasing throughput rates while at the same time requiring unrestricted high production quality. Acoustic quality control in end-of-line testing has been established to address this challenge and is gaining popularity in combination with advanced machine learning techniques. This paper discusses current progress in the field, presenting acoustic click detection in the assembly of electrical connectors for heated hydraulic lines. Initial feasibility investigations include measurements of connector click sounds in different production facility noise background, acoustic signal analysis for NOK detection and classifier development using machine learning. With positive results from the initial studies, the click detection algorithm is brought into practical application, being implemented in a re-designed version of the assembly line production machine. Further applications of the presented methodology are presented as an outlook of this study.

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