

PRESS Release
Aachen, den 03.05.2019

**Werkzeugmaschinenlabor WZL der
RWTH Aachen University**

Viktoria Ingelmann
Leitung Presse & Öffentlichkeit

Campus-Boulevard 30
52074 Aachen
GERMANY

Telefon: +49 241 80-27554
Telefax: +49 241 80-22293
v.ingelmann@wzl.rwth-aachen.de
www.wzl.rwth-aachen.de

Mixed lots are to be sampled at enable small series

App-based effort reduction during adaptive test- ing in the production of variants

In variant production, a 100% inspection of all inspection characteristics of manufactured components due to small batch sizes is common. This is associated with a high testing effort and leads to bottlenecks in the production of testing machines. This results in high production costs and time.

In large series production, this effort is reduced by a sampling inspection that only refers to key characteristics. To use the sampling inspection, the key characteristics, the inspection scope, and the inspection frequency are determined using statistical methods and high personnel costs. This is not possible in variant production due to the small lot sizes and the increased personnel costs caused by the variants.

To solve this problem, the new research project APProVe (App-based effort reduction in adaptive testing in the production of variants) is developing an app for automated effort reduction in test planning for variant production. The aim is to create mixed batches of variants and thus achieve a sufficient batch size for random testing.

The project is supported by the AiF, specifically the FQS Forschungsgemeinschaft Qualität e. V. For two years the Chair for Production Metrology and Quality Management at the Laboratory for Machine Tools and Production Engineering (WZL) at the RWTH Aachen - under the direction of Prof. Dr.-Ing. Robert Schmitt - will develop algorithms based on machine learning for the identification of key characteristics and the definition of mixed lots. These are implemented in an intuitive app that allows companies producing variants to perform adaptive random sampling.

Dipl.-Ing. Guido Hüttemann, Senior Engineer and Head of Department at the Chair of Production Metrology and Quality Management and responsible for the subject area Model Based Systems: "We want to achieve that even SMEs, which often manufacture in small quantities, can reduce their inspection costs by means of a combination of new machine learning methods and traditional sampling inspection plans. The competitiveness of SMEs will thus be significantly increased while quality remains the same".

In the research of algorithms and development of the app, a project-supporting committee consisting of industrial partners who are active in the areas of consulting, the provision of CAQ software and the production of variants in small series supports the chair. Members are Q-The | Hexagon, iqs Software GmbH, Transfact GmbH, Tebit GmbH & Co. KG, GFE Präzisionstechnik Schmalkalden GmbH, Lauscher Präzisionstechnik GmbH, PFW Aerospace GmbH, TCG UNITECH GmbH and PFW Aerospace GmbH.

PRESS Release

Aachen, den 03.05.2019

During the kick-off meeting in April 2019 at the FQS Forschungsgemeinschaft Qualität e. V. in Frankfurt am Main, Germany, it was discussed with the companies, which requirements exist for an app for cost reduction in adaptive testing in the production of variants. It was pointed out, for example, that the algorithms should take up human input, e.g. when certain characteristics of a product must always be tested at the customer's request. In addition, the algorithms should always indicate the risk that a reduction of the testing effort is associated. This gives the company the opportunity, firstly, to decide whether this should be entered into and, secondly, to discuss its acceptability with its customer. An orientation to current standards such as DIN EN 9138 Aerospace - Quality management systems - Statistical product acceptance requirements and ITAF 16949 was explicitly requested.

The app to be developed and the research results will be made available to participating companies. The research project will make a significant contribution to the development of a VDI Guideline VDI/VDE GMA Expert Committee 1.21: VDI Guideline 2600-3 "Adaptive Test Planning".

Further information can be found on www.approve.wzl.rwth-aachen.de

Laboratory for Machine Tools and Production Engineering (WZL)

The Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University has stood worldwide for more than 100 years for future-oriented research and successful innovations in the field of production technology.

Under the leadership of four professors Thomas Bergs, Christian Brecher, Robert Schmitt und Günther Schuh, the WZL is conducting research in six areas - production technology, machine tools, production systems, transmission technology, production metrology and quality management - on the future-oriented design of production in high-wage countries. Together with industry partners from various sectors, the WZL develops solutions for a wide variety of production scenarios in both publicly funded and bilateral projects. These activities are being consolidated on the RWTH Aachen Campus in the Cluster Production Engineering.

Contact WZL:

Jonathan Greipel, M.Sc.

Tel.: +49 241 80-28383

j.greipel@wzl.rwth-aachen.de

PRESS Release

Aachen, den 03.05.2019

Attachment:



The research team (f.l.t.r.): G. Hüttemann (WZL), Dr. W. Schultz (Q-DAas | Hexagon), D. Huber (iqs Software GmbH), Dr. Kellermann-Langhagen (FQS Forschungsgemeinschaft Qualität e. V.), Dr. M. Gutensohn (PFW Aerospace GmbH), Jonathan Greipel (WZL), Herzogenrath (Lasuscher Präzisionstechnik GmbH), D. Radeck (Q-Das | Hexagon), A. Chishnjak (Tebit GmbH & Co. KG), H. Kerbl (TCG UNITECH GmbH)

© WZL