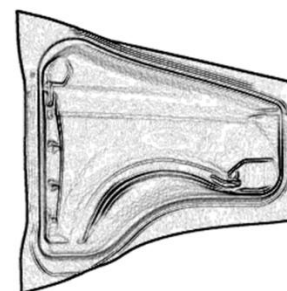
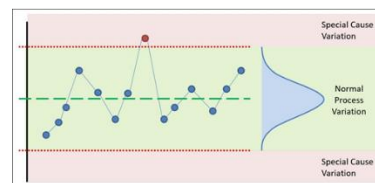


Digital image analysis for statistical process control

Background

The impressive current advances in the field of image acquisition devices opened new possibilities for developing cost effective solutions for industrial process monitoring. Various devices like remote controlled photo cameras, IP web cameras, mobile phones and / or single board computers enable various strategies for data acquisition automation and analysis. The choice of an optimum solution requires finding the balance between image quality, programming effort, reliability and costs as well as considering the particularities of the industrial process being monitored.



The aim of this project is to select and develop an image acquisition system for statistical process control of an industrial process producing automotive body parts by sheet metal forming. Monitoring of the process parameters involve edge detection and quantification of edge displacement measurements. The options to develop and display live and batch analysis methods for the collected data will be explored. The student will have the opportunity to test and program various image acquisition devices at the university laboratory and to test the system in a real automotive part manufacturing process.

Tasks

- Assess the hardware and software aspects of four types of image acquisition systems: photo-camera, raspberry pi, mobile phone, web camera
- Program in Python modules for image calibration, edge detection and data acquisition and analysis
- Assess the options to mount the system in a sheet metal forming automotive line

Goals

- Develop a data acquisition, analysis and display system for monitoring a sheet metal forming process.
- Testing of the system in a real automotive part manufacturing process at Volvo Cars

Information

Contact Tata Steel: Joakim Wiberg, Toni Chezan

joakim.wiberg@tatasteel.com, toni.chezan@tatasteel.com

Contact Chalmers/Examiner: Kristina Wärmefjord Kristina.warmefjord@chalmers.se



TATA STEEL

wingquist
LABORATORY