Proposed paper for the Future RFID 2014

Intelligent sensor systems for self-optimizing production chains

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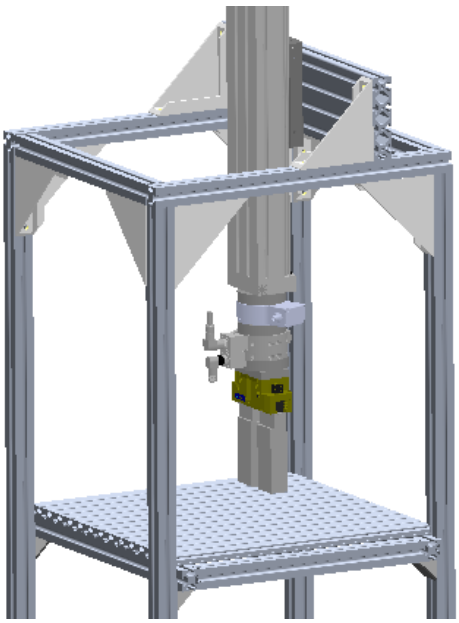
With great effort the German industrial landscape is researching to realise of cyber physical and self-optimizing production systems. The resulting advantages aid in promoting the automated fabrication of products made of fibre-reinforced plastics (FRP).

For example the safety of FRP-handling processes can be increased by the augmented interconnection between workpiece, gripper and testing unit. The possibilities through utilisation of existing sensor technologies for cyber physical production systems will be determined as part of the project "Intelligent sensor systems for self-optimizing production chains" (iSensPk). A testing unit for force measurement on different gripping systems to handle FRP- and non-rigid components is used as a demonstrator (picture 1). For the acquisition of environmental properties, a sensor network will be developed. The accurate image of the environmental conditions is used to improve the results of the force measurement. Additionally, testing conditions and results will be recorded and stored inside the workpiece's memory. Other entities of the process are thus enabled to request previously collected data and refuse a handling operation if the gripper does not have the necessary parameters for the manipulation. This way, unsafe situations can be avoided.



Picture 1: intelligent gripper force measurement unit

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