Learning Factory Modules for Smart Factories in Industrie 4.0

Abstract
Industry 4.0 applies to the knitting industry. Regarding the knitting process retrofitting activities are executed mostly manually by an operator on the basis on the operator's experience. In doing so, the knitted fabric is not necessarily produced in the most efficient way regarding process speed and fabric quality aspects. The knitting division at ITA is concentrating on project activities regarding automation and Industry 4.0. ITA is working on analysing the correspondences of the knitting process parameters and their influence on the fabric quality. By using e.g. the augmented reality technology, the operator will be supported when setting up the knitting machine in case of product or pattern change - or in case of an intervention when production errors occur. Furthermore, the RFID-Technology offers great possibilities to ensure information flow between sub-processes of the fragmented textile process chain. ITA is using RFID-chips to save yarn production information and connect the information to the fabric producing machine control. In addition, ITA is currently working on integrating image processing systems into the large circular knitting machine in order to ensure online-quality measurement of the knitted fabrics. This will lead to a self-optimizing and selflearning knitting machine.

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