Integrating Sustainability in the Development and Operation of High-volume Production Lines

Three key aspects influence the sustainability of high volume production: The available production technology, its integration and, finally, the operation of the production line. The differing contexts require the manufacturer to assess each aspect independently, which, in addition to common decision structures, hinders the holistic sustainability assessment of a technology and its performance in the use stage. Based on an industrial collaboration, this study addresses the development and integration of a methodology combining quantitative and qualitative methods to assess technologies, their implementation, and their operation.

Results indicate that the simplicity of the chosen methods is the key factor enabling their integration into the decision-making processes. An initial review of ongoing case studies indicated positive results and an increased environmental awareness of decision makers as well as high potential for beneficial integration of a Green Lean concept.