



Research School for Operations
Management and Logistics

Selective assembly for complex products in a dynamic production environment

Andrea Mencaroni – Ghent University

In order to assure that assembled products conform quality standards, tolerances are assigned to features (typically geometric dimensions) of the comprising components. Often such tolerances are strict to maintain quality of the assemblies, leading to a considerable scrap rate of components and/or expensive manufacturing processes. Therefore, selective assembly has been proposed as an alternative strategy. Instead of randomly selecting components when assembling a product, the features of all components are measured, and components are selected smartly, that is, with a given set of measured components, the number of quality conforming assemblies is maximized. Research on selective assembly has focused on simple products in a static context. The assemblies contain typically two components (shaft-hole type) and the algorithm gets as input a fixed number of components with their feature values. In reality, however, products are more complex, and the production environment is dynamic, that is while components are being used to assemble products, new components are being manufactured. Therefore, the goal of the PhD research is to develop algorithms that also work in case of complex products in a dynamic production environment.