

**Dissertation title:**

**Method of planning of modular, flexible assembly configuration as part of the volume assembly of customized products**

**Christian Küber**

In the future the automotive industry has to manage a further increasing product portfolio and new vehicle technologies. In consequence, the vehicle-specific demand volume is not predictable anymore. Thereby especially the assembly lines are affected, because they realize the biggest outcome of the vehicle variability. If it is possible to assemble more than one vehicle on the same assembly line without any restrictions in the variation mix, the future challenge could be managed. There exist degrees of freedom between assembly modules, which allow building up alternative assembly configurations. The research gap currently is that in the assembly planning the degrees of freedom are not used methodically, although the planning of vehicle-flexible assembly configurations could be supported. As a result assembly modules have to be defined. After analyzing the vehicle and the assembly line specific degrees of freedom between these assembly modules, it is possible to configure modular, product-flexible assembly lines, which also allow the integration of new models into existing lines.