### Assignment of tasks

The company ASMA deals since 1980 with the production and development of technical components, coatings and composite parts made of polyurethane. Two parts from current production with high volumes are rollers and sealing elements. At the beginning of the thesis, these processes are still manually expired and should be done fully automatically from now on. In particular, the test apparatus plays an important role. Some parts of the above have errors in the layer between the body and the polyurethane. A test fixture / prototype needed to be designed and implemented as well. The entire review process should be carried out within a period not exceeding 15 seconds. Furthermore, the device should be used for both inner as well as external polyurethane layers.

### Realization

1. designing the application of force, including force measurement  
2. construction of the device including clamping  
3. selection and test a suitable test sensor  
4. test of the prototype on good - and bad parts and parameterization  

The basic design is based on a test sensor, which is rotated by a rotating mechanism to check the extent of the boundary layer between the polyurethane layer and the metal ring body. Then various concepts have been developed to ensure the simplest possible review of the components and should be integrated into the automated assembly line. Finally, a framework of Bosch Rexroth strut profiles was constructed which was compact, stiff and light and was therefore well suited for use as a prototype to check the connection. Then the sensor could be parameterized and the liability errors are detected on the basis of components with predefined liability errors. Thus, the concept has been proposed as a possible final solution, with theoretically elaborated automated force application methods for checking connections.

### Results

The prototype was assembled and the sensor has been parameterized and adjusted on some good and bad parts. The tests and measurements were successful and the prototype is fully automated with an upgrade of the already theoretically elaborated automated force application methods.
Illustrative graph, photo (incl. explanation)

Design automatic connection testing machine

Participation in competitions

Awards: none

Accessibility of diploma thesis

AV Hörlesberger

Approval

Examiner: J. Köberl

Head of Department / College: G. Hörlesberger/Harald Hrdlicka