Bachelor thesis

TU Graz

Graz University of Technology

Institut für Werkzeugtechnik & Spanlose Produktion
Member of [FSI]

Univ.-Prof. Dr.-Ing. Ralf Kolleck
Institutsvorstand

Inffeldgasse 11/I
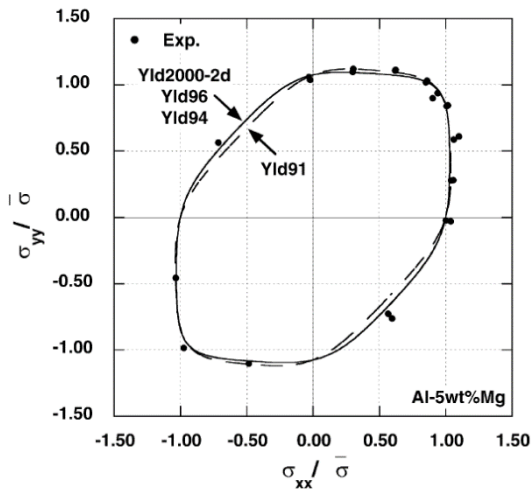A-8010 Graz

Determination of Anisotropy Coefficients for Barlat YLD2000

Kontakt: DI Michael Machhammer
Tel.: 0316 873 9445
Mail: michael.machhammer@tugraz.at
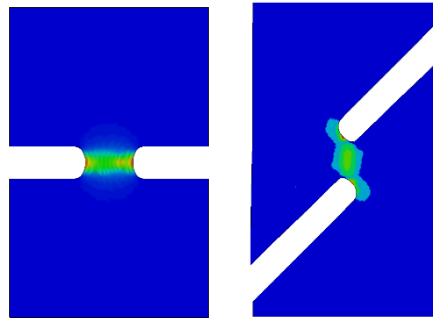
Fig.1 Yield surface shape for Al-Mg-Si

Fig.2 Simulation of notched specimen

Introduction:

The optimization of an aluminum deep drawing process needs the use of finite element software to reduce costs during the design phase. The precision of the simulation results depends mainly on the quality of constitutive law of the forming material. Therefore, the aim in this work is to determine 8 material coefficients for the YLD2000-2d criterion to describe the anisotropic behavior of the sheet. These 8 coefficients are linked to experiment date which are already determined. For the calculation of the material coefficients Matlab or EXCEL VBA can be used. In order to verify the applicability of the obtained material coefficient from Matlab or Excel a uniaxial and a simple shear test has to be performed via simulation in Ls-Dyna.

Work content:

1. Literature research
2. Calculation of the anisotropy coefficients in Matlab or Excel VBA
3. Validation of the obtained coefficients through simulation of a uniaxial and simple shear test in Ls-Dyna

Duration of the bachelor work: 3 month - **Start**: from now on