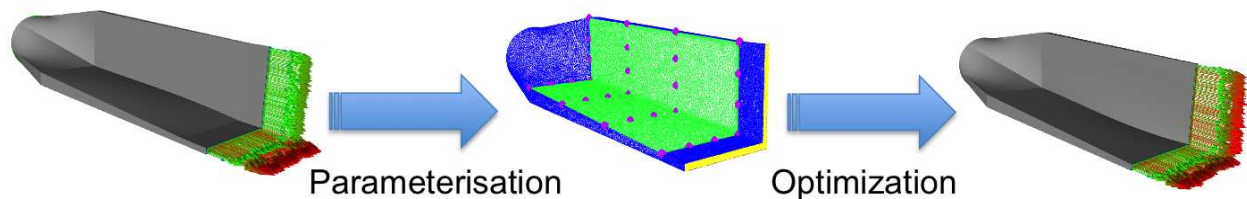


Doctoral Position

Inverse Design of Profile Extrusion Dies

Profile extrusion is a manufacturing process for continuous plastic profiles, such as pipes or window seals. It is the task of the extrusion die to reshape the molten raw material into the desired profile. The extrusion die plays a central role when it comes to product quality but nevertheless, at the current state of the art, the extrusion die has to be designed based on experience and running-in experiments. Up to 15 reworking steps may be necessary until an extrusion die suitable for high-quality products is obtained. Numerical shape optimization is a very promising approach to increasingly automate the design process of extrusion dies. Basis of this new design concept will be an in-house shape optimization framework, including a flow solver employing a stabilized finite element formulation of incompressible flow. The inverse design of extrusion dies, i.e. the definition of an optimal design of the extrusion die only based on the product shape, is the main goal of the project. Important steps towards this aim are the accurate modeling of the behavior of the plastics melt (particularly the shear-thinning and viscoelastic properties) as well as the development of new objective functions. The position will be embedded into the cluster of excellence "Integrative Production Technology for High-Wage Countries".



Your profile: Requirement for this position is a diploma or master's degree in CES, engineering, applied mathematics, physics or a similar subject with superior academic record. Practical programming experience in Fortran or C as well as with parallelization (MPI or OpenMP) are an advantage. Familiarity with UNIX operating system would be ideal. We expect you to contribute to general tasks at the institute, such as teaching and advising master or project theses.

Our offer: The candidate will be employed as a regular employee and must meet required personal qualifications. This is a full-time position and the salary is according to TV-L E 13. Initially, it is a fixed-term position for one year, but is expected to be extended for up to five years. Applications are being reviewed now.

RWTH Aachen University has been rewarded with the Total-E-Quality-Award™ for its efforts with respect to gender equality. In cases of equal qualification, aptitude and expertise of the applicants, female applicants will be given preferential treatment for those salary groups and careers in which females are underrepresented, unless there are preponderant reasons to give preference to another applicant. RWTH Aachen University has been awarded with the title "disability-friendly" (Prädikat behindertenfreundlich) for its efforts with respect to training and employment of disabled people. Applications from disabled persons with appropriate qualifications are explicitly welcome.

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