



University of Stuttgart

Institute of Fluid Mechanics and
Hydraulic Machinery
Prof. Dr.-Ing. Stefan Riedelbauch
Pfaffenwaldring 10
D-70569 Stuttgart

Job Advertisement PhD position

The Institute has an immediate full-time vacancy in the area of **Simulation of Hydraulic Machinery (fluid-structure-interaction, flow simulation, structural dynamics)** for a highly motivated

Research Associate, Scientific Employee (m, f)

to be filled. It is limited in accordance with the rules of the State University Act and is remunerated according to TV-L 13*. The implementation of a doctoral project, PhD degree, should be pursued.

Scope of Work

The overall objective of the research project is the safe and reliable dynamic design of pump turbines. This includes the prediction of dynamic stresses in impellers, but also of vibrations and acoustic emissions of the turbine cover. Unsteady flow phenomena cause the vibration excitation, and interactions of the flow with the structure can have a damping effect. The work includes analysis of the natural vibration and response behavior of impellers and other components in air and water. However, the focus is on simulating flows to determine pressure fluctuations as well as fluid-induced structural quantities, such as hydrodynamic damping. The contributions of the vibration-induced fluid forces to the fluid-added quantities in the runner side-chamber and the seals are of particular interest. The tasks include all activities required to perform corresponding simulations, such as creation of the geometry as a CAD model, generation of computational grids, numerical solution, and evaluation and assessment of the results. This project is carried out in cooperation with Voith Hydro in Heidenheim, Germany.

Work results have to be presented, documented and published on a regular basis to partners from research and industry as well as at national and international conferences.

In addition, cooperation in teaching (participation in courses, examination correction, supervision of student work) is expected.

Required Qualifications

An above-average engineering degree with sound knowledge in the fields of structural dynamics, fluid mechanics and turbomachinery is required. Further knowledge in the fields of computational fluid dynamics (CFD), finite element analysis (FEA) and programming is very advantageous. Good German language skills and very good written and spoken English language skills are required.

Suitable applicants are characterized by a reliable, independent and structured way of working, as well as strong analytical skills, initiative and the ability to work under pressure. The ability to work in a team and confident communication skills are required. The application should be based on joy and interest in innovative, technical-scientific tasks.

For more information please contact:

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General information is available on the Internet at: www.ihs.uni-stuttgart.de.

Please send your complete application documents to:

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E-Mail: sekretariat@ihs.uni-stuttgart.de

The University of Stuttgart intends to increase the proportion of women in the technical-scientific field and is therefore particularly interested in applications from women. Severely disabled persons are preferred if they are suitable and qualified. The recruitment of scientific / non-scientific employees is carried out by the Central Administration (Rector's Office).

* for details see https://bv.landbw.de/documents/20181/42056/4_Tabellentgelt+12-2022.pdf/b8b08801-7d41-7475-52ef-99395c3a3f08?t=1659693761252 line EG 13