TUD Dresden University of Technology, as a University of Excellence, is one of the leading and most dynamic research institutions in the country. Founded in 1828, today it is a globally oriented, regionally anchored top university as it focuses on the grand challenges of the 21st century. It develops innovative solutions for the world's most pressing issues. In research and academic programs, the university unites the natural and engineering sciences with the humanities, social sciences and medicine. This wide range of disciplines is a special feature, facilitating interdisciplinarity and transfer of science to society. As a modern employer, it offers attractive working conditions to all employees in teaching, research, technology and administration. The goal is to promote and develop their individual abilities while empowering everyone to reach their full potential. TUD embodies a university culture that is characterized by cosmopolitanism, mutual appreciation, thriving innovation and active participation. For TUD diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements and productivity to the success of the whole institution.

At the **Faculty of Mechanical Science and Engineering, Institute of Manufacturing,** the **Chair of Forming and Machining Technology** is offering a position as

Research Associate (m/f/x)
(subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

starting **at the earliest possible date** within the research project "Automated greenhouse gas balancing for SMEs" until August 31, 2027. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz - WissZeitVG). The position offers the chance to obtain further academic qualification.

The project: We are looking for dedicated researchers to join our international team in the project "Automated Greenhouse Gas Balancing for SMEs". The goal of the project is to develop a software solution that automatically generates greenhouse gas balances for metalworking companies based on CAD data. This industry-oriented research project is being conducted in collaboration with two partners from the private sector. By integrating automation approaches in production planning with greenhouse gas emission calculations, the current manual and time-consuming process will be significantly simplified. The intended outcome is a fast, reliable, and standards-compliant balancing process that minimizes resource requirements and helps companies comply with legal regulations such as the Supply Chain Act.

Tasks: As part of your role, you will develop and research innovative models and methods for the automated process modelling of 5-axis milling operations. The approaches you design will serve as the foundation for calculating greenhouse gas emissions. You will collaborate closely with other team members and project partners to ensure the efficient execution of the project. This project offers you the opportunity to apply scientific methods flexibly to address complex challenges—while working toward a clearly defined overarching goal.

Responsibilities:

- develop, implement, and evaluate concepts using hybrid data models for robust and high-performance process planning
- design, implement, and investigate heuristics and metaheuristics to optimize production process planning
- analyze and process large datasets to support planning decisions
- collaborate across disciplines, particularly with experts in production engineering and life cycle assessment
- publish scientific findings and present results at professional conferences

Requirements:

- very good to good university degree in engineering, ideally in manufacturing technology, computational engineering, or simulation methods
- high level of self-motivation with a willingness to learn new skills and adapt to evolving challenges
- solid knowledge of manufacturing engineering and planning, process modelling, and machining, with a strong interest in further developing this expertise
- familiarity with data modelling and algorithmic optimization
- experience with simulation methods and data-driven decision-making processes
- basic knowledge of data engineering and statistics
- strong organizational and communication skills, with the ability to work effectively in an international team
- independent, creative, goal-oriented, and solution-focused working style
- very good written and spoken communication skills in both German and English
- Programming skills in Java, C#, Python, or a comparable language are an advantage.

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university. We welcome applications from candidates with disabilities. If multiple candidates prove to be equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

Please submit your detailed application with cover letter, CV and relevant certificates by **September 1, 2025** (stamped arrival date of the university central mail service or the time stamp on the email server of TUD applies), preferably via the TUD SecureMail Portal https://securemail.tu-dresden.de by sending it as a single pdf file to **dorothee.mehlgarten@tu-dresden.de** or to: **TU Dresden, Professur für Formgebende Fertigungsverfahren, Prof. Alexander Brosius, Helmholtzstr. 10, 01069 Dresden, Germany.** Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

Reference to data protection: Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: https://tu-dresden.de/karriere/datenschutzhinweis.