



## MOBILITY & PRODUCTION

Fields of Expertise TU Graz

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Source: Lunghammer – TU Graz

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**It is particularly clear how closely our future is linked to mobility and production at TU Graz.**

The research field of Mobility & Production symbolises a world in which machines not only become more efficient, but also more intelligent and sustainable. However, autonomous vehicles, smart factories and climate-friendly mobility are not the result of a single specialism – but the interplay between mechanical engineering, electrical engineering, electrochemistry, mechatronics and information technology.

Mechanical engineering provides the foundation, so to speak. This is where the physical systems are created: vehicles, production systems and robotic solutions. Electrical engineering brings energy and sensor technology into play – without them there would be neither electric drives nor the precise control of modern machinery. Electrochemistry complements this interaction by enabling the conversion and storage of energy on a material level – for example in rechargeable batteries, fuel cells or electrochemical processes. Mechatronics, on the other hand, combines mechanics and electronics to form an intelligent overall system. And finally, information technology ensures that all these components can communicate with each other, analyse data and make decisions.

This cooperation is particularly evident in mobility. A modern electric vehicle is no

longer a “car with a battery”, but rather a high-tech system on wheels: mechanical construction, electric drives, electrochemical energy storage and converters, mechatronic control systems and software-based intelligence work hand in hand. The situation is similar in production, where factories are increasingly becoming networked, data-driven ecosystems.

The special thing about research into Mobility & Production is therefore not so much a single spectacular technology, but its **interdisciplinary nature**. Innovation arises precisely where engineers, computer scientists and systems thinkers work together on solutions. In other words, the future will not only be electric or autonomous – it will be **interdisciplinary**. And this is precisely where it becomes clear why technical fields of study are more important today than ever before.

The following article bears witness to this interdisciplinarity. Our colleague Jürgen Tromayer shows that the efficiency of electric drives can be further improved with a technical understanding of electric motors and classic mechanical engineering.