

Preface

The phase-out of nuclear energy decided by the German government in 2011 will lead to the gradual shutdown of the four remaining Bavarian nuclear power plants by 2022. Against the background of the high share of electricity from nuclear energy in Bavaria (57.6 %), Bavaria's technology and production location has begun to close the considerable supply gap in electrical energy on a sustainable basis. However, the planned energy transition cannot be implemented as quickly as desired. Although the nuclear power plants are being shut down, the supply problem has not yet been solved. This Herculean task cannot be implemented in terms of time alone due to the strong expansion of renewable energies that has begun.

The model factories for energy efficiency in production of the Universities in Erlangen-Nuremberg and in Munich, of the Universities of Applied Sciences Amberg/Weiden, Ansbach, Coburg, Deggendorf, Hof, Ingolstadt, Nuremberg and Schweinfurt/Wuerzburg as well as the of the Fraunhofer Institutes in Augsburg and Bayreuth are targeting together the long-term objective of energy self-sufficient production plants. These Green Factories Bavaria develop technologies to optimize energy consumption and to minimize the wastage of resources in production and all other areas of industrial companies. Strategies for adapting the energy consumption to the volatile supply of regenerative electric power and procedures for decentralized renewable energy generation are developed and implemented in the Green Factories.

The Green Factories in Bavaria combine up the research skills of all relevant fields for energy efficient production processes, e.g. mechanical engineering/ manufacturing technology, electrical engineering, information technology, process engineering, materials science and economic science. They also consider all major types of energy, e.g. for motion, illumination, information processing, manufacturing processes and thermal control. Furthermore, the Green Factories address the use of energy in production, logistics and administration in more than 35 research projects. With clear focus on energy efficiency in production, the Green Factories are aiming to expand into an international research network, which currently consists of more than 80 companies and 20 research institutes in named universities with more than 40 active scientists. In the model factories for energy-efficient production, innovative industrial partners have the opportunity to present and to develop advanced techniques and technologies for energy-efficient production together with scientists from the participating research institutions in the available laboratories and production areas. They also allow for intensive networking and to pass on knowledge effectively to users and students.

This unique concept of collaborative research between industry and universities guarantees an efficient research and a fast and more efficient transfer of the results into the economy.

The project partners would like to express their sincere thanks to the Freistaat Bayern for funding the project "Green Factory Bavaria" in the framework of the future initiative "Aufbruch Bayern".

Jörg Franke
Michael Scholz
Annika Höft

Institute for Factory Automation and Production Systems (FAPS)
Friedrich-Alexander University Erlangen-Nürnberg