ENGINEERING OF SPECIAL MACHINES AND AUTOMATION SOLUTIONS
ENGINEERING OF SPECIAL MACHINES AND AUTOMATION SOLUTIONS

Increasing demands on international markets placed on production quality and speed are countered by a growing trend toward rationalization of production processes in order to cut costs. By automating production, both aims can be achieved. Using complex and highly engineered systems, specialized processes can be executed automatically. Production success thus depends today on the tailored development of efficient production lines.

Benefits of special machines and machinery

• Automatic execution of specialized processes
• Enhanced productivity
• Reproducible manufacturing quality
• Efficient use of resources

Our services

• Elaboration of feasibility studies for new and advanced production processes, machines and machinery
• Execution of process analyses for existing and future processes
• Conceptual design in different levels of detail as well as complete 3D/2D designs
• Mechanical and electrical assembly of machines and machinery as well as control and procedural commissioning up to complete functionality
• Design, process and control optimization for special machines and machinery
• CE certification of the manufactured special machines and machinery

Our skills

• Multifaceted technical competencies thanks to an interdisciplinary team of scientists, technicians and design engineers from the fields of mechanical engineering, electrical engineering and physics. In particular, outstanding mechatronic expertise
• Unique technology park with multifaceted processes as well as extensive application competence
• Intensive customer contact with the objective of conflating proven experiences with new ideas to create progressive solutions
• Extensive knowledge as well as experience from our own applied research to ensure the efficient application of advanced technologies
• Comprehensive engineering services from one source
DEVELOPMENT OF TECHNOLOGIES THROUGH FEASIBILITY STUDIES

The first step in creating an efficient production line is to verify its practicability and assess its cost-benefit ratio.

Our services

• Detailed recording and analysis of requirements, basic conditions and restrictions
• Development and construction of test arrangements
• Comprehensive theoretical and practical investigation for verification of feasibility
• Detailed documentation and analysis of experimental results as well as concluding evaluation

Our skills

• Unique technology park for the efficient execution of feasibility studies
• Targeted and creative approach to the development of tailored and innovative solutions
• Extensive expertise thanks to interdisciplinary project teams and experiences gathered from multifaceted, successful research projects
• Intensive customer contact in order to develop best possible solutions on the basis of proven experiences and new ideas

FROM CONCEPT TO PRODUCTION-READY DESIGN

A detailed conception phase for the development and comparative evaluation of different technical solutions is the key to targeted machine design.

Our services

• Development and evaluation of different machine concepts
• Component design using computer-aided FEA simulations
• Detailed 3D design of the overall system and preparation of 2D drawings suitable for production
• Planning/drafting/preparatory design of drives and control units

Our skills

• Extensive competencies in conceptual development based on large stock of knowledge and experience from successful engineering projects
• Tailored integration of progressive technologies to improve efficiency
• Use of modern, computer-aided design and simulation tools
ASSEMBLY AND COMMISSIONING UP TO COMPLETE FUNCTIONALITY

A solid mechanical and electrical assembly as well as the effective commissioning of control systems are requirements for high machine availability and long durability.

Our services

• Assembly and electrical installation
• Commissioning and parameterization of the electrical drives
• Implementation of control programs
• Process qualification of the assembled machine system
• Assembly and integration of the machine into the existing production line on site

Our skills

• Complete commissioning services from one source
• Multifaceted metrological systems for process qualification and validation of acceptance criteria
• Elaborate infrastructure for commissioning and process qualification at the institute

CONCLUDING OPTIMIZATION AND CE CERTIFICATION

A concluding process optimization for the developed machinery increases the productivity attainable. The CE certification required for the European market completes the engineering process.

Our services

• Process investigation on the assembled machine system as well as metrological characterization
• Empirical development and execution of design and control optimization measures
• Complete execution of the CE certification required for the European market in accordance with the EC Machinery Directive

Our skills

• Extensive competencies in the area of machine optimization in terms of design and control systems as well as machine characterization
• Multifaceted metrological equipment for the investigation and analysis of machine systems
• Extensive experiences in certification of different machines and machinery
Fraunhofer Institute for Production Technology IPT
Steinbachstraße 17
52074 Aachen
Germany
Phone +49 241 8904-0
Fax +49 241 8904-198
info@ipt.fraunhofer.de
www.ipt.fraunhofer.de

Contact

Dr.-Ing. Christian Wenzel
Phone +49 241 8904-220
Fax +49 241 8904-6220
christian.wenzel@ipt.fraunhofer.de

Dipl.-Ing. Christoph Baum
Phone +49 241 8904-400
Fax +49 241 8904-6400
christoph.baum@ipt.fraunhofer.de