

The Research Center Pharmaceutical Engineering GmbH (RCPE) is a global leader in pharmaceutical engineering sciences. We help our partners create and manufacture advanced medicines for patients worldwide through optimizing products and processes.

In cooperation with the Institute of Automation and Control, Graz University of Technology, we offer the following

## PAID DIPLOMA / MASTER'S THESIS

# Development of Control Concepts for a Continuous Pharmaceutical Manufacturing Line

Ref. No. DA169

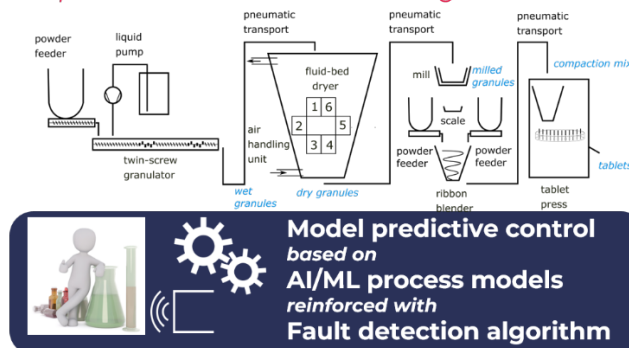
To dedicated students of electrical engineering, digital engineering, information and computer engineering, mechanical engineering, physics, chemical and process engineering, or related disciplines.

## Objective

The ConsiGma™-25 is an industry-scale from-powder-to-tablet pharmaceutical manufacturing line. The line integrates the following unit operations: twin screw granulation (to produce wet granules), drying (to dry the wet granules), granule-conditioning (to break the large granules and add powders needed for tableting), and tablet press (to produce tablets). The innovative sensors monitoring critical quality attributes (CQA) have been installed and the artificial intelligence (AI) and machine learning (ML) process models linking the process settings and CQAs have been developed. The objective of this thesis is to integrate the process models that are currently available to design a model predictive controller (MPC).

### ConsiGma™-25

from powder to tablet manufacturing line



## Possible topics (depending on the student's personal interest):

- Development of MPC in a simulation environment
- Comparison of MPC performance for different AI/ML process models
- Improvement of MPC performance with a fault detection algorithm
- Application of the most promising concepts on the industry-scale manufacturing line

## Within the framework of this diploma / master's thesis we offer the following

- Extensive participation in a top-level and industrially relevant research project in an international environment <https://www.capri-project.com/>
- Supervised training in the task
- Assistance of experienced staff with the implementation of innovative ideas
- Access to highly modern infrastructure on campus of Graz University of Technology
- Assistance with the publication of results

## Financing

- Compensation on the basis of a service contract

If you are interested in writing your thesis at the interface between university research and industry/ business and to contribute to the optimization of product and process development in the pharmaceutical industry, please contact us by indicating the reference number.

## Contact

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