



## From Model-centric to Data-centric AI in Industry: Understanding the Production Processes using the Example of Quartz Glass Production

With the increasing spread of digital technologies such as big data and cloud infrastructures for data analytics, more and more companies can integrate intelligent data processing into their development, manufacturing, or production processes. In this way, many companies hope to renew or improve their products and services, as well as their internal and external processes. The prerequisite for data analytics is first sensors, for example on products and production machines, which communicate by means of a new, networked infrastructure to collect data about previous processes and to be able to understand them better. Hereby, the quality of the data plays an important role in keeping model complexity low and enabling learning from the process.

### Approach

The aim of this thesis is to better understand the current manufacturing process and to control it in the future in an industrial use case "Measurement of a quartz glass hollow cylinder". This work is implemented in collaboration with Heraeus, a leading global technology company headquartered in Hanau, Germany. The following steps will be performed in this work:

- 1) Connecting sensors and signals to a data acquisition system (DAQ, from National Instruments) at the production site and programming the DAQ in LabView.
- 2) Analysis of the data (e.g., machine vision, multivariate methods for regression, etc.) and evaluation of different models for controlling and improving the production process.
- 3) Evaluation of the Trade-Off Model-centric to Data-centric AI in Industry.

### Specifics of the external work

You will be employed by Heraeus for the duration of this work. The implementation will take place on site in production as well as at the Heraeus Digital Hubs (digitization specialist unit of Heraeus). During your work you will have access to infrastructure and data and work with experts from the areas of production, data science and digitalization as well as with various executives and stakeholders. If you apply for this job, we ask you to provide us with a short motivation letter, your CV and your current reference.

### Requirements

Knowledge in the field of sensor technology, data processing, programming, and data analytics.

### Supervisor / Coach

Start possible immediately. If you are interested, please contact:

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