

## Bachelor Thesis / Master Thesis

**Circular Economy and Sustainable Sharing Systems****Subject matter and motivation**

Sustainability is one of the core topics of the Institute of Logistics Engineering. While the circular economy will be a key factor within this area in the future, its implementation is sometimes challenging, especially for small and medium-sized companies in Austria. One example of circular economy is composting, where high-quality soil is produced from organic waste. Heavy agricultural machinery, such as compost turners (see Figure 1), are required for such operations. However, these machines are usually quite expensive.



Figure 1: Compost turner on an industrial composting plant. While the utilization of modern, highly automated machines is essential for the sustainability industry, the purchase is associated with high costs. In our research project, we are developing sharing systems to enable smaller businesses access to such technologies.

**Tasks**

In the current research project, we are therefore investigating how heavy-duty agricultural machinery can be used jointly on multiple sites in the form of enhanced sharing concepts ("machinery ring").

There are numerous opportunities for bachelor's and master's thesis within this research project. For example, the processes of the sharing concept shall be described in a structured form (using model-based systems engineering), thus answering the question: Who has to do what at which point in order for the sharing concept to work? However, there are also many possibilities in the area of simulation using CAD, CAE, multi-body simulation and system simulation.

If you are interested in this topic, please contact me at [cichocki@tugraz.at](mailto:cichocki@tugraz.at). We will find an exciting topic for your thesis which suits your personal interests.

**Contact**

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