

## **Economical assessment of small-scale pyrolysis plants**

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Pyrolysis of mixed plastic waste as an Advanced Recycling method will play a crucial role in the circular economy. Many players (plant manufactures, petrochemical companies) in the pyrolysis market focus on large-scale plants that use highly sorted municipal plastic waste as a feedstock. The arguments for this are economy of scale and the possibility to connect to an upgrading facility (refinery). Even though these are valid points, for a fully circular economy also the smaller waste streams (industrial waste, residues from sorting, hard to process plastics) need to be recycled. Right now, there are no plants in operation that take care of these waste streams. Even though there are currently few economic calculations for small plants they are often prematurely labeled as uneconomical.

To address this, an economical assessment of small-scale decentralized plants for low quantity waste streams is made. The presentation will exemplarily highlight the case of a small-scale plant for hard to recycle plastics and will give detailed insight into achievable oil quality and yields and their impact on the profitability of this approach. Furthermore, the cost structure and CO<sub>2</sub> emissions will be discussed in detail to give a comprehensive conclusion of the ecological and economic benefits. This will also answer the question if small-scale plants are a solution for the low quantity waste streams that are currently not considered with the planned large-scale plants.