

Process Development & Test Work

Competence in Recycling & E-waste Processing



- ✓ Customer tailored recycling solutions **BENEFIT**
- ✓ Prediction of input and output streams
- ✓ All from theoretical research, to lab/technical scale test projects, and process models to plant design
- ✓ In depth data for realisation and optimisation

A **core competence** of UrbanGold is the development and design of metallurgical recycling processes. UrbanGold has specialised in nonferrous metals containing secondary raw materials, as there are fractions from **electronics or automotive waste streams**, but also **alloys and cable scrap**. The focus is usually on the metal extraction, as metals typically finance recycling efforts. However, “by-products” such as electrical energy, bromine, salts, construction material (...) have their place in the recycling chain as well.

UrbanGold follows the approach of a **stepwise development**: Depending on the novelty of a concept, a project can start directly with plant design, but also in the early stage of a **literature research** and **practical test projects**. Later stages include process modelling for setting up a comprehensive **mass and energy balance** with an estimate of the necessary consumables. Technical scale trials can be carried out to optimise facility design and metallurgical process.

Process models are a suitable tool for optimisation work as well. After setting up a model as **digital twin** of a process, parameter studies and endpoint predictions can be carried out to **obtain** a deeper understanding of the real process and to improve operations.



Process development

Conceptual design

Process engineering

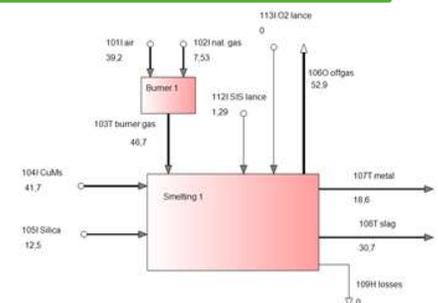
Our services in the field of Process Development and Test Work are:

- ✓ **Process development:** Elaboration of the processing chain to achieve the desired product qualities from a defined raw material portfolio using standard, proven, and/or novel technologies
- ✓ **Lab and technical scale test work:** Verification and refinement of calculated and estimated process parameters
- ✓ **Process modelling:** Setting up a mass and energy balance both to predict novel processes and to reproduce existing ones; integration of process models into the decision making for facility operation

SERVICES



“... metallurgical recycling processes require comprehensive knowledge in thermochemistry and process technology ...”



We are the ideal partner for:

- ✓ Development of recycling solutions from the idea to realisation readiness
- ✓ Planning, executing, guiding, and/or supporting test series for the development of new and optimisation of existing recycling processes
- ✓ Thermodynamic process modelling of new and existing processes

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