In the pyrolytic conversion of biomass by the TCR®-process - which is an advancement of the pyrolysis technology - following product streams accrue: oil, gas, water phase and biochar. TCR®-process parameters can be set exactly in technical and pilot plant size. Through this the quality and quantity of the products can be controlled. Cost-effective investigations already can be performed in technical scale with small quantities (5 kg), since even on that scale sufficient product quantities for meaningful analyzes can be generated. Therefore specific parameters depending on the feedstock can be determined together with the client and afterward utilization concepts and market studies can be developed.

**Keywords**
- TCR® (Thermo catalytic reforming)
- Biochar
- Biogenous residues
- Biomass

**Industrial sectors**
- Biogas plant operators
- Agriculture and forestry
- Livestock farming
- Food industry
- Municipalities (garden cuttings, green waste)
- Waste management
- Sewage treatment plants
### Technical specification

- Continuously temperature and residence time adjustment in reactor and reformer unit
- Operation also as pyrolysis unit
- Countless thermocouples for temperature control
- Investigation with small quantities (5 kg) in technical scale (2 kg/h) and still enough product quantities for extensive analyzes
- Pre-treatment of the feedstock is possible (e.g.: pelletizing)
- Transfer into pilot plant scale (30 kg/h)
- All kinds of biogenous materials utilisable

### Our service

Together with Fraunhofer UMSICHT specially for your biogenous residues, the ideal process parameters can be identified through thermogravimetry (TGA) and cost-effective technical plant. Afterward your biogenous residues can be transferred into the pilot plant and marketing and utilization paths can be developed.

The main properties of the biochar are the physical and chemical ones. These properties are optimatized feedstock specific (e.g.: BET surface and pore size distribution for soil or filter usage) to generate the highest possible added value. Thereby also the other product streams, oil, gas and water phase are considered for an extensive assessment of the overall process to ensure the best quality for all products.

### Analytics for feedstock, biochar and oil:

- Water content
- Ash content
- Thermogravimetry (TGA)
- Upper and lower heating value
- Elemental analysis (C, H, N, S, O)
- Nutrients
- Pollutants

### Analytics for gas:

- Online measurement (composition and quantity)
- Upper and lower heating value

### Your benefits

- Cost-effective, fast evaluation of specific feedstock and generated biochar
- Competent evaluation of the analysis results
- Development of feedstock-specific marketing opportunities (also including existing industry contacts)
- Consideration of the overall process, including quantitative and qualitative oil and gas utilization
- Economic analysis
- Opportunity for ongoing exchange and advancement through participation in projects
- Life cycle assessment (LCA)
- Experience with various feedstocks (e.g.: wood, straw, digestate, pig manure, coffee, grape pomace, olive pomace, sewage sludge, paper sludge, coatings slurry, mill residues, municipal solid waste, diapers, deinking sludge)

1. [Impact of biochar on plant growth](http://www.biochar.info).