

Fact sheet for VTT's "test bed services" offering for Piloting Innovation Vouchers to SMEs in the bioeconomy

When developing new bio-based products and processes VTT can offer a wide variety of pilot, bench and laboratory scale research and innovation services, related advanced characterisation tools and top level technical experts. VTT can also provide various assessment services, such as LCA and environmental foot print assessments as well as techno-economical feasibility studies.

These VTT services are available in most steps of the value chain: from biomass raw material pre-treatments, chemical/ thermochemical conversions, industrial biotechnology, new biobased material technologies and recycling concepts.

Examples of business innovations for SME:s that have utilised VTT:s services are e.g..

- Development of new cellulose based material replacing plastic bags (Paptic Ltd),
- Chemical recycling techniques for cotton textile fibres (Infinite Fibre Company Ltd),
- Novel non-chemical method for production of cellulose textile fibres (Spinnova Ltd),
- New biocomposite materials for kitchen furniture (Puustelli Group Ltd).
- Scale-up of a novel industrial process for starch based paper chemicals (Chemigate Ltd).

[VTT testbed infrastructures and equipment](#) especially suitable for SMEs in the bioeconomy are listed below. Main contact mika.harkonen@vtt.fi , more contacts in e-mails addresses below.

Biomaterial products:

- Biocomposite compounding and processing: twin screw compounders, plastic conversion by extrusion and injection moulding (incl. foam extrusion), production of multi-layer cast film, biaxial orientation in lab scale, testing of thermal and mechanical properties. lisa.wikstrom@vtt.fi
- Novel cellulose fibre web materials production and testing: e.g. foam forming, fibre web sheet production, testing of mechanical properties. kristian.salminen@vtt.fi
- Roll-to-roll coating, packaging material development and characterisation (e.g. permeability test) heli.kangas@vtt.fi
- Cellulose based textile fibre technologies: cellulose dissolution, textile fibre spinning, fibre property testing. jari.sirvio@vtt.fi

Biomass processing technologies:

- Laboratory and semi-pilot scale pre-treatment, pulping and novel techniques for fractionation of biomass, bleaching, nano/microcellulose production, and related analytics. jari.sirvio@vtt.fi

Chemical and thermochemical conversions:

- Multi-purpose pilot plant for process chemistry: steel and class lined pressure reactors (synthesis, polymerisations, extractions), pilot and laboratory scale separation equipment (filters, separators, centrifuges, dryers, evaporators, membrane filters). jarmo.ropponen@vtt.fi
- Versatile laboratory and bench scale tools for chemical synthesis and polymerisations. Advanced chemical analytics (NMR, FTIR, GC-MS, calorimetry). janne.hulkko@vtt.fi
- Thermochemical conversions: pilot and bench scale test equipment for gasification, pyrolysis and hydrothermal processing. Good variety of analytical tools. ilkka.hiltunen@vtt.fi

Industrial biotechnology and food processing:

- Multi-purpose fermentation and bioprocessing pilot plant with fully equipped bioreactors, downstream processing units and advanced analytics. jaana.uusitalo@vtt.fi
- Food grade piloting: grinding and dry fractionation, extrusion, brewing, baking. emilia.nordlund@vtt.fi

Process modelling and environmental assessments

- Process concept and CFD modelling, techno-economic feasibility and environmental assessments (e.g. LCA, carbon or water footprint) inka.orko@vtt.fi