

VTT
VTT Technical Research Centre of Finland
Espoo, Finland



ABOUT

VTT Technical Research Centre of Finland Ltd is a state owned and controlled non-profit limited liability company established by law and operating under the ownership steering of the Finnish Ministry of Employment and the Economy. VTT is a multitechnological research organisation providing high-end technology solutions and innovation services. VTT's activities are focused on three areas: Knowledge intensive products and services, Smart industry and energy systems, and Solutions for natural resources and environment.

VTT Group is the largest public applied research activity in Northern Europe with a staff of 2600 and turnover €279 M. VTT has over 70 years of experience in addressing the needs of industry and the knowledge-based society. Over the years, VTT has participated in more than 1000 European R&D Framework Programme projects, within various thematic programmes. VTT is ranked among the leading European RTOs.

EXPERTISE

VTT has experience in developing new innovative solutions for by-product metals, precipitates, slags, and wastes generated by metallurgical industry and mining operations. Our competences have focused on enabling hydrometallurgical technologies (leaching, precipitation, cementation, liquid-liquid extraction, electrochemistry, and bioprocessing) and waste treatment (characterisation, recycling, stabilisation, and landfills).

Process development is accompanied by advanced thermodynamic modelling and flowsheet simulations. The goal is to improve recovery of metals from low grade ores and industrial residues, to develop new innovative solutions for industrial residuals and to improve resource efficiency in downstream processing.

Our expertise includes:

- Hydrometallurgical process development for recovery of metals from low grade ores, tailings, industrial residues, and other complex sources
- New ways of processing and combinations of methods
- Bioprocessing of low grade ores and tailings (metals and P)
- Recovery of critical and scarce metals, such as REE and Au, by nonconventional methods
- Waste and regulations, waste stability and stabilization
- Secondary materials design and processing for reuse and upcycling

- Material technology, powder technology, substitution and value chains
- Water recycling in hydrometallurgical processes
- Measurement and control in mineral processing
- Utilisation, treatment, safe management, characterisation of mine waste, mine closure
- Advanced thermodynamics and materials modeling

FACILITIES & SERVICES

VTT has well equipped laboratory facilities with up-to-date pilot and lab scale resources.

VTT's new hydrometallurgical laboratory test facilities include leaching reactors, pilot reactors, precipitation reactors, SX pilots (12 stage mixer settler and counterflow column pilot), bio-hydrometallurgy reactors, adsorption columns and reaction calorimeters.

Flexmet hydrometallurgical pilot reactor series (each 5 or 10 L) made of titanium and equipped with scalable OKTOP mixer design and all the necessary instrumentation (T, Red-Ox, gas flow, liquid flow, agitation for gas-liquid-solid dispersion) is modular, modifiable and transportable. ICP, XRD, GC, LC and SEM are available for analytics as well as thermochemical analysis (TGA, DSC and RC).

Microbiology laboratories are equipped for biohydrometallurgical work. Additionally, materials can be further processed in in-house laboratories through powder metallurgical routes. VTT has licenses for the use of HSC-Sim process simulation software, and inhouse modelling tools Chemsheet and Chemsage are available for advanced thermodynamic calculations.



MORE INFORMATION
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