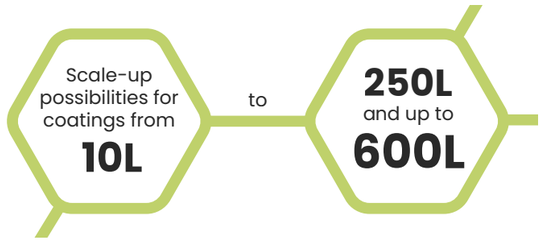
Data mining as the basis for efficient production of PLAX copolymers

APPLICATIONS: PACKAGINGS

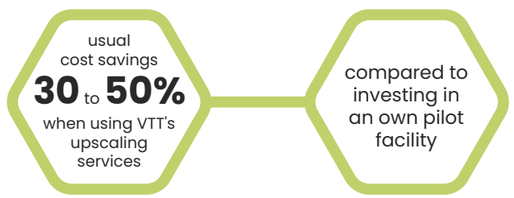
DEVELOPMENT: NEW BIOMATERIALS

CURRENT-STATUS

Process Chemistry Platform offers pilot services to scale-up and develop new products. For example, stable dispersions based on reactive PLAX co-polymers can be produced at 10-600 litres scale in vacuum shover dryer reactors. There is also possibility to test different mixing reactors up to 1800-liter scale for other applications and utilize downstream operations for further product development. Up-to-date online data collection supports process optimization work.

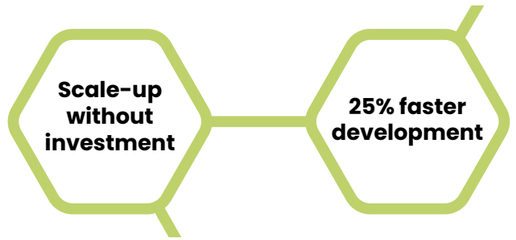


CHALLENGE



FURTHER DEVELOPMENT

Improved data collection and data management will provide faster process optimization to produce PLAX copolymers with desired structure, architecture, and molecular weight.



BENEFITS FOR COMPANIES AND SME'S

Pilot facilities are flexible to produce different formulations for dispersion coatings. Existing facilities and highly skilled personnel enable faster application development. There are no big investments needed for the scale-up process.

Companies can have access to develop novel barrier dispersion coating material PLAX for fibre-based packages, which can be recycled and reused in fibre-based packaging value chain. This is a cost-effective and environmental feasible technology to produce reactive PLAX materials.

Facility enables material production in variable scale, also larger amounts of material for testing purposes is possible.

APPLICATION EXAMPLES

TC 2: STAND-UP POUCH FOR FOOD: PLAX DISPERSION FOR BARRIER COATINGS

The PLAX technology is a feasible solution for bio-based recyclable barrier materials using crosslinking technology. Mild processing conditions without need of organic solvents enables environmental feasible technology..

An enhanced performance of the polymer is achieved, and thus, increase its value chain. By varying the monomers ratio, polymers with different content of reactive double bonds and tunable properties are obtained. PLAX copolymers are suitable for crosslinking reactions in presence of a selected crosslinker and thermal and/or UV initiator. Thermomechanical methods have been developed at VTT for preparation of PLAX dispersions.