

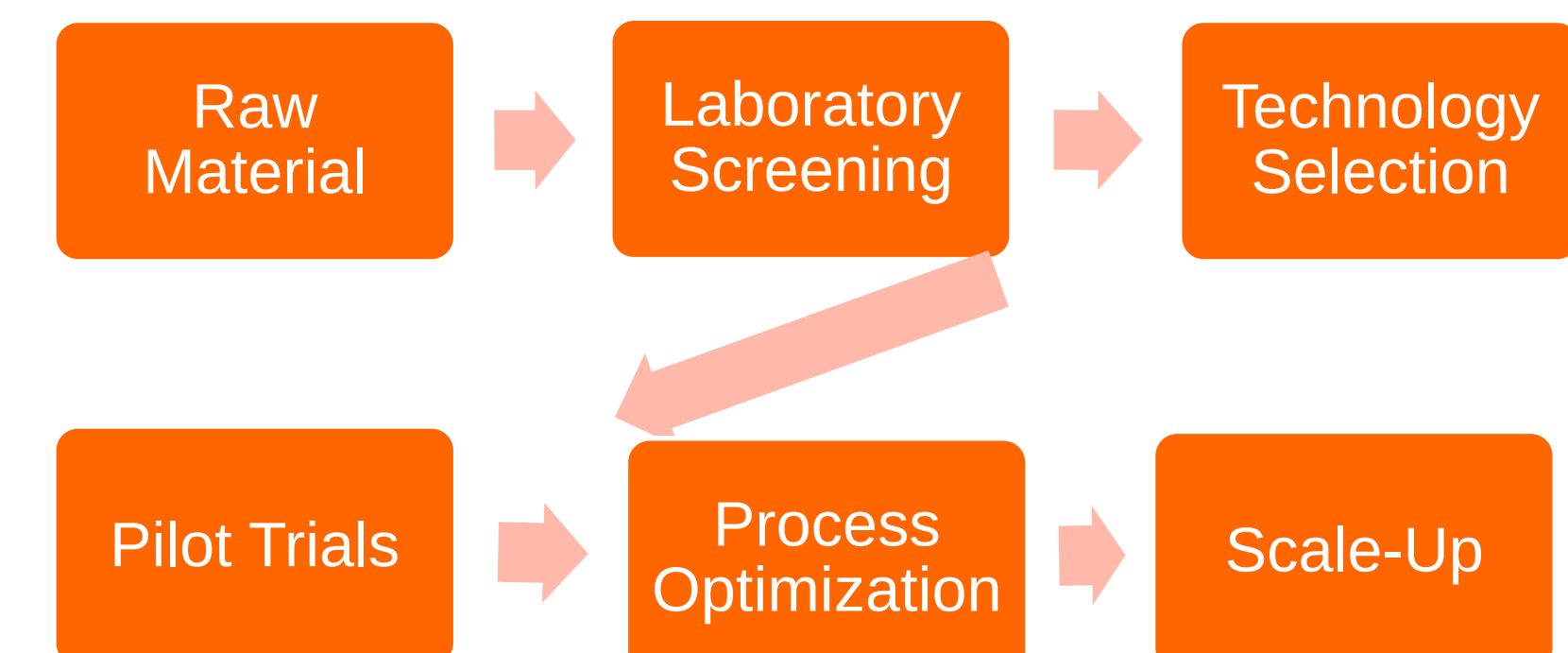
Solid/Liquid-Separation Equipment of LUT Kouvola

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Why Solid/Liquid-Separation?

- Essential operation in different fields of food industry such as beverage and dairy
- Used for product recovery, clarification, concentration and waste reduction
- Laboratory and pilot-scale testing reduces scale-up risks
- LUT Kouvola provides multiple complementary separation technologies in one research environment



1. Pilot-Scale Decanter Centrifuge



Principle
Continuous separation using centrifugal force and a screw conveyor.

- Suitable Studies**
- Continuous clarification
 - Protein recovery
 - Starch separation
 - Side-stream processing
 - Process scale-up

Key Benefit
Industrial-type operation under controlled laboratory conditions.

3. Pressure Filtration System

Principle
Liquid is forced through filter media using positive pressure.

- Suitable Studies**
- Filter cake formation
 - Washing and dewatering
 - Filtration kinetics
 - Filter media evaluation

Key Benefit
Assessment of filtration materials suitability for different matrices



Food Industry Applications

- Plant protein production
- Starch recovery
- Juice and beverage processing
- Fruit and berry processing
- Fermentation broth clarification
- Side-stream valorization
- Ingredient concentration
- Dewatering of food processing residues

What Can We Measure?

- Process Parameters**
- ✓ Flow rate
 - ✓ Pressure
 - ✓ Filtration rate
 - ✓ Separation efficiency
 - ✓ Dry matter content
 - ✓ Product yield
 - ✓ Moisture content
 - ✓ Energy consumption
 - ✓ Process temperature

4. Vacuum Filtration System

Principle
Filtration driven by vacuum pressure difference

- Suitable Studies**
- Laboratory screening
 - Filterability assessment
 - Filter aid evaluation

Key Benefit
Versatile data collection



2. High-Capacity Laboratory Centrifuge



Principle
Batch centrifugation utilizing density differences between phases.

- Suitable Studies**
- Screening experiments
 - Clarification studies
 - Small sample volumes

Key Benefit
Quick laboratory separations and small-scale tests before decanter centrifuge

5. Hydraulic Piston Filter

Principle
Mechanical compression removes liquid from solid materials

- Suitable Studies**
- Juice extraction
 - Press cake characterization
 - Dewatering studies

Key Benefit
Capable of very high pressures

