

Pilot Short Path Evaporator Testing

Pilot-scale process development for high-value, heat-sensitive separations

Testing available at our Swedesboro, NJ facility

Our pilot short path evaporator gives customers a practical way to evaluate throughput, product quality, and process feasibility before scale-up. The system is designed for high vacuum, low residence time separations where limited feed volume and product sensitivity matter.



Why Short Path / Thin Film Technology?

- Very low residence time helps minimize thermal degradation
- High vacuum lowers boiling temperatures for gentler processing
- Continuous operation provides more representative scale-up data than batch testing
- Handles viscous, high-boiling, and difficult-to-distill products
- Small holdup and flexible sample collection reduce the feed volume required for pilot work

Typical Applications

- Heat-sensitive purification and fractionation
- Pharmaceutical and nutraceutical processing
- Flavors, fragrances, oils and specialty chemicals
- High-vacuum distillation of high-boiling products
- Process development, feasibility, testing, and scale-up support

At a Glance



Evaporator area: 0.05 m²



Jacketed feed tank volume: 5L



Adjustable feed rate: 156 mL/h to 204 L/h



Sample collection: 2 x 500 mL flasks plus dual multi-flask selectors with 6 x 250 mL flasks



Integrated degasser for low-boiler removal ahead of evaporation



Max process temperature: up to 250°C



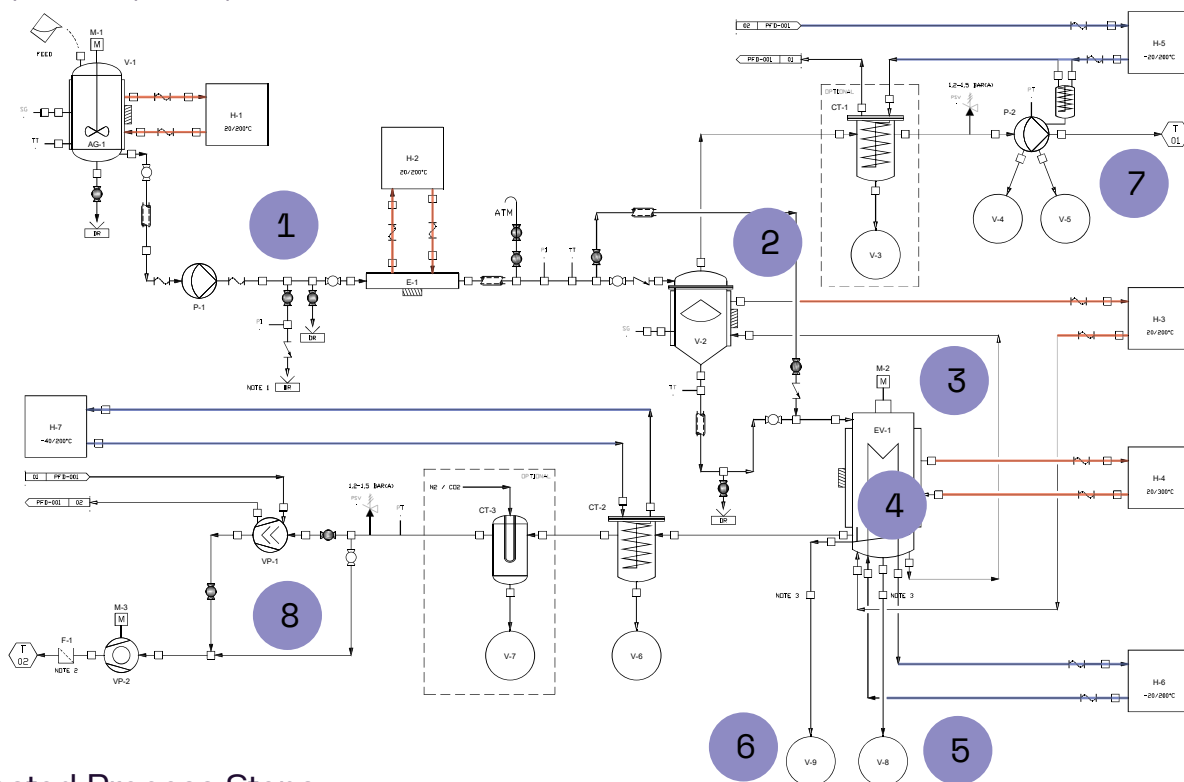
Ultimate vacuum capability down to 0.001 mbar (a)

How the Short Path Evaporation Process Works

From Feedstock to Purified Product

Every application is unique, but the basic short path evaporation process follows the same proven sequence. Feed material is conditioned, heated under high vacuum and distributed as a thin film across the evaporator surface. Volatile components vaporize almost immediately, travel only a short distance to the internal condenser and are collected separately from the purified product.

Because residence time is extremely short and operating pressures are very low, short path evaporation is well suited for high-boiling, heat-sensitive materials where product quality is critical.



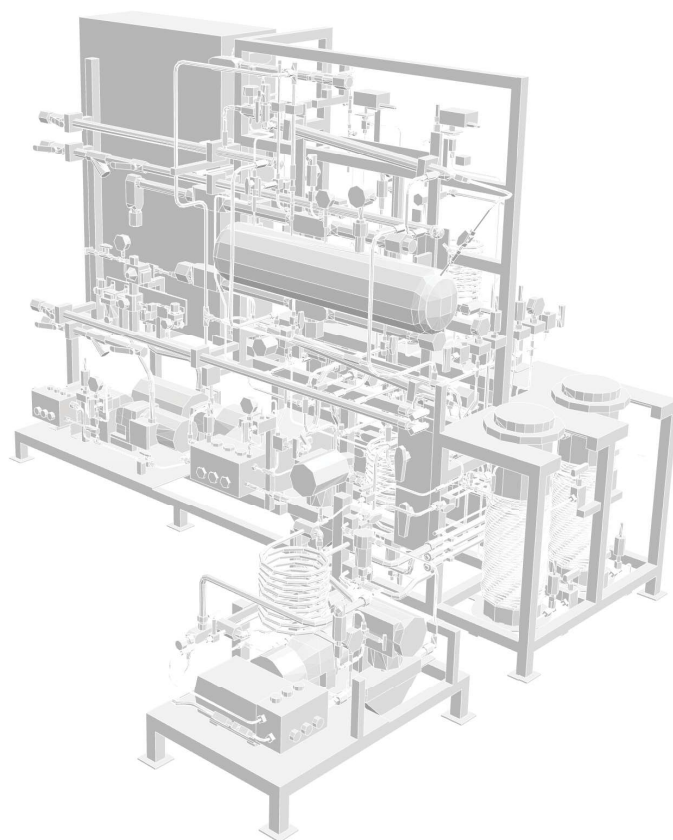
Suggested Process Steps

- 1 FEED PREPARATION**
 Product is introduced into the jacketed feed vessel where temperature and feed conditions are stabilized before processing.
- 2 DEGASSING (IF REQUIRED)**
 Volatile low-boiling components are removed to minimize flash/ entrainment in Thin Film Evaporation stage.
- 3 THIN FILM EVAPORATION**
 Feed is spread onto the heat transfer surface/wall via a wiper, roller, or fixed offset blade to maximize heat transfer & flow of material through the unit to minimize residence time.
- 4 SHORT PATH SEPARATION**
 Internal condenser minimizes the distance between evaporating surface and condensing surface allowing for minimal pressure drop (rise) for high vacuum operating conditions.
- 5 DISTILLATE COLLECTION**
 The desired volatile fraction is condensed and collected separately.
- 6 CONCENTRATE RECOVERY**
 The concentrated product exits the bottom of the evaporator for collection or additional processing.
- 7 DEGASSING VACUUM SYSTEM**
 A dedicated vacuum line with knock-out condensers removes and captures vapors released during feedstock degassing.
- 8 HIGH VACUUM SYSTEM (to 0.001mBara)**
 A deep-vacuum pump with knock-out condensers establishes and maintains the low operating pressure required for short path evaporation.

Is Your Process a Good Candidate?

Short path and thin film evaporation are commonly used for:

- Edible oils
- Specialty oils
- Nutraceuticals
- Pharmaceutical intermediates
- Flavors & fragrances
- Cannabinoids
- Fine chemicals
- High-boiling specialty chemicals



Why Pilot Testing Matters

Pilot testing allows manufacturers to evaluate actual process performance before investing in commercial equipment. Testing with your own product provides valuable operating data that can help reduce scale-up risk and optimize system design.

Typical testing objectives include:

- Determine throughput capacity
- Evaluate product purity and yield
- Optimize vacuum and temperature
- Confirm residence time
- Validate product quality
- Support commercial equipment sizing

Start with Your Process, Not the Equipment

Every application is different. Completing our application questionnaire helps our engineering team better understand your product, process conditions and performance goals before recommending pilot testing or commercial equipment.



Download the Thin Film & Short Path Evaporation Process Evaluation Worksheet.



Better pilot data leads to better scale-up decisions. Learn how De Dietrich pilot testing can help validate your process before commercial investment. Contact:

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