



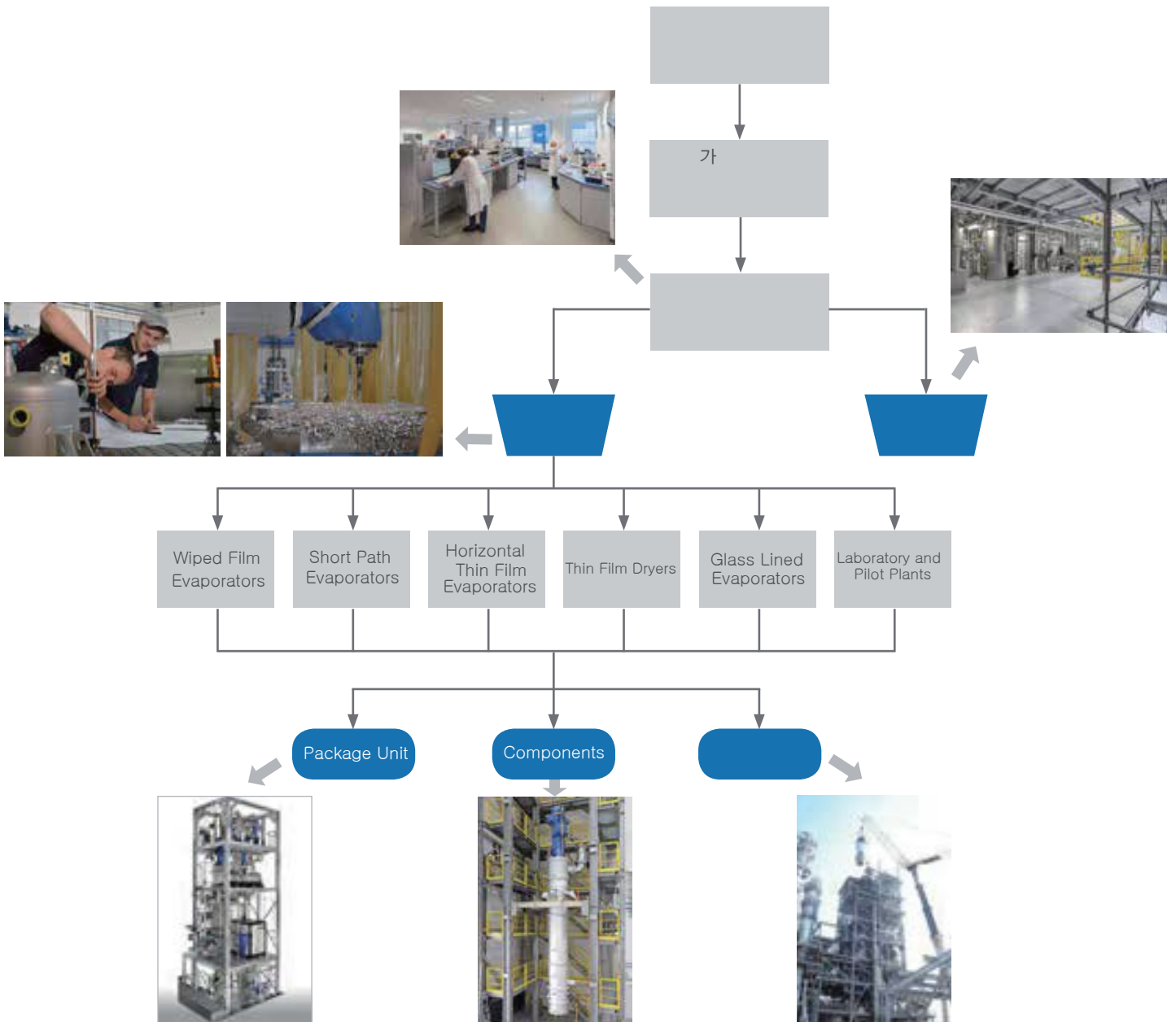
LABORATORY AND PILOT PLANTS

WIPED FILM AND SHORT PATH DISTILLATION

박막증류장치 (실험용/파일럿용)



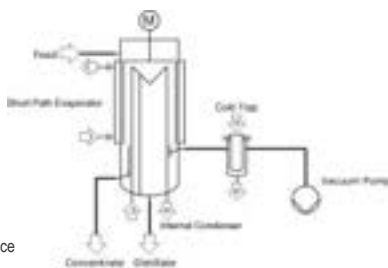
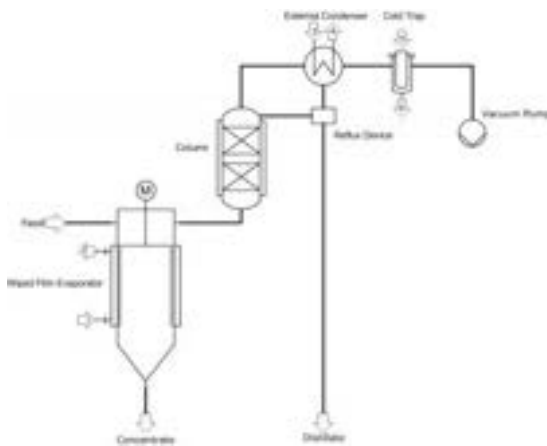
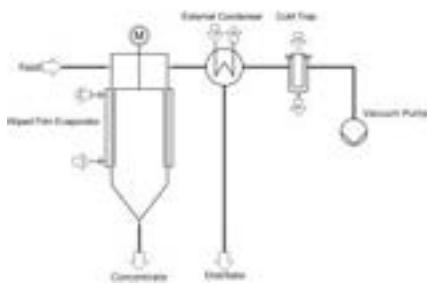
Company Profile and Services





Distillation Methods

General Set-up of Wiped Film and Short Path Distillation Units



Key:
 1 = Inlet Heating Media
 2 = Outlet Heating Media
 3 = Inlet Cooling Media
 4 = Outlet Cooling Media
 5 = Refrigerant, LN2, Dry Ice
 6 = Condensate Cold Trap

Wiped Film Distillation ()

Wiped film evaporator ()
 wiper product
 wiper product
 Wiped film evaporator ()
 1mbar (pressure drop)
 wiper 가 가
 가 Wiped film evaporator
 Re-boiling 가

Short Path Distillation ()

Short path evaporator ()
 가 Wiped film evaporator 가
 Pressure drop 가 0.001mbar 가
 Short path evaporator ()
 Short path evaporator 가
 Short path evaporator 가



Laboratory Plants - General Description

Wiped Film and Short Path Distillation Units for laboratory use

가

Lab units are used for

- 가
- 가
- 가

Features of laboratory units	
Feed rate ()	20 g/h up to 6 kg/h
Product wetted material ()	Borosilicate glass, stainless steel or other special materials
Max. heating temperature (가)	350 °C
Evaporator size ()	0.01 up to 0.30 m ²
Achievable pressure in Wiped film evaporator ()	<0.1 mbar
Achievable pressure in Short path evaporator ()	<0.001 mbar





Pilot Plants - General Description

Pilot plants for Wiped Film and Short Path Distillation

가 . (VTA 가)

Pilot plants are used for

- 가
- 가
- 가

Features of pilot units	
Feed rate ()	5 kg/h up to 50 kg/h
Product wetted material ()	Stainless steel or other special materials
Max. heating temperature (가)	350 °C (hot oil) For temperatures > 350 °C inductive heating possible
Evaporator size ()	0.06 up to 0.50 m ²
Achievable pressure in Wiped Film Evaporator ()	<0.1 mbar
Achievable pressure in Short Path Evaporator ()	<0.001 mbar

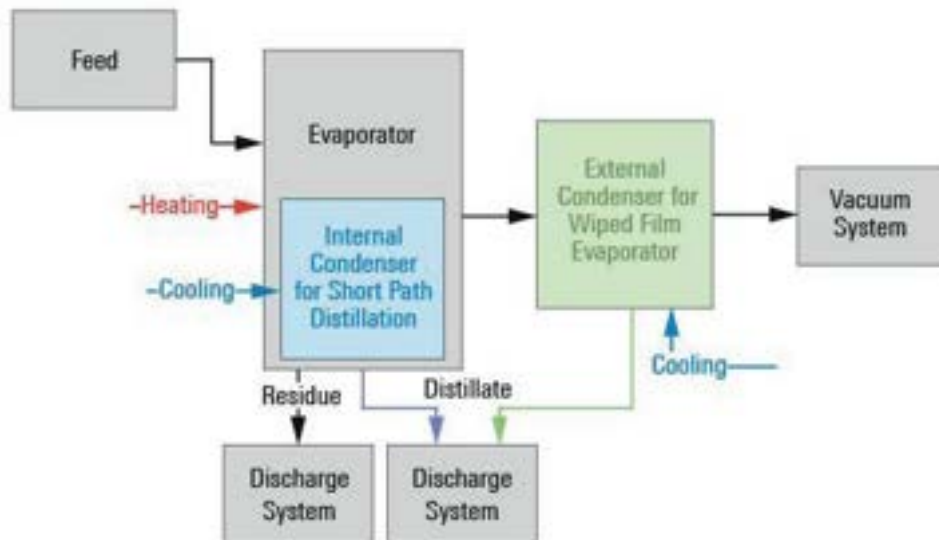




Laboratory Plants - Set up

가

: single stage Distillation Unit

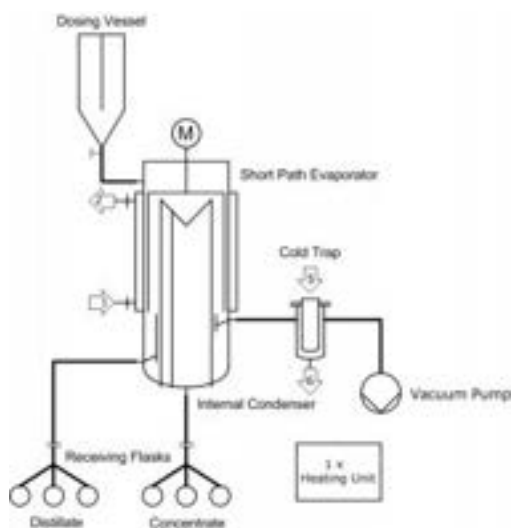


Component and Design	Options
Feed	<ul style="list-style-type: none"> * Dosing vessel* * Gear pump* * Dosing pump
Discharge	<ul style="list-style-type: none"> * Glass flasks * Triple split distributor * Intermediate buffer vessel* * Gear pump*
Vacuum system	<ul style="list-style-type: none"> * Rotary vane pump * Oil diffusion pump
Skid	<ul style="list-style-type: none"> * Movable skid * Installation on bench (e.g. fume hood)
Electrical equipment	<ul style="list-style-type: none"> * Standard version for manual operation * PLC control and process visualisation
Material	<ul style="list-style-type: none"> * Borosilicate glass * Stainless steel * Other special materials
Configurations	<ul style="list-style-type: none"> * Single stage * Multi stage * Wiped film evaporator with column

*) 가



Standard Design / Short Path Distillation Unit



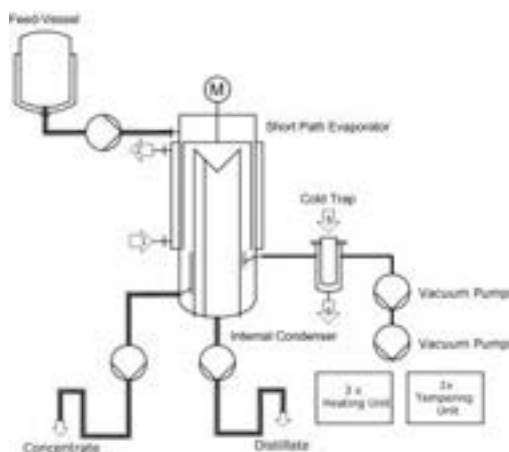
Suitable for

- Feasibility studies
- Simple separation tasks
- Low melting products
- Discontinuous operation

Features

- Dosing vessel
- No trace heating
- Flasks for residue and distillate discharge

High-end Design / Short Path Distillation Unit



Suitable for

- Production of samples up to several kilograms
- Complex separation tasks
- High melting products
- Continuous operation

Features

- Feed vessel
- Fully trace heated system
- Pumps for feed supply, residue and distillate discharge

Key:
 1 = Inlet Heating Media
 2 = Outlet Heating Media
 5 = Refrigerant, LN2, dry ice
 6 = Condensate Cold Trap



Laboratory Plants - Standard Sizes

Standard Sizes of VTA Wiped Film Evaporators for laboratory use (Glass plant)

Type	Evaporator surface [m ²]	Feed rate [kg/h]	Required crude amount [kg]
VDL 70-4	0.04	0.1 - 1.5	1.0
VDL 70-5	0.05	0.1 - 1.5	1.0
VDL 70-7	0.07	0.2 - 2.0	2.0
VDL 125-15	0.15	0.3 - 5.0	5.0
VDL 200-30	0.30	0.5 - 9.0	10.0
VDL 200-40	0.40	0.8 - 12.0	12.0

Larger laboratory-evaporator sizes on request



Standard Sizes of VTA Short Path Evaporators for laboratory use (Glass plant)

Type	Evaporator surface [m ²]	Feed rate [kg/h]	Required crude amount [kg]
VKL 38-1	0.01	0.02 - 0.3	0.1
VKL 70-4	0.04	0.10 - 1.2	2.0
VKL 70-5	0.05	0.10 - 1.5	2.0
VKL 125-10	0.10	0.30 - 3.0	4.0
VKL 125-15	0.15	0.30 - 5.0	5.0
VKL 125-20	0.20	0.30 - 6.0	6.0
VKL 200-30	0.30	0.50 - 9.0	10.0

Larger laboratory-evaporator sizes on request



Technical Data

Wiped Film Evaporator	Wiped Film Evaporator with Rectification Column	Short Path Evaporator
: 1,000 - 0.1 mbar	: 1,000 - 0.5 mbar (column head) min. 1.5 mbar in evaporator (depending on evaporation rate and reflux ratio)	: 1,000 - 0.001 mbar
	가 : 200 °C	
	: 350 °C	
	가 : 15,000 mPas (cP)	
	Standard: approx. 10	



Pilot Plant - Standard Sizes

(30kg)

(kg)

Pilot Plants with Wiped Film Evaporators

Standard Sizes of VTA Wiped Film Evaporators in pilot scale

Type	Evaporator surface [m ²]	Feed rate [kg/h]	Required crude amount [kg]
VD 83-6	0.06	5.0 - 12.0	30.0
VD 125-20	0.20	15.0 - 40.0	100.0
VD 200-50	0.50	40.0 - 100.0	300.0



Pilot Plants with Short Path Evaporators

Standard Sizes of VTA Short Path Evaporators in pilot scale

Type	Evaporator surface [m ²]	Feed rate [kg/h]	Required crude amount [kg]
VK 83-6	0.06	3.0 - 10.0	30.0
VK 100-10	0.10	3.0 - 15.0	30.0
VK 125-15	0.15	8.0 - 30.0	80.0
VK 200-40	0.40	25.0 - 80.0	200.0



Technical Data

Wiped Film Evaporator	Wiped Film Evaporator with Rectification Column	Short Path Evaporator
: 1,000 - 0.1 mbar	: 1,000 - 0.5 mbar (column head) min. 1.5 mbar in evaporator (depending on evaporation rate and reflux ratio)	: 1,000 - 0.001 mbar
	가 : 200 °C	
	: 350 °C	
	가 : 100,000 mPas (cP)	15,000 mPas (cP)
	Standard: approx. 10	



Pilot Plants - Set up

Available options

- 가 (feed, residue and distillate): 가
- 가 (Stainless steel, Hastelloy, Duplex) // VTA Standard: Stainless steel 316Ti
- 가 //
- Wiped Film Evaporator rectification column 가
- 가 (PLC and visualisation)
- 가



Degasser - Short Path Evaporator - Short Path Evaporator



Multi-stage system configurations for example are:

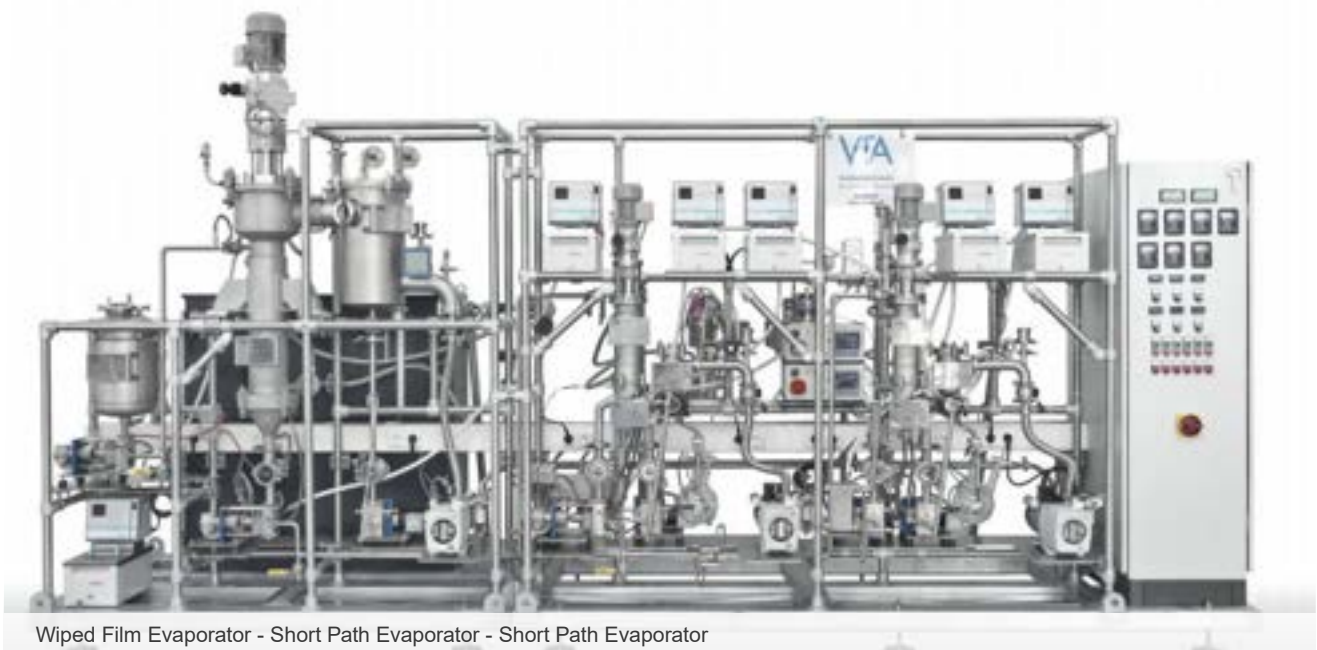
- 1st stage wiped film evaporator
- 2nd stage short path evaporator
- 3rd stage short path evaporator

- 1st stage degasser
- 2nd stage short path evaporator
- 3rd stage short path evaporator

- 1st stage degasser
- 2nd stage short path evaporator
- 3rd stage short path evaporator
- 4th stage short path evaporator



Wiped Film and Short Path Evaporator with control system/visualisation



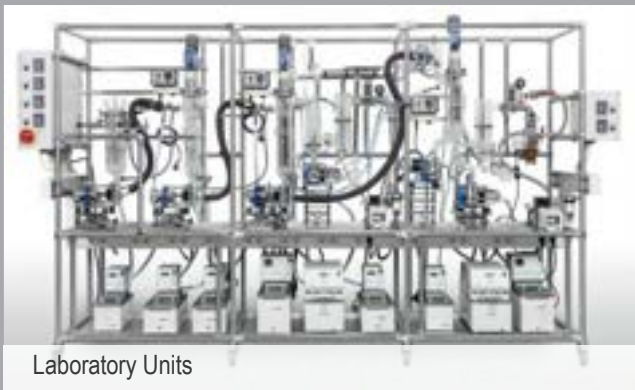
Wiped Film Evaporator - Short Path Evaporator - Short Path Evaporator



Laboratory and Pilot Tests (Test Center)



Contract Manufacturing



Laboratory Units



Pilot Units



Package Units & Plant Components



Service

VTA Verfahrenstechnische Anlagen GmbH & Co. KG

Establishment	1994
Number of employees	150
Locations	Niederwinkling/Germany Subsidiary Beijing/China: VTA PROCESS EQUIPMENT BEIJING Co., LTD Branches: Rock Hill/US Seri Kembangan/Malaysia
	Visit us online: www.vta-process.de



STREICHER Group

Establishment	1909 (MAX STREICHER GmbH & Co. KG aA)
Number of employees	approx. 4,000
Locations	Headquarters: Deggendorf/Germany more than 30 locations worldwide

Korean Agency (국내대리점)



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