BHS CANDLE FILTER TECHNOLOGY

Fluid Clarification & Solids Recovery

Solid-Liquid Separation, Cake Washing & Drying Technologies

DESCRIPTION & OPERATION

The BHS Candle Filter provides for thin-cake pressure filtration, cake washing, drying, reslurry and automatic discharge as well as heel filtration in an enclosed, pressure vessel. Units are available up to 100m² of filter area per vessel.

Filter Candles & Media

The filter candles consist of three components: single-piece filtrate pipe, perforated core with outer support rods and filter media. The filtrate pipe is the full length of the candle and ensures high liquid flow as well as maximum distribution of the gas during cake discharge. The perforated core can be a synthetic material, stainless steel or Hastelloy and is designed for the full pressure of the vessel. The outer support rods provide for an annular space between the media and the core for a low pressure-drop operation and efficient gas blowback for cake discharge. Finally, the filter media can be synthetic or metallic with removal efficiency to 1-2 microns.

Filter Vessel & Candle Registers

Vessel is constructed of stainless steel, Hastelloy or carbon steel lined. Within the vessel are candle registers. Each candle is connected to a register with a positive seal to prevent bypass. Each register may contain from 1-20 candles depending upon the filter size. The registers convey the liquid filtrate as well as the pressure gas for blowback. Each register is controlled with automated valves to ensure optimum flow in both directions.

AUTOMATIC PROCESS CYCLES

Filling: The slurry feed enters the bottom of the filter vessel.

Filtration: The slurry is pumped under pressure into the vessel. Cake will deposit on the outside of the candle; the separated filtrate will flow through the filtrate pipe and the registers. This process continues to a maximum pressure drop, the maximum cake thickness, or the minimum flow.

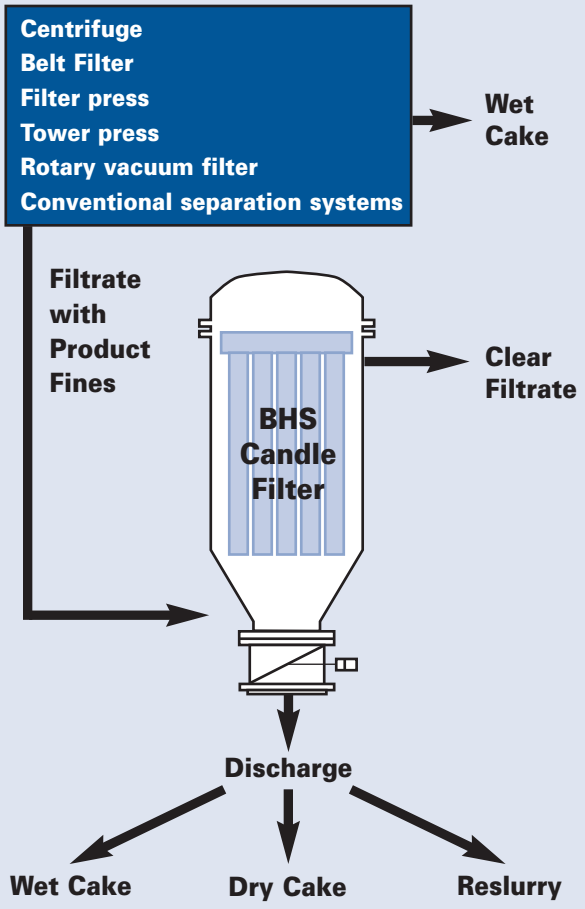
Washing: Displacement washing or recirculation washing.

Drying: Blowing gas, steam or "shock" drying.

Heel (Falling-Film) Filtration: The liquid remaining in the vessel cone after filtration or washing is completely filtered.

Cake Discharge: Gas flows through the register pipes, and down the filtrate pipe. The filter media gently expands allowing for cake discharge. Alternatively, the cake can be discharged as a slurry.

CLARIFICATION OF FILTRATES AND RECOVERY OF SOLIDS*



*For other process applications and ideas, please contact BHS.

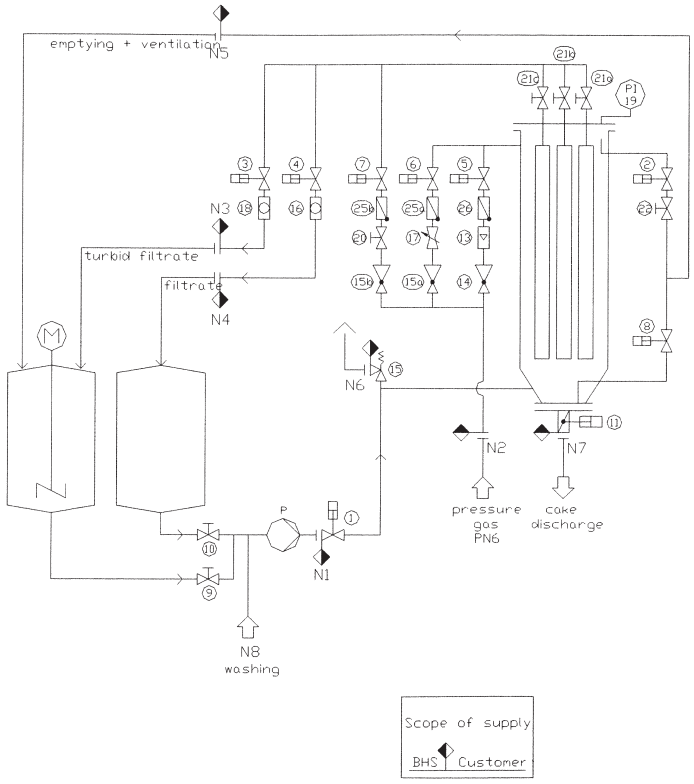
BENEFITS

- Full containment of solids, liquids and vapors
- Automatic operation
- Replaces filter presses & manual plate filters
- Eliminate pre-coat and/or body feed
- Clean-in-place
- Recovery of catalysts and activated carbon
- Clarification of pharmaceutical and chemical solutions
- Completely skid-mounted including piping, valves, instruments and PLC controls with up to 100m² of filter area per unit.

Test in the BHS filtration and process laboratory or at your plant to select the optimum process technology.

BHS CANDLE FILTER, KF 3-1, PILOT SYSTEM

For On-site Testing and Evaluation



Nozzle	Valve/Instrument	Description
N8		Washing
	26	Non-return
	25a	Non-return
N2		Pressure Gas
N7		Cake Discharge
	22	Ventilation
	21a - c	Filtrate Outlets
	20	Gas blowback
	19	Pressure Gauge
	18	Sight glass
	17	Throttling
	16	Sight Glass
	15a – b	Pressure Control
	14	Pressure Control
	13	Flow Meter
N6		Relief Valve (10 bar)
	11	Discharge
N5	8	Emptying
	7	Gas Blowback
	6	Heel Filtration
	5	Drying Gas
N4	4	Filtrate
N3	3	Turbid Filtrate
N5	2	Ventilation
N1	1	Slurry Feed

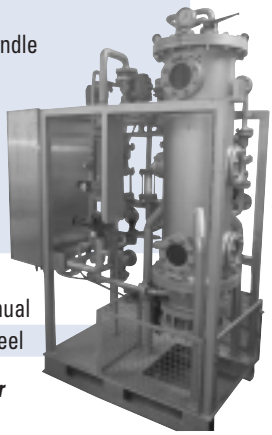
OPERATION:

Step Description	Valve Number											
	1	2	3	4	5	6	7	8	11	20	21	22
1) Fill with slurry	X	X	X								X	X
2) Turbid filtration	X		X								X	
3) Filtration	X		X	X							X	
4) Clear Filtration	X			X							X	
5) Emptying slurry				X		X		X			X	
6) Blow dry - preparation			X		X	X					X	
7) Blow dry			X		X						X	
8) Depressurizing		X									X	X
9) Opening discharge									X		X	X
10) Cake discharge/blow back							X		X	X	X	
11) Close filter									X		X	
12) Stop												

X = Valve Open

SPECIFICATIONS: BHS Pilot Model KF 3-1

Dimensions	30 inches x 60 inches x 88 inches tall 2100 pounds empty 2600 pounds full (water)
Vessel*	316 Ti Stainless Steel
Liquid Volume	200 liters
Working pressure	FV/150 psig
Working temperature	150°C
Filter candles*	
Core Material	Synthetic or Stainless Steel
Number	3
Filter area	0.33 m^2 each candle
Filter candle diameter	90 mm
Effective candle length	1200 mm
Total candle length	1310 mm
Filter Media	Various
Sealing	Various
Cake thickness	20 mm
Control	Automatic/ Pneumatic/Manual
Valves & Instruments*	316 stainless steel



Hastelloy and other materials are available for corrosive applications

BHS-Filtration Inc.

9123-115 Monroe Road, Charlotte, NC 28270 • Tel 704.845.1190 • Fax 704.845.1902 • e-mail: info@bhs-filtration.com • internet: www.bhs-filtration.com

BHS-Filtration Inc. is a subsidiary of **BHS-Sonthofen**

Hans-Böckler-Straße 7 • D-87527 Sonthofen, Germany • Tel 49.8321.802.200 • Fax 49.8321.802.320 • www.bhs-sonthofen.de