

Alfa Laval VHE Final Heater

For deodorization and physical refining of fats and oils

Introduction

This high-performance heat exchanger is specially designed for the final heating of edible fats and oils in deodorization and physical refining plants. This heating takes place under vacuum and sparging steam conditions, using high-pressure steam or another heating medium.

The VHE Final Heater is part of the Alfa Laval deodorization concept, but is also available as a retrofit component for installation in other deodorization systems – irrespective of origin.

Application

For deodorization and physical refining of fats and oils.

Benefits

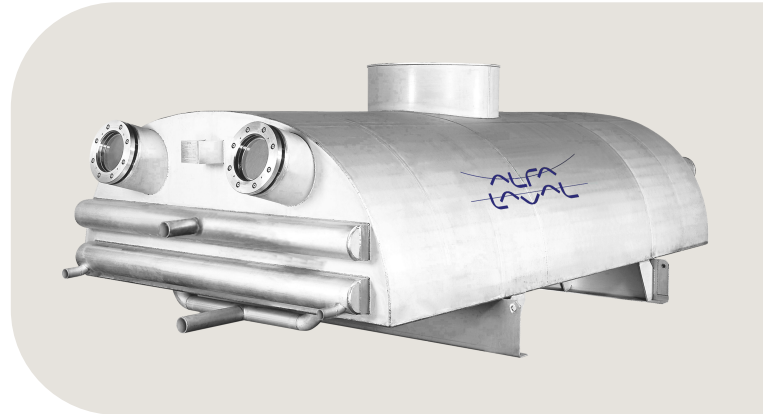
- Increased capacity
- Better product quality
- Greater efficiency

Design

The VHE Final Heater is designed to heat oil under vacuum and sparge steam conditions. Gradual heating under such conditions avoids any overheating of the oil on the hot tube surface and means that the oil is treated gently, thus maintaining the quality. The sparge steam also acts as stripping to remove volatiles and to improve the heat transfer rate.

The low liquid level ensures that the oil follows the desired path, and thus remains inside the VHE Final Heater for the required time, avoiding bypass. The first oil entering the VHE Final Heater is the first out. In order to simplify service and maintenance, the sparge steam tubes can be removed from outside for manual cleaning. The shell side is equipped with illuminated sight glasses with double O-rings on the flanges. To reduce time and contamination during stock changes, a bottom drain valve is used to drain the oil.

When undertaking the physical refining of oils, the vapours outlet connection can be equipped with an optional demister to ensure that only vapours are removed.



Options

- Drain valve with or without actuator
- Demister
- Thermal fluid models available
- Electrical models are available for smaller capacities

Working principle

The cold oil enters the VHE Final Heater at one end of the shell side, which is under vacuum, and flows continuously through a special baffle system until it reaches the outlet connection at the other end. It then flows to the deodorizer by gravity.

A fixed overflow pipe on the outlet connection controls the oil level on the shell side.

The heating medium circulates under pressure through a set of heating tubes installed inside the heat exchanger. The sparge steam is injected through perforated tubes located on the bottom of the shell, below the heating tubes.

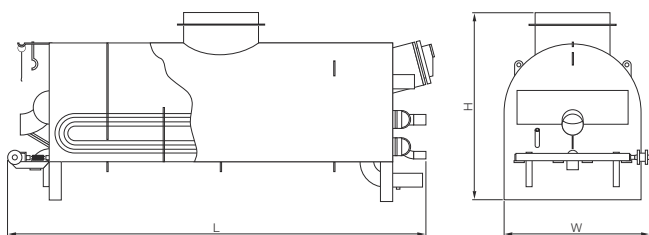
The high heat transfer efficiency between the oil and heating medium is maintained by a special design of the heating tubes and baffles on the shell side. To empty the shell side, a drain is installed on the bottom.

Technical data

Capacity	up to 3000 tons/day ¹
Operating temperature	up to 275°C (530°F)
Pressure on the tube side	up to 90 barg (1300 psig)
Pressure on the shell side	full vacuum
Sparge steam consumption	0.05–0.1% of oil flow
Material shell	AISI 304
Material tubes	AISI 316L
Standard code	AD Merkblätter, ASME and PED

¹ Actual capacity depends on the temperature program

Dimensional drawing



	L=length	W=width	H=height	Net weight
Model ¹	mm (inch)	mm (inch)	mm (inch)	kg (lb)
20D	3550 (140)	1000 (40)	1160 (46)	1000 (2200)
40D	3410 (134)	1190 (47)	1550 (61)	1775 (3900)
56D	3440 (135)	1190 (47)	1630 (64)	2000 (4400)
80D	3450 (136)	2000 (79)	1650 (65)	3000 (6614)
110D	3665 (144)	2620 (103)	1590 (63)	4300 (9500)
120D	3665 (144)	2620 (103)	1590 (63)	4400 (9700)
150D	4635 (182)	2620 (103)	1590 (63)	5300 (11700)

¹ Dimensions and weights are approximate.

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