

# HEAT EXCHANGER

## TYPE VEV

adequate for all gases acc. to "DVGW Arbeitsblatt" (work sheet) G260  
and for all non-aggressive special gases.

## WÄRMEÜBERTRAGER TYP VEV – VEV-L – VEV-ex

### CHARACTERISTICS

- »Optimal load case design
- »Flow-optimized design
- »Vibration-optimized design

### OPTIONS

- » custom-specific design acc. to various design codes (ASME, EN 13445, SVTI, AS1210, PD5500, etc.)
- » custom specific TPI approvals
- » custom specific testing
- » sour gas application - NACE
- » low temperature application up to -50°C
- » high pressure application up to 300 bar
- » high temperature application up to 250°C
- » custom specific nozzle arrangement

### ACCESSORIES ON DEMAND

- »Water SSV safety shut-off valve (Water jacket pre-pressure resistant)
- »Water SRV safety blow-off valve (Water jacket not pre-stress-resistant)
- »Rupture disk, water side (Water jacket not pre-stress-resistant)

### STANDARD DESIGN DATA

<b>Design Code</b>	AD 2000 + CE
<b>Design Pressure</b>	custom specific
<b>Design Temperature</b>	-10 / +50°C
<b>Body Material</b>	Carbon Steel
<b>Design Approval</b>	Third Party Inspector
<b>Material Certificates</b>	EN 10204/3.1

### GENERAL

Heat exchangers heat gas for a subsequent system demand or to counteract the Joule-Thomson effect. This arises e.g. by reducing pressure in a gas pressure control. Heat exchangers can also be determined as a cooler in reverse operation.

The execution takes place as a welded steel construction in vertical or horizontal design.

### QUALITY MANAGEMENT

- » DIN EN ISO 9001
- » Our standard vessel design acc. to AD 2000 are third party approved by TÜV or other TPI and CE certified according to the pressure equipment directive EG/PED 2014/68/EU.
- » Test- and material-certificates are issued by an authorized person according to the code requirements

### FUNCTION

Heat exchangers VEV (vertical) or VEV-L (horizontal) function in the standard version for gaseous media as counterflow tube bundle heat exchangers. The gas flowing through the tube is heated by the shell-side recirculation of water or saturated steam. The jacket-side flow around the tubes is optimized by baffles (baffles).

The application of the heat exchanger and the heating medium determine whether the shell side is pre-pressure-resistant. The tube bundle can be firmly welded or demountable.

### CALCULATIONS

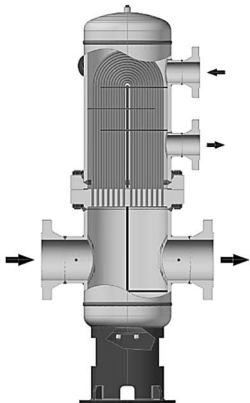
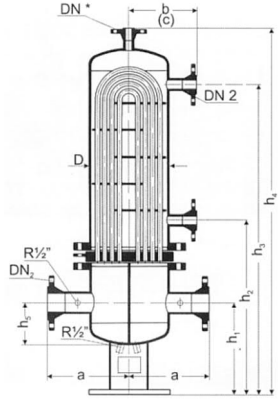
Our heat exchanger calculations are based on the theoretical principles of the VDI heat atlas and the HEDH (Heat Exchanger Design Book). The calculation bases are constantly being further developed by current research reports.

<b>Radiography Test</b>	according code
<b>Dye Penetrant Test</b>	according code
<b>US-Test</b>	on demand
<b>Hydrostatic Pressure Test</b>	p x 1,43
<b>Leak Test</b>	workshop test 6 barg
<b>EG/PED 2014/68/EU</b>	CE-certified
<b>Corrosion Allowance</b>	1 mm

### TECHNICAL DATA FOR CUSTOM-SPECIFIC INQUIRY/ORDER:

Design Data										
Design Code	<input type="checkbox"/>	AD 2000	<input type="checkbox"/>	ASME	<input type="checkbox"/>	TEMA	<input type="checkbox"/>	other		
Tests / Options	<input type="checkbox"/>	CE / PED	<input type="checkbox"/>	U-Stamp	<input type="checkbox"/>	NACE	<input type="checkbox"/>	other		
Design Pressure	PN		bar	corrosion allowance	c <sub>2</sub>		mm			
Design Temperature	DT	-	/ +	°C	Design	<input type="checkbox"/>	vertical	<input type="checkbox"/>	horizontal	
Process / Operation Data			tube side		shell side					
medium		<input type="checkbox"/>	Natural Gas	<input type="checkbox"/>	other	medium	<input type="checkbox"/>	Wasser	<input type="checkbox"/>	Dampf
density (gas analysis)	ρ <sub>ni</sub>		kg/m <sup>3</sup>	density	ρ <sub>na</sub>	998,3 /	kg/m <sup>3</sup>			
nominal flow	V <sub>i</sub>		Nm <sup>3</sup> /h / SCFM	mass flow	m <sub>a</sub>	calculated result	kg/s			
pressure inlet	P <sub>i</sub>		bar	pressure inlet	P <sub>a</sub>	2,5	bar			
pressure after regulation	P <sub>ad</sub>		bar	temperature inlet	ϑ <sub>ea</sub>		°C			
temperature inlet	ϑ <sub>ei</sub>		°C	temperature outlet	ϑ <sub>aa</sub>		°C			
temperature after regulation	ϑ <sub>ad</sub>		°C	Antifrogene N			°C / %			
heat capacity	Q	calculated result	kW	Fouling	R <sub>f</sub>		m <sup>2</sup> *K/W			
tube bundle replaceable	<input type="checkbox"/>	yes	<input type="checkbox"/>	no	pressure-resistant	<input type="checkbox"/>	yes	<input type="checkbox"/>	no	

## TYPE VEV, VERTICAL

Typ / Type	Technische Daten / Technical Data	Skizze / Sketch
<b>VEV</b>	<p><b>Heat Exchanger, vertical</b></p> <p>U-Tube Bundle, replaceable counterflow</p> <p>Fixed welded in bundle, on demand (see sample)</p> <p>Joule-Thomson</p> 	

Type Key, sample:



The table values are based on the following design criteria:

Design according to AD2000; Design pressure PN16 - PN40; Design temperature -10°C /+100°C; Water side not pre-pressure resistant.

DN	Code	Ø [mm]	h <sub>1</sub> [mm]	h <sub>2</sub> [mm]	h <sub>3</sub> [mm]	h <sub>4</sub> [mm]	h <sub>5</sub> [mm]	a [mm]	b [mm]	c [mm]	DN 1 [mm]	DN 2 [mm]
100	1	114,3	700	1025	1435	1655	150	205	150	175	50	25
	2				1685	1905						
	3				1935	2155						
	4				2185	2405						
	5				2435	2655						
125	1	139,7	700	1035	1455	1675	160	215	160	190	50	25
	2				1705	1925						
	3				1955	2175						
	4				2205	2425						
	5				2455	2675						
150	1	168,3	700	1080	1435	1655	195	240	180	210	80	40
	2				1685	1905						
	3				1935	2155						
	4				2185	2405						
	5				2435	2655						
200	1	219,1	700	1130	1510	1770	220	270	205	240	100	50
	2				1760	2020						
	3				2010	2270						
	4				2260	2520						
	5				2510	2770						
250	1	273	700	1195	1570	1855	260	310	245	275	150	80
	2				1820	2105						
	3				2070	2355						
	4				2320	2605						
	5				2570	2855						
300	1	323,9	700	1265	1610	1930	300	360	285	320	200	100
	2				1860	2180						
	3				2110	2430						
	4				2360	2680						
	5				2610	2930						
400	1	406,4	800	1435	1740	2110	370	420	330	375	250	125
	2				1990	2360						
	3				2240	2610						
	4				2490	2860						
	5				2740	3110						
500	1	508	900	1620	1945	2320	440	480	380	430	300	150
	2				2195	2570						
	3				2445	2820						
	4				2695	3070						
	5				2945	3320						

## TYPE VEV-L, HORIZONTAL

Typ / Type	Technische Daten / Technical Data	Skizze / Sketch
<b>VEV-L</b>	<p><b>Heat Exchanger, horizontal</b></p> <p>Straight Bundle, fix welded, not replaceable counterflow</p> <p>Joule-Thomson</p>	

Type Key Sample:

**VEV-L 200 . 40 . 100 . 3**

WT Typ / HE Type \_\_\_\_\_  
 DN Apparat / DN vessel \_\_\_\_\_

Durchflussrichtung / flow direction  
 DN Stutzen / DN Nozzle  
 Durchflussrichtung / flow direction

## TYPE VEV-EX FOR LOW FLOW RATES, START-UP

Typ / Type	Technische Daten / Technical Data	Skizze / Sketch
<b>VEV-ex</b>	<p><b>Heat exchanger, vertical electrically heated indirectly</b></p> <p>Pipe coil (gas), electric heating element for water bath</p> <p>Heating Element:          Application: II 2G          Protection Class: EX de II C T5 / IP65          Certificate: TÜV 03 ATEX          Load voltage: as required</p> <p>Including instrumentation:          Level limit switch, thermostat and temperature limiter (water side), thermometer, manometer, safety valve for thermal expansion</p>	

Type Key Sample:

**VEV-Ex 2 . 150 . 40 . 50**

WT Typ / HE Type \_\_\_\_\_  
 Heizleistung / Caloric Power [kW] \_\_\_\_\_

DN Stutzen / DN Nozzle  
 PN Designdruck / PN Design Pressure  
 DN Apparat / DN Vessel

## CONTACT

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