

## Airsock air coolers THOR-A

Industrial coolers with Cu tubing



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## Airsock selection

For a correct selection and dimensioning of air sock systems to be used in combination with THOR-A coolers, you will have to consult your air sock supplier.

## Other THOR models

### THOR

The THOR series is a wide and flexible range of industrial air coolers fitted with blow-through or draw-through fans. These models have been highly standardised in construction and dimensions, while maintaining flexibility in fin spacings, coil construction and circuiting design.



### THOR-D

Low silhouette dual discharge air coolers.



### THOR-F

Air cooler models THOR-F have been optimized for the refrigerated storage of agricultural products. These cooler models are characterised by an optimised capacity/air volume ratio and a relatively low profile.



## Code description

<b>THOR-A</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>(80Pa)</b>	<b>6</b>	<b>L</b>	<b>H1</b>	<b>400</b>	-	*
1	2	3	4	5	6	7	8	9	10	

- 1 Industrial airsock cooler CuAl
- 2 Cooler module (1 to 4)
- 3 Number of fans (1 to 3)
- 4 Tube rows in air direction (4, 6)
- 5 External pressure (40, 60, 80, 100, 120 Pa)
- 6 Fin spacing (4, 6 or 7 mm)
- 7 Fan speed (L=1000, H=1500 rpm)
- 8 Circuiting design (2H, H1, H2 ...)
- 9 Fan power supply (400=230/400/50/3, 230=230/50/1)
- 10 Options

All THOR, THOR-D, THOR-F and THOR-A models are also available with stainless steel tubing (TYR range).

## Two-Year guarantee

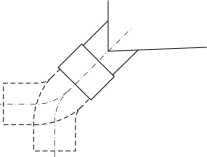
Because Alfa LU-VE has the fullest confidence in the product quality, a two-year full guarantee is given.

## General information & application


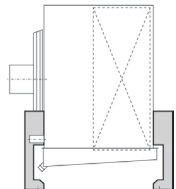
Helpman THOR-A industrial air coolers have been designed for airsock application. All models are fitted with an airsock ring and fan motors capable of supplying the additional external pressure that is required for the proper functioning of an airsock system. Suitable for applications like processing rooms, working production area's and greenhouse cooling.

Evaporating temp.	+5 to -15 °C
Refrigerants	all HFO/HFC, brine, CO <sub>2</sub>
Capacities (SC2)	4 up to 46 kW
Airsock diameter	450 up to 730 mm

## Standard configuration

- Finned coil
  - 4 coil block modules
  - 4 or 6 tube rows deep
  - Cu ripple fin tubing  $\varnothing$  5/8" (smooth tubing for brine)
  - Tube pitch 50x50 mm square
  - Corrugated aluminium fins
  - Fin spacings 4, 6, 7 mm
- 1-3 Fans, drawing through the coil, available in a range of different executions.  
Airsock diameters  $\varnothing$  450 mm up to  $\varnothing$  730 mm.  
Fan motor protection class IP55.
- Corrosion-resistant casing material: Aluminium/Sendzimir, white epoxy coated (RAL 9003).
- Hinged, enclosed end covers.
- Hinged driptray. Drain(s) 32 mm PVC connection, freely adjustable into either horizontal or vertical position. 
- Refrigerant distribution optimised to refrigerant applied.
- Refrigerant connections on right hand side (fan side view).
- Fitted with schröder valve on the suction connection for testing purposes.
- Sufficient room for fitting the expansion valve inside.
- Suitable for dry expansion or pumped system.
- Stickers indicate fan direction and refrigerant in/out.
- Delivery in mounting position. Coolers are mounted on wooden beams. Installation can take place with use of a forklift.
- Design pressure 33 bar (HFO/HFC) or 6 bar (brine). Higher design pressures on request. Each heat exchanger is leak tested with dry air and finally supplied with a nitrogen precharge.

## Options

- Defrost system
  - Hot gas coil in driptray (G1)
  - Hot gas connected (G1C)  
*Hot gas coil in driptray connected to suction header, without non-return valve.*
  - Water defrost (W)
  - Electric defrost (E1, E4)  
*Electric defrost for air coolers with pumped refrigerant circulation or in glycol execution on special request only.*
- Driptray insulation
  - Styropore 10 mm + cladding (I2)  
*not in combination with electric defrost*
  - Foamglass 25 mm + cladding (I3)
- Refrigerant connections (L/R) 
- Mounting feet (MF)  
*For floor mounting, coolers can be equipped with hot dip galvanized steel mounting feet.*
- Isolating switch - mounted (ISM)
- Secondary refrigerant  
*Air coolers for secondary refrigerant application can be selected with our selection software. Extra information on request.* 
- Stainless steel 304 casing (SSC)
- Suction hood (SH)

## Non-standard executions (on request only)

- Higher capacities
- Special fan motors
  - Dual fan speed motors
  - Variable fan speed motors
  - EC fans
  - Fan motors 254-280/440-480/60/3, 230/60/1 or 230-380/60/3
- Built in heater coil sections

## Driptray insulation (I)

For specific operational conditions the air coolers can be fitted with driptray insulation.

Insulation of the driptray is recommended for air coolers with hot gas defrosting used at a room temperature below -5 °C.

For areas with high relative humidity it may also be necessary to insulate other parts of the casing. At extra cost this driptray insulation can be combined with the usual epoxy coating.

*Note : When selecting driptray insulation the overall height "B" of the coolers (see page 10) increases by the thickness of the insulation material applied.*

## Technical data

n=1000 rpm

Cooler model THOR-A	Air flow (m <sup>3</sup> /h)	
	ext. press. 40 Pa	ext. press. 60 Pa
<b>Fin spacing 4 mm</b>		
214-4-* L	2740	
216-4-* L	2710	
224-4-* L	5480	
226-4-* L	5420	
234-4-* L	8220	
236-4-* L	8140	
<b>Fin spacing 6 mm</b>		
314-6-* L	4300	3760
316-6-* L	4250	3710
324-6-* L	8610	7520
326-6-* L	8510	7430
334-6-* L	12910	11280
336-6-* L	12770	11150
414-6-* L	5550	5200
416-6-* L	5480	5140
424-6-* L	11100	10420
426-6-* L	10970	10300
434-6-* L	16650	15630
436-6-* L	16470	15450
<b>Fin spacing 7 mm</b>		
214-7-* L	2860	
216-7-* L	2820	
224-7-* L	5720	
226-7-* L	5650	
234-7-* L	8580	
236-7-* L	8480	
314-7-* L	4370	3810
316-7-* L	4320	3770
324-7-* L	8730	7620
326-7-* L	8630	7540
334-7-* L	13100	11440
336-7-* L	12950	11300
414-7-* L	5620	5280
416-7-* L	5560	5220
424-7-* L	11250	10560
426-7-* L	11130	10440
434-7-* L	16880	15840
436-7-* L	16690	15670

## Technical data

n=1000 rpm

Cooler model THOR-A	Sound press dB(A)	Coil surface m <sup>2</sup>	Int. vol. dm <sup>3</sup>	Cooler Weight Kg	Dimensions			Fans	
					Length A mm	Height B mm	Airsock diameter mm	Capacity kW	Nr
<b>Fin spacing 4 mm</b>									
214-4* L	53	46.0	12	71	1300	680	500	0.25	1
216-4* L	53	68.9	19	81	1300	680	500	0.25	1
224-4* L	56	91.9	20	112	2100	680	500	0.25	2
226-4* L	56	137.9	30	133	2100	680	500	0.25	2
234-4* L	58	137.9	28	153	2900	680	500	0.25	3
236-4* L	58	206.8	42	185	2900	680	500	0.25	3
<b>Fin spacing 6 mm</b>									
314-6* L	56	41.7	17	89	1300	880	555	0.25	1
316-6* L	56	62.5	25	102	1300	880	555	0.25	1
324-6* L	59	83.3	27	144	2100	880	555	0.25	2
326-6* L	59	125.0	40	170	2100	880	555	0.25	2
334-6* L	61	125.0	37	198	2900	880	555	0.25	3
336-6* L	61	187.5	56	238	2900	880	555	0.25	3
414-6* L	58	52.1	19	102	1500	880	730	0.45	1
416-6* L	58	78.1	29	118	1500	880	730	0.45	1
424-6* L	61	104.1	32	166	2500	880	730	0.45	2
426-6* L	61	156.2	48	199	2500	880	730	0.45	2
434-6* L	63	156.2	45	230	3500	880	730	0.45	3
436-6* L	63	234.3	67	280	3500	880	730	0.45	3
<b>Fin spacing 7 mm</b>									
214-7* L	53	27.0	12	69	1300	680	500	0.25	1
216-7* L	53	40.6	19	78	1300	680	500	0.25	1
224-7* L	56	54.1	20	108	2100	680	500	0.25	2
226-7* L	56	81.1	30	127	2100	680	500	0.25	2
234-7* L	58	81.1	28	147	2900	680	500	0.25	3
236-7* L	58	121.7	42	176	2900	680	500	0.25	3
314-7* L	56	36.1	17	88	1300	880	555	0.25	1
316-7* L	56	54.1	25	101	1300	880	555	0.25	1
324-7* L	59	72.1	27	142	2100	880	555	0.25	2
326-7* L	59	108.2	40	168	2100	880	555	0.25	2
334-7* L	61	108.2	37	196	2900	880	555	0.25	3
336-7* L	61	162.2	56	234	2900	880	555	0.25	3
414-7* L	58	45.1	19	101	1500	880	730	0.45	1
416-7* L	58	67.6	29	117	1500	880	730	0.45	1
424-7* L	61	90.1	32	164	2500	880	730	0.45	2
426-7* L	61	135.2	48	196	2500	880	730	0.45	2
434-7* L	63	135.2	45	227	3500	880	730	0.45	3
436-7* L	63	202.8	67	275	3500	880	730	0.45	3

## Technical data

n=1500 rpm

Cooler model THOR-A	Air flow (m <sup>3</sup> /h)				
	ext. press. 40 Pa	ext. press. 60 Pa	ext. press. 80 Pa	ext. press. 100 Pa	ext. press. 120 Pa
<b>Fin spacing 4 mm</b>					
116-4-* H	3280	3080	2670		
126-4-* H	6570	6160	5340		
136-4-* H	9860	9240	8010		
214-4-* H	4580	4380	3980		
216-4-* H	4540	4340	3940		
224-4-* H	9170	8770	7980		
226-4-* H	9070	8680	7890		
234-4-* H	13750	13160	11960		
236-4-* H	13610	13020	11830		
<b>Fin spacing 6 mm</b>					
314-6-* H	7510	7170	6830	6420	6010
316-6-* H	7430	7090	6750	6350	5940
324-6-* H	15040	14350	13670	12850	12030
326-6-* H	14860	14190	13510	12700	11890
334-6-* H	22550	21530	20500	19270	18040
336-6-* H	22300	21280	20270	19050	17840
414-6-* H	9400	8890	8550	8200	7950
416-6-* H	9290	8780	8450	8110	7850
424-6-* H	18800	17780	17100	16410	15900
426-6-* H	18580	17570	16900	16220	15710
434-6-* H	28200	26660	25640	24610	23840
436-6-* H	27880	26360	25350	24330	23570
<b>Fin spacing 7 mm</b>					
116-7-* H	3420	3210	2780		
126-7-* H	6850	6420	5560		
136-7-* H	10270	9630	8350		
214-7-* H	4780	4570	4150		
216-7-* H	4720	4510	4100		
224-7-* H	9560	9140	8310		
226-7-* H	9450	9040	8220		
234-7-* H	14340	13720	12470		
236-7-* H	14180	13560	12330		
314-7-* H	7620	7280	6930	6510	6100
316-7-* H	7540	7190	6850	6440	6030
324-7-* H	15250	14550	13860	13030	12200
326-7-* H	15070	14390	13700	12880	12060
334-7-* H	22870	21830	20790	19540	18300
336-7-* H	22610	21580	20550	19320	18080
414-7-* H	9530	9010	8670	8320	8060
416-7-* H	9420	8910	8570	8220	7970
424-7-* H	19060	18020	17330	16630	16110
426-7-* H	18850	17820	17140	16450	15940
434-7-* H	28580	27020	25990	24950	24170
436-7-* H	28260	26720	25700	24670	23900

## Technical data

n=1500 rpm

Cooler model THOR-A	Sound press dB(A)	Coil surface m <sup>2</sup>	Int. vol. dm <sup>3</sup>	Cooler Weight Kg	Dimensions			Fans	
					Length A mm	Height B mm	Airsock diameter mm	Capacity kW	Nr
<b>Fin spacing 4 mm</b>									
116-4-* H	57	57.5	11	74	1300	580	450	0.25	1
126-4-* H	60	114.9	21	120	2100	580	450	0.25	2
136-4-* H	62	172.4	32	165	2900	580	450	0.25	3
214-4-* H	60	46.0	12	71	1300	680	500	0.25	1
216-4-* H	60	68.9	19	81	1300	680	500	0.25	1
224-4-* H	63	91.9	20	112	2100	680	500	0.25	2
226-4-* H	63	137.9	30	133	2100	680	500	0.25	2
234-4-* H	65	137.9	28	153	2900	680	500	0.25	3
236-4-* H	65	206.8	42	185	2900	680	500	0.25	3
<b>Fin spacing 6 mm</b>									
314-6-* H	63	41.7	17	89	1300	880	555	0.55	1
316-6-* H	63	62.5	25	102	1300	880	555	0.55	1
324-6-* H	66	83.3	27	144	2100	880	555	0.55	2
326-6-* H	66	125.0	40	170	2100	880	555	0.55	2
334-6-* H	68	125.0	37	198	2900	880	555	0.55	3
336-6-* H	68	187.5	56	238	2900	880	555	0.55	3
414-6-* H	65	52.1	19	102	1500	880	730	1.20	1
416-6-* H	65	78.1	29	118	1500	880	730	1.20	1
424-6-* H	68	104.1	32	166	2500	880	730	1.20	2
426-6-* H	68	156.2	48	199	2500	880	730	1.20	2
434-6-* H	70	156.2	45	230	3500	880	730	1.20	3
436-6-* H	70	234.3	67	280	3500	880	730	1.20	3
<b>Fin spacing 7 mm</b>									
116-7-* H	57	33.8	11	72	1300	580	450	0.25	1
126-7-* H	60	67.6	21	116	2100	580	450	0.25	2
136-7-* H	62	101.4	32	159	2900	580	450	0.25	3
214-7-* H	60	27.0	12	69	1300	680	500	0.25	1
216-7-* H	60	40.6	19	78	1300	680	500	0.25	1
224-7-* H	63	54.1	20	108	2100	680	500	0.25	2
226-7-* H	63	81.1	30	127	2100	680	500	0.25	2
234-7-* H	65	81.1	28	147	2900	680	500	0.25	3
236-7-* H	65	121.7	42	176	2900	680	500	0.25	3
314-7-* H	63	36.1	17	88	1300	880	555	0.55	1
316-7-* H	63	54.1	25	101	1300	880	555	0.55	1
324-7-* H	66	72.1	27	142	2100	880	555	0.55	2
326-7-* H	66	108.2	40	168	2100	880	555	0.55	2
334-7-* H	68	108.2	37	196	2900	880	555	0.55	3
336-7-* H	68	162.2	56	234	2900	880	555	0.55	3
414-7-* H	65	45.1	19	101	1500	880	730	1.20	1
416-7-* H	65	67.6	29	117	1500	880	730	1.20	1
424-7-* H	68	90.1	32	164	2500	880	730	1.20	2
426-7-* H	68	135.2	48	196	2500	880	730	1.20	2
434-7-* H	70	135.2	45	227	3500	880	730	1.20	3
436-7-* H	70	202.8	67	275	3500	880	730	1.20	3

## Fans

For THOR-A coolers there is a choice of 8 different fan capacities and either 1000 or 1500 rpm fan speeds. Fans are suitable for external pressures ranging from 40 up to 120 Pa.

### Execution

Fans are executed with balanced aluminium or polyamide fan blades, fitted with robust electrolytically galvanized and epoxy coated fan guards according to DIN 31001. Fans are mounted in vibration dampers.

Enclosed design spray-tight motors, protection class IP55. All motors, with the exception of the 0.18 kW, 230/50/1 motor, are equipped with a thermal safety device built in the windings, connected to separate terminals in the box.

This safety device can therefore be integrated into the control circuit. The electrical control should be arranged preferably with a manual reset device in order to prevent continuous on/off switching (tripping) of the motors. Cable inlet ranges from 7 up to 12 mm.

## Sound pressure dB(A)

Sound pressure as given in the tables are sound pressure levels in dB(A) according to EN 13487 at 5 m distance in free field conditions. Values may deviate depending on situations at site. The table below gives calculated sound pressure corrections at various distances.

Distance m	Correction dB(A)
1	+14
2	+8
3	+4
4	+2
5	0
10	-6
20	-12
50	-20

## Fans 50 Hz

Fan motor W	Motor voltage* V	Electric capacity		Adj values overload relays A		Cable inlet
		nom. kW	abs. kW***	0 °C	-20 °C	
<b>Fan motors n=1000 rpm</b>						
250	230/400/3	0.25	0.33	1.2	1.3	2 x M20x1.5
180	230/1**	0.18	0.35	2.4	2.5	2 x M20x1.5
450	230/400/3	0.45	0.45	2.0	2.1	2 x M20x1.5
<b>Fan motors n=1500 rpm</b>						
250	230/400/3	0.25	0.37	1.1	1.1	2 x M20x1.5
220	230/1	0.22	0.37	2.6	2.8	2 x M20x1.5
550	230/400/3	0.55	0.70	1.7	1.8	2 x M20x1.5
550	230/1	0.55	0.70	5.5	6.0	2 x M20x1.5
1200	230/400/3	1.20	1.20	3.0	3.2	2 x M20x1.5

\* Motor windings 230 V.

\*\* These 230/50/1 motors are suitable for temperatures down to -20 °C and are not provided with a thermal safety device in the windings.

\*\*\* Absorbed fan motor energy is measured in under laboratory conditions at ambient temperature 20 °C. These values may vary depending on local conditions.



## Defrost Systems

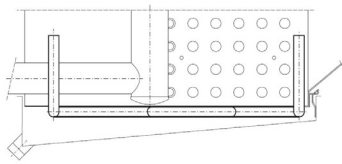
Several forced defrost systems are available. Each defrost system is optimised for specific applications and ambient conditions.

### Hot Gas Defrost (G)

The driptray can be fitted with a copper defrost coil (G) to bring it rapidly up to temperature by means of hot gas.

The following G-systems are available:

- G1 Air on temperature down to -5 °C.  
Defrost coil under the coil block.



### Water Defrost (W)

- W Water defrost system.

## Electric Defrost (E)

Stainless steel heater elements placed in additional tubes between the evaporator tubes. The elements for the driptray are fitted to the bottom of the inner tray. Both coil and driptray have the same elements.

Standard voltage per element 230 V.

Connection to 230 V/1 phase or 400 V/3 phase, connected in star with Zero-Wire. Total defrost power is given for 400 V/3 phase with Zero-Wire.

All elements can be withdrawn at the refrigerant connection side. The driptray elements can be taken out after removal of the outer tray.

The heater elements are pre-wired and are connected to one or more terminal boxes.

Depending on the ambient temperature and air humidity a number of E-executions are available.

- E1 Air on temperature down to -25 °C.  
Electric stainless steel defrost elements in the driptray. For use in combination with for example hot gas defrost in the coil block.
- E4 Air on temperature down to -5 °C.  
Electric stainless steel defrost elements in the coil block and driptray, low duty.

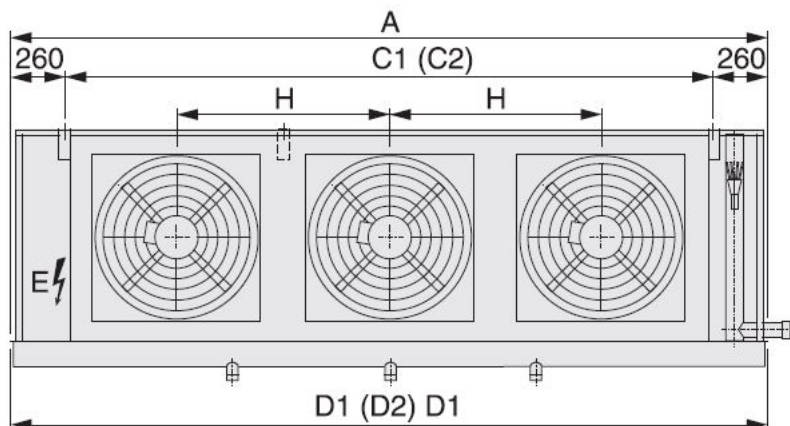
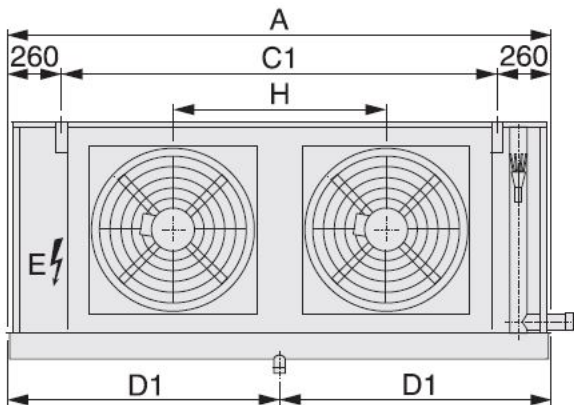
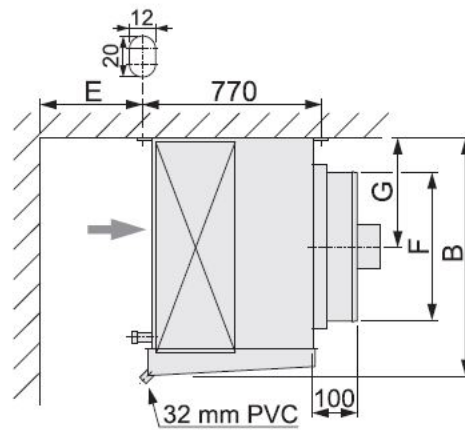
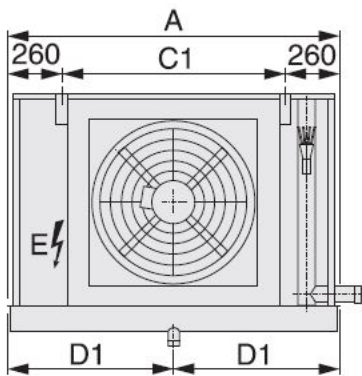
## Defrost power

Cooler model THOR-A	Element article number	E1		E4	
		number of element	cap. kW	number of element	cap. kW
116	33.03.21	2	2.1	3 + 1	4.2
126	33.03.31	2	4.0	3 + 1	8.1
136	33.03.39	2	6.0	3 + 1	11.9
214	33.03.21	2	2.1	3 + 1	4.2
216	33.03.21	2	2.1	4 + 1	5.3
224	33.03.31	2	4.0	3 + 1	8.1
226	33.03.31	2	4.0	4 + 1	10.1
234	33.03.39	2	6.0	3 + 1	11.9
236	33.03.39	2	6.0	4 + 1	14.9
314	33.03.21	2	2.1	4 + 1	5.3
316	33.03.21	2	2.1	5 + 1	6.4
324	33.03.31	2	4.0	4 + 1	10.1
326	33.03.31	2	4.0	5 + 1	12.1
334	33.03.39	2	6.0	4 + 1	14.9
336	33.03.39	2	6.0	5 + 1	17.9
414	33.03.24	2	2.4	4 + 1	6.1
416	33.03.24	2	2.4	5 + 1	7.3
424	33.03.36	2	4.9	4 + 1	12.1
426	33.03.36	2	4.9	5 + 1	14.6
434	33.03.43	2	7.4	4 + 1	18.5
436	33.03.43	2	7.4	5 + 1	22.2

# Airsock air coolers THOR-A

## Dimensions

Cooler model THOR-A	Dimensions (mm)									
	A	B	C1	C2	D1	D2	E	F	G	H
11*	1320	580	800		660		450	450	260	
12*	2120	580	1600		1060		450	450	260	800
13*	2920	580	2400		1460		450	450	260	800
21*	1320	680	800		660		450	500	310	
22*	2120	680	1600		1060		450	500	310	800
23*	2920	680	2400		1460		450	500	310	800
31*	1320	880	800		660		500	555	410	
32*	2120	880	1600		1060		500	555	410	800
33*	2920	880	2400		1460		500	555	410	800
41*	1520	880	1000		760		600	730	410	
42*	2520	880	2000		1260		600	730	410	1000
43*	3520	880	1000	2000	1010	1500	600	730	410	1000





**Alfa LU-VE in brief**

Alfa LU-VE is a leading global provider of specialized products and engineered solutions.

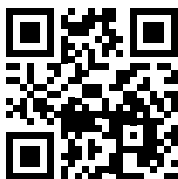
Our equipment, systems and services are dedicated to helping customers optimize the performance of their processes.

We help our customers to cool products such as oil, water, chemicals, beverages, foodstuffs and pharmaceuticals. Our worldwide organization works closely with customers to help them stay ahead.

**How to contact Alfa LU-VE**

Up-to-date contact details are always available on our website at [alfa.luvegroup.com](http://alfa.luvegroup.com).

You can also download product information and selection software.



[alfa.luvegroup.com](http://alfa.luvegroup.com)

Alfa LU-VE partner

