Mirelta®

Hűtőtechnika
Holding Kft.

TEK

EVAPORATIVE CONDENSERS

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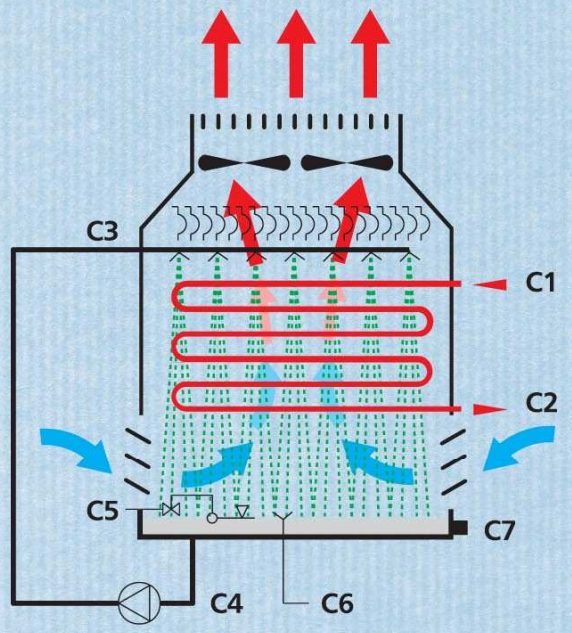


Principle of operation

The TEK type evaporative condenser is a heat exchanger unit built in cooling systems of industrial scale. The high pressure cooling medium coming from the cooling compressors is condensed in the smooth pipe ***liquefaction pipe system.*** The heat exchange taking place in the pipe system is of evaporative character, i.e. the cooling medium transmits its heat through the pipe wall to the water sprayed on the external surface of the pipe and partially being evaporated there. The heat exchange between the evaporating water and the air takes place by the evaporation itself and in a convective way. The cooled and condensated cooling medium can be drained off by the fluid studs. The water spray rising up is separated by a special plastic cartridge (drop separating unit).

Standard type

The bottom part of the condenser is a painted ***drop tray*** made of steel plate, on which the air intake grids and some elements of the water circulating system (water refilling, overflow, water suction stud) are arranged. At the bottom of the drop tray a ***steel framework*** is placed for fixing and supporting.

On the drop tray the middle part is mounted including the ***heat exchanger and the water sprayer system,*** coated with painted and zinc plate. The air is directed by the ***fans*** from the bottom to the top. The ***fan housing*** is the highest element of the TEK type condenser. The members of this type family differ only in the number of built-in cartridges and fans, when designing them the principle of box of bricks was used. The ***drop separating unit*** is a special plastic artridge, ensuring the satisfactory separation with a little air resistance.

Caution: On the TEK type and the TKA type a drop separating unit is used in the standard design instead of the former steam pre-cooler.

The water running down from the pipes is collected in the drop tray, it is to be returned from here to the spraying system by means of pumps. The replacement of the small water quantity, casued by the evaporation and removed by the air stream is carried out automatically, by means of the water replacing ***float valve.*** The possibly occuring excess water is drained off by the overflow stud of the drop tray.

The TEK type evaporative condenser is subjected to a 25 bar test pressure examination carried out by the manufacturer.

Options (with additional charge)

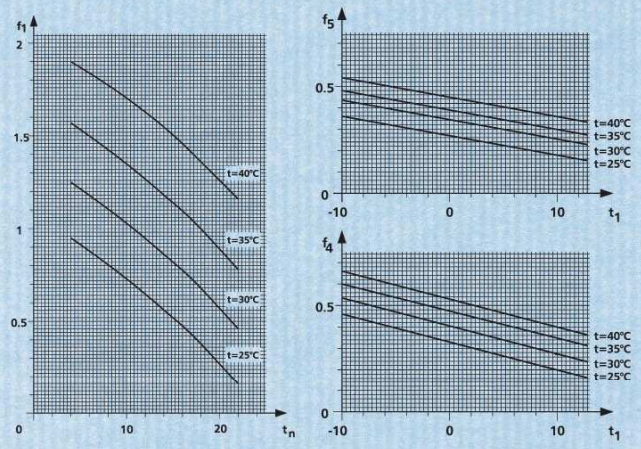
- Zinc plate pipe system
- Silent fan
- Noise insulation
- Axiliary water circuit pump
- Fan rim heating
- Drop tray heating
- Water treating equipment.
- Steam pre-cooler

Transport and installation

In transport lifting can be carried out – after removing the air box – by means of the lifting rings on the top side of the modules using a rope (the minimum rope angle is 45°). On the installation site the equipment must be lifted on the suitably prepared groundwork, or framework. During installation it must be considered, that the air supply and the access for cleaning must be ensured. When connenting of water, NH_3 and voltage supply the effective safety standards and regulations must be considered. After completing the electrical installation the proper direction of fan rotation must be checked.

The resistance on the internal side of the condensers is less than 0,35 bar, thus it is enough to use a connection of a 70 cm loop pipe on the fluid side.

Selection reference



In TABLE 1. the nominal performance (Q_n) of TEK evaporative condensers regards a cooling system operating with a screw compressor. The data apply to t_n=+18 °C environmental humid temperature (+27,3 °C dry temperature and 40% humidity) and t=+35 °C condensation temperature (in clean conditions).

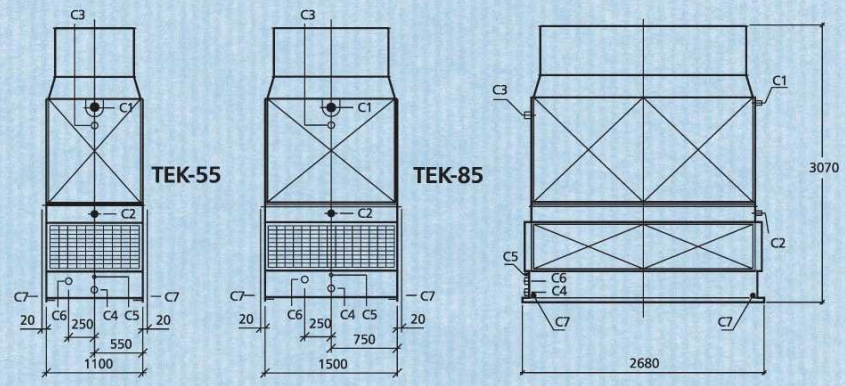
The specifications in the table are based on the data determined in measurements carried out under practical conditions. For other temperature conditions the performance can be determined by means of factors f_1 and f_2 given by the diagrams.

In evaporative operation the actual performance of the condenser is: $Q=f_1 \times f_3 \times Q_n$.

Without operating the water sprayer system: $Q=f_2 \times f_3 \times Q_n$.

When using piston compressors a performance surplus of 5 to 10% can be sonsidered compared to the catalogue specifications, i.e. f_3=1,05 to 1,1.

The TEK condensator family is of modular construction, i.e. the different types are assembled from the combination of both standard types TEK-55 and TEK-85.



C1 NH_3-steam C2 NH_3-fluid C3 Water sprayer C4 Pump C5 Auxiliary water connection C6 Overflow stud C7 Drain stud

TABLE 1.

TYPE				TEK-55	TEK-85	TEK-110	TEK-170	TEK-195	TEK-225	TEK-255	TEK-280	TEK-340
Nominal cooling performance	1440 l/min		W	223995	287067	447990	574134	735074	798129	861201	1022124	1148268
	960 l/min		W	194372	243636	388744	487272	632380	681644	730908	876016	974544
Maximum secondary water consumption			m^3/h	0,4	0,6	0,8	1,4	1,6	1,8	1,8	2	2,4
Air stream			m^3/h	26000	29000	52000	58000	81000	84000	87000	110000	116000
Fan	standard type		kW	2 x 1,5	2 x 1,5	4 x 1,5	4 x 1,5	6 x 1,5	6 x 1,5	6 x 1,5	8 x 1,5	8 x 1,5
	noise insulated		kW	2 x 1,5/1,1	2 x 1,5/1,1	4 x 1,5/1,1	4 x 1,5/1,1	6 x 1,5/1,1	6 x 1,5/1,1	6 x 1,5/1,1	8 x 1,5/1,1	8 x 1,5/1,1
Quantity of water to be circulated			m^3/h	15	20	30	40	50	55	60	70	80
Water sprayer resistance			Pa	30000	30000	30000	30000	30000	30000	30000	30000	30000
NH_3 connection	pressure pipe		mm	1 x Ø76 x 3	1 x Ø76 x 3	2 x Ø76 x 3	2 x Ø76 x 3	3 x Ø76 x 3	3 x Ø76 x 3	3 x Ø76 x 3	4 x Ø76 x 3	4 x Ø76 x 3
	fluid pipe		mm	1 x Ø44 x 2,6	1 x Ø44 x 2,6	2 x Ø44 x 2,6	2 x Ø44 x 2,6	3 x Ø44 x 2,6	3 x Ø44x 2,6	3 x Ø44 x 2,6	4 x Ø44 x 2,6	4 x Ø44 x 2,6
Pump connection			mm	1 x Ø89 x 3	1 x Ø89 x 3	2 x Ø89 x 3	2 x Ø89 x 3	3 x Ø89 x 3	3 x Ø89 x 3	3 x Ø89 x 3	4 x Ø89 x 3	4 x Ø89 x 3
Water sprayer stud			mm	1 x Ø76 x 3	1 x Ø76 x 3	2 x Ø76 x 3	2 x Ø76 x 3	3 x Ø76 x 3	3 x Ø76 x 3	3 x Ø76 x 3	4 x Ø76 x 3	4 x Ø76 x 3
Net weight			kg	1400	1800	2800	3600	4600	5000	5400	6400	7200
Noise level	standard type	1440 l/min	dB(A)	58,7	58,7	61,7	61,7	64,9	64,7	64,7	67,7	67,7
	noise insulated	1370 l/min	dB(A)	44,9	44,9	47,2	47,2	48,8	48,8	48,8	50,9	50,9
	noise insulated at night	1020 l/min	dB(A)	35,8	35,8	38,8	38,8	40,5	40,5	40,5	41,8	41,8

IN TABLE 1. the noise level of the TEK type evaporative condensers is given for outdoor installation, at a distance of 30 m and a height of 1,5 m. In case of other distances the noise level can be determined by means of the correction factors of TABLE 2.

TABLE 2.

TYPE	TEK-55 TEK-85		TEK-110 TEK-170		TEK-195 TEK-225 TEK-255		TEK-280 TEK-340	
Distance	Standard type 1440 1/min	Low noise design 960 1/min	Standard type 1440 1/min	Low noise design 960 1/min	Standard type 1440 1/min	Low noise design 960 1/min	Standard type 1440 1/min	Low noise design 960 1/min
2 m	1,40	1,51	1,38	1,47	1,36	1,45	1,35	1,42
5 m	1,27	1,33	1,25	1,31	1,24	1,30	1,23	1,28
10 m	1,16	1,21	1,16	1,19	1,15	1,18	1,14	1,17
20 m	1,06	1,08	1,06	1,07	1,06	1,07	1,05	1,06
30 m	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
40 m	0,96	0,95	0,96	0,95	0,96	0,95	0,96	0,96
50 m	0,93	0,91	0,93	0,91	0,93	0,92	0,94	0,92

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ÖSTERREICHISCHE VEREINIGUNG ZUR ZERTIFIZIERUNG
VON QUALITÄTS- UND MANAGEMENTSYSTEMEN
(Osztrák Egyesület Minőségügyi és Irányítási Rendszerek Tanúsítására)

ezennel tanúsítja, hogy a

Mirelta
H&F

A hűtőtork, evaporatív kondenzátorok, vízvisszahűtő tornyok, gyorsfagyasztó berendezések és jegyvetőhídak gyártása területén.
H-2890 Tata, Szomódi út 4

MINŐSÉGÜGYI RENDSZERT
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ÖNORM EN ISO 9002:1994

Minőségügyi rendszerek.
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Kelt: 3.12.1997 | Ikt.szám: 11685/I | Érvényes: 4.11.2000

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Ügyvezetőlégr

Ing. Viktor Seitschek — Konrad Scheiber

The ÖQS has been accredited according to the Federal Law on Accreditation, Law Gazette Nº 468/1992 and the Decree, Law Gazette Nº 488/1993 of 22.7.1993.
The ÖQS is member of IQNet. (The International Certification Network).

which ***is used*** in the field of
- ***production***
- ***installation***
- ***customers' service***

complying with the prescribed requirements.

Our specialist are available for our kind customers for further informations at any time.

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