

# TKS

SERIES

**CRANE CAB  
COOLERS**

# TMS

INDUSTRIAL REFRIGERATION







# ABOUT US

With over 10 years experience in the industrial refrigeration industry, we provide comprehensive range of competitively priced services, including refrigeration systems' design and installation, after sales services and supply of parts. We offer expert knowledge and practical solutions.

Thanks to our high quality product range with high technology, we are providing solutions for our clients from the project step until the end commissioning. We prepare technical information to clients about the project which is commissioned by our technical staff to be able to have maintenance services.

With a comprehensive range of refrigeration units and control systems, we choose high quality equipments which can easily be found in the markets all over the world with their service centers.

Including our standard refrigeration unit range, we can supply customized solutions for our clients, we record information which are to be used for maintenance services.

Yours Sincerely,

TMS Team

# S



# WE OFFER STRONG COOLING SOLUTIONS IN HEAVY INDUSTRY PROCESS CRANES

WITH VKS SERIES CRANE CAB COOLERS.



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# GENERAL INFORMATION

TMS/VKS Series crane air-conditioner units are project for cooling Crane Electric and Operator Cabins in, Iron-steel factories, coking coal, cements factories and aluminum manufacturing plants.

Air-conditioner units are specially manufactured to work in high ambient temperature, high radiation and extremely dusty air. The frequency invertors and crane operators must be protected from the hard ambient conditions.

TMS/VKS Series Crane Cabin Air-Conditioners are specially designed for under specified ambient air conditions and are manufactured using high quality equipments.

Keep in mind that if there is a problem, there is definitely a solution. We can find a solution definitely to all kind of problems you experience in crane air-conditioner systems with our VKS Series Crane Cab Coolers product range.

All technical information related to our VKS Series product group defined in the following pages.



## VKS SERIES GENERAL SPECIFICATIONS



VKS Series it has the cooling capacity range of 2.5-30 KW and produced as to be able to operate up to +90°C. VKS Series has the possibility to be produced as packaged type and split type vertical and horizontal.

VKS Series which are produced with special designs by TMS like a tailor to the projects. All components of the cooling cycle used in VKS Series are designed to operate without being affected by hard working conditions. The service and ease of maintenance are constantly kept in mind in the design of VKS Series Crane Cabin Cooling Units. VKS Series offer strong cooling system solutions in heavy industry with the chassis structure where high insulation properties and durability are kept in the foreground.

TMS applies tests to %100 of production in EN378-2 standards before the shipment.

### CYCLING TABLE

Cooling Capacity					
	KW	Btu/h	US ton	brit. ton	kcal/h
1 KW	1	3414	0,2846	0,2572	860
1 Btu/h	0,000293	1	0,000083	0,00007531	0,252
1 kcal/h	0,001163	3,968	0,000331	0,000299	1
1 US ton	3,513	12000	1	0,9037	3024
1 brit. ton	3,888	13260	1,1045	1	3340

Volume Flow Rate		
	m³/h	cfm
m³/h	1	0,588578
cfm	1,699092	1

Temperature		
	°C	°F
°C	915 °C +32	1
°F	1	915 (f-32)



# REFRIGERATION COMPRESSORS

TMS acts very sensitively in the selection of refrigeration compressors which are used in the VKS Series. Instead of scroll compressors used in residential cooling units which are manufactured for the purpose of comfort; Open-Type and Semi-Hermetic types of compressors are used. These types of compressors are designed to operate in a potentially powerful impact and vibration in high ambient temperatures. These compressors are built to be in heavy working conditions.

SEMI-HERMETIC COMPRESSOR

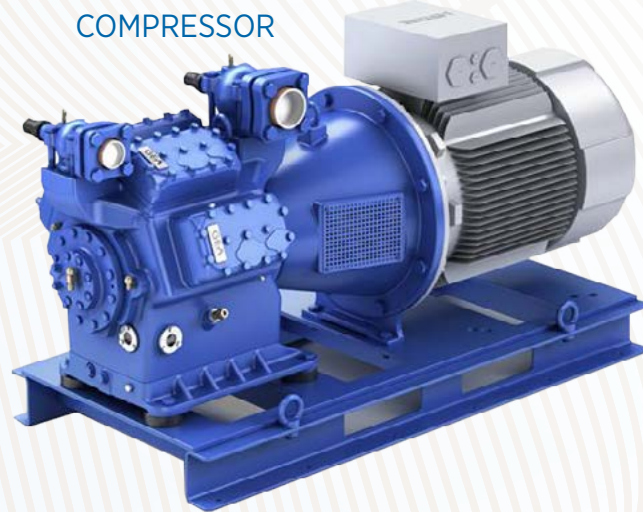


## IN TMS / VKS SERIES;

As an alternative to the Semi-Hermetic compressors, the Open-Type compressors are used. The working principle of Open-Type and Semi-Hermetic compressors are exactly the same.

The only difference between them is the independent application of the motor from the compressors driving the compressor.

OPEN TYPE COMPRESSOR



The use of this type of compressors was a long time ago; but today it is still known in the wide industrial areas.

Since the compressor and the drive motor are independent from each other this type of compressor is preferred and used in many heavy industry and process applications.

# COMPONENTS IN COOLING CYCLE / CONDENSER UNIT

TMS specially selects all components providing the cooling cycle in VKS Series. These components will compensate high temperature differences from one side and on the other hand they consist of special equipments that can protect against any disruption in the cooling cycle.

## HEAT EXCHANGER CONDENSER UNITS

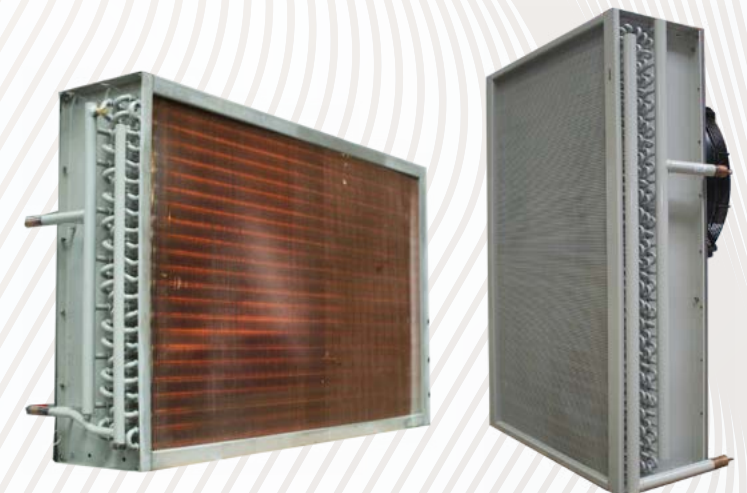
Since the efficiency is kept in the foreground in cooling units produced in standard for comfort, condenser lamellar spaces are composed of 1.2 mm pitch and aluminum fins. High durability need to be kept in the foreground instead of high efficiency in cooling units of crane cabinets.

Crane cabin cooling purposes to the cooling unit, condenser unit is a structural component which is significant and should be paid attention in cooling units that will be used for the purpose of crane cabinet cooling.

### COPPER PIPE COPPER FIN CONDENSER, COPPER PIPE COPPER FIN EPOXY COATED CONDENSER

Condenser units are formed of copper pipes and copper fins to show resistance to high temperature. Condenser unit is designed as completely epoxy painted against high corrosive ambient and chlorine containing gases.

TMS acts very sensitive in selecting VKS Series condenser units. Different applications can be carried out in these units by taking the working conditions in to consideration. Against excessive dust and dirt, fin spacing is designed in the range of 3.2mm to 6.2mm pitch.





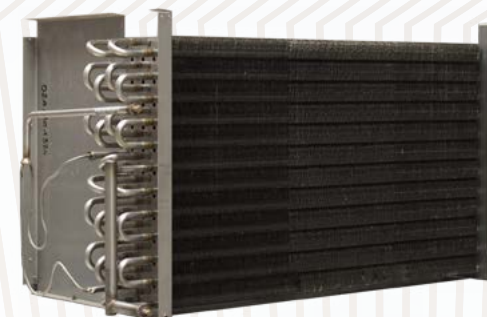
### STAINLESS CONDENSER

Including the corrosive gases, condenser units can be designed as stainless fins against gases with acid functionality  $H_2SO_4$ ,  $HNO_3$ ,  $NH_3$ ,  $S_2$ .



### STAINLESS PIPE STAINLESS FINS EVAPORATOR

As well as the condenser units, the evaporator units are also can be manufactured in stainless pipe and stainless fins. However, since the heat transfer coefficient of these materials are lower compared to copper, the sizes of the cooling units enlarge.

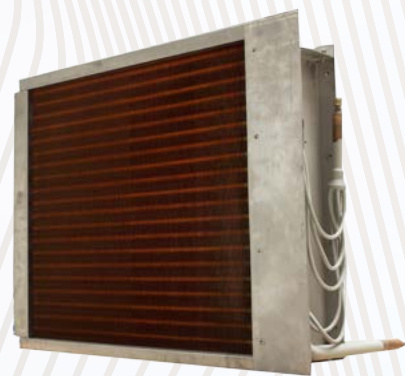


## HEAT EXCHANGER EVAPORATORS

In VKS Series, it is a structural component that is important and should be paid attention in the design of evaporator units as well as the condenser units.

Since the evaporator units are directly in contact with moist air, durability is again kept in the foreground.

Evaporator units are manufactured as copper pipe, copper fins with spaces 3.2mm pitch, the mirror plates and plates are covered with hood. Coated completely with epoxy against corrosive gases.



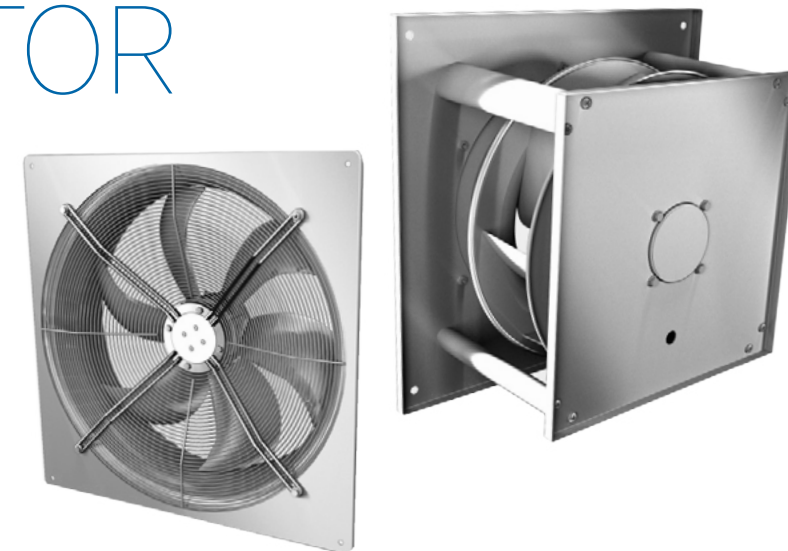
COPPER PIPE AND COPPER FINS  
EVAPORATOR



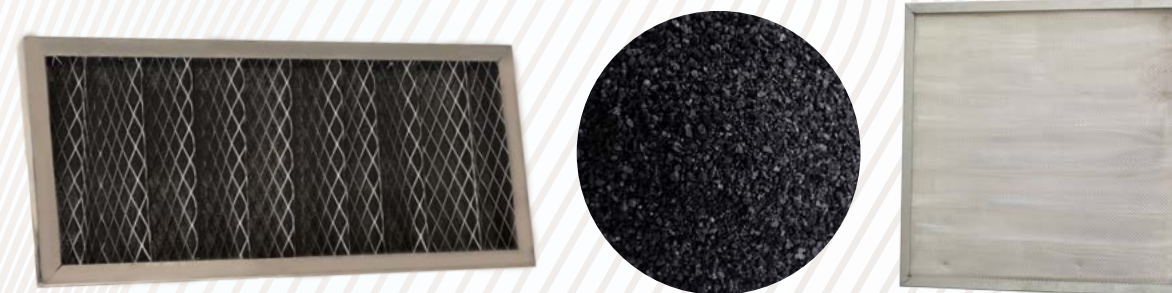
COPPER PIPE COPPER FINS EPOXY  
COATED EVAPORATOR

## CONDENSER AND EVAPORATOR FANS

In the selection of the condenser and evaporator fans in VKS Series high operating temperatures and high protection classes are kept in the foreground.



## FILTER SYSTEMS



High quality alternative filter systems are used in VKS Series in order to retain the dust and bad smell. Filters used consist of easily accessible and washable filters.



# ELECTRIC AND CONTROL EQUIPMENTS

In the electric panel of VKS Series, there is a motor protection switch in each motor used in the cooling cycle. Electronic control processors are not used in control system against the potential power supply fault in VKS Series Crane Cabin Cooling Units. In order to determine the possible failures in a rapid way, the control panel is completely mechanical. Technical staff who is not well experienced on electricity will easily detect possible electrical failures and correction of the failure is quickly provided. In VKS Series, in equal aging system applications, automation system added also which controls this system.



# REFRIGERANTS

## R134A

A refrigerant that can be used in VKS Series of up to 60°C ambient temperature. It is CFC and HCFC free and has low greenhouse gas potential. It is more advantageous than the below recommended refrigerants in terms of energy and cost.

## R227EA

A refrigerant that can be used in VKS Series up to 80°C ambient temperature. It is CFC and HCFC free and has low greenhouse gas potential. Considering the thermo dynamical properties of R227ea refrigerant is, it allows to operate at high condensing temperatures. It should be acted very sensitive in the selection of the applications to be carried out with this refrigerant. It is most costly than the above mentioned application as the cost of investment.

## R236FA

A refrigerant that can be used in VKS Series up to 90°C ambient temperature. It is CFC and HCFC free and has low greenhouse gas potential. Considering the thermo dynamical properties of R236fa refrigerant, it allows to operate at high condensing temperatures. In applications to be carried out with this refrigerant, it should be acted very sensitive in the selection of equipments providing the refrigerant cycle as mentioned above. It is more costly than the above mentioned application as a cost of investment.

The refrigerants are indicated above can be used in the long-term and are not subject to any legal prohibitions so far. They are non-flammable and those meet the high safety requirements in the field of crane cab coolers.

IN VKS SERIES  
ACCORDING OF THE  
PROCESS CONDITIONS  
THE BELOW MENTIONED  
ALTERNATIVE  
REFRIGERANTS ARE  
USED. ALL EQUIPMENTS  
USED IN COOLING CYCLE  
ARE SELECTED AND USED  
ACCORDING TO THIS  
REFRIGERANTS.





# SERIES OVERVIEW

## VKS COMPACT SERIES APPLICATION SAMPLES



## VKS COMPACT SERIES

TMS/VKS Series Compact Type Units are manufactured as 6 different models in range of 2.5 KW and 8KW cooling capacity. VKS Compact Series can be manufactured as vertical or horizontal. Used in areas where reduced cooling is required and where air duct application is not possible to apply. Compact Series custom cabinet design, without any demand for long air ducts, it can easily be adapted to the cabinets to be cooled directly.

Other than VKS Compact Series, also the panel cooling system is used in industrial panel cooling applications. All test procedures of VKS Series Compact Units are carried out in TMS factories. In this way, the units are delivered to the customer on site of the end user being commissioned in a short time.



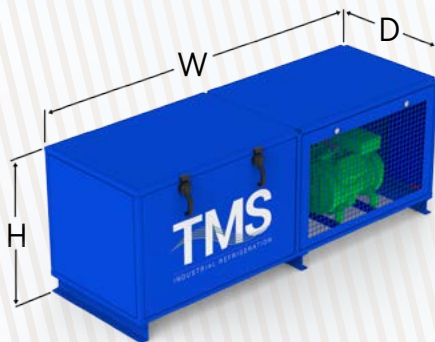


VKS COMPACT SERIES  
DIMENSION TABLES



Standard Compact Series Vertical Modeling Table

Model No	VKS 250 D	VKS 350 D	VKS 420 D	VKS 550 D	VKS 720 D	VKS 850 D
H / Height	1480	1480	1750	1750	1930	1930
W / Witdh	650	650	850	850	1050	1050
D / Depth	650	650	750	750	850	850
Weight kg	200	285	324	370	483	535



Standard Compact Series Horizontal Modeling Table

Model No	VKS 250 Y	VKS 350 Y	VKS 420 Y	VKS 550 Y	VKS 720 Y	VKS 850 Y
H / Height	730	730	990	990	1025	1025
W / Witdh	1400	1400	1700	1700	2000	2000
D / Depth	650	650	750	750	850	850
Weight kg	200	285	324	370	483	535

VKS COMPACT SERIES  
SELECTION TABLE



VKS Compact Series 2,5-8,5 KW Range Selection Table

Model No	VKS 250/YD	VKS 350/YD	VKS 420/YD	VKS 550/YD	VKS 720/YD	VKS 850/YD
Cooling capacity Ambient Temperature: 60°C Refrigerant: R134a	2,5 KW	3,5 KW	4,2 KW	5,5 KW	7 KW	8 KW
Cooling capacity Ambient Temperature: 80°C Refrigerant: R227Ea	2,4 KW	3,4 KW	3,9 KW	5,8 KW	7,2 KW	8,5 KW
Cooling capacity Ambient Temperature: 90°C Refrigerant:e R236Fa	2,3 KW	3,4 KW	4 KW	6 KW	7 KW	9 KW
Heating Capacity	3 KW	3 KW	3 KW	3 KW	4 KW	6 KW
Nominal Air Flow	800 m3/h	800 m3/h	1250 m3/h	1800 m3/h	2200 m3/h	2200 m3/h
External Static Pressure	40 Pa	40 Pa	40 Pa	40 Pa	60 Pa	60 Pa
Power Consumption min.max. 60°C Refrigerant R134a	2,3 / 3,1 KW	2,7 / 3,7 KW	3,3 / 3,8 KW	3,6 / 4,5 KW	4,4 / 5,7 KW	5,4 / 6,9 KW
Power Consumption min/max. 80°C Refrigeran R227Ea	2,8 / 4,4 KW	3,5 / 5,5 KW	4,1 / 6,8 KW	5,7 / 10,1 KW	6,9 / 12,7 KW	8,1 / 15,2 KW
Power Consumption min/max. 90°C Refrigerant: R236Fa	2,9 / 5,5 KW	3,8 / 8,1 KW	4,6 / 10,1 KW	6,3 / 14,9 KW	7,3 / 17,7 KW	9,6 / 21,2 KW
Area of Usage	Electric Panels / Operator Cabinets / Small Electric Rooms					
Power Supply Options	400V50Hz3Ph / 500V50Hz3Ph / 690V50Hz3Ph / 220V50Hz1Ph 380V60Hz3Ph / 460V60Hz3Ph					

Evaporator inlet temperature to be used for the operator cabinets are designed according to 22-24 ° C %50 RH.  
Evaporator inlet temperature to be used for electrical rooms is designed according to 26-28 ° C, %50 RH conditions.  
Standard power input 400V / 50Hz / 3 Ph. Please specify the other alternative power options when ordering.



# VKS MONOBLOCK SERIES APPLICATION SAMPLES



## VKS SERIES STANDARD MONOBLOCK TYPE

TMS/VKS Series Standard Monoblock Type Crane Cabin Cooling Units are manufactured as standard between 4KW and 30KW cooling capacities.

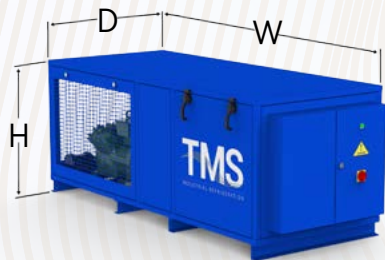
Standard monoblock type units are recommended for crane cabinets and electric rooms where high cooling capacity is required.

They are manufactured as vertical or horizontal depending on the area of usage. Optionally, solutions specific to projects can be produced by making 40 different changes over the monoblock type VKS Series. High quality alternative filter systems are used for the purpose of keeping the dust and bad smell in the units. All test procedures of VKS Series Monoblock Type Units are carried in TMS factories, so the units are delivered to the customer on site of the end user being commissioned in a short time.



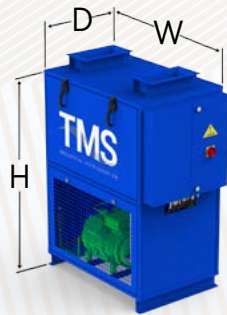


VKS STANDARD MONOBLOCK  
SERIES DIMENSION TABLES



VKS Standard Monoblock Series Horizontal Dimension Table

Model No	VKS 420 Y	VKS 550 Y	VKS 720 Y	VKS 850 Y	VKS 1050 Y	VKS 1200 Y	VKS 1450 Y	VKS 1650 Y	VKS 1850 Y	VKS 2050 Y	VKS 2500 Y	VKS 3200 Y
H / Height	780	780	880	880	930	1030	1030	1030	1030	1030	Please contact us	
W / Width	2050	2050	2150	2150	2500	2600	2600	2600	2600	2600		
D / Depth	650	650	780	780	1080	1150	1150	1150	1150	1150		
Weight kg	325	395	485	550	680	730	730	780	860	895		



VKS Standard Monoblock Series Vertical Dimension Table

Model No	VKS 420 D	VKS 550 D	VKS 720 D	VKS 850 D	VKS 1050 D	VKS 1200 D	VKS 1450 D	VKS 1650 D	VKS 1850 D	VKS 2050 D	VKS 2500 D	VKS 3200 D
H / Height	1430	1430	1580	1580	1730	1730	1880	1880	1880	1880	Please contact us	
W / Width	1050	1050	1200	1200	1300	1350	1350	1350	1350	1350		
D / Depth	650	650	780	780	1080	1080	1150	1150	1150	1150		
Weight kg	325	395	550	550	600	680	730	780	860	895		

VKS STANDARD MONOBLOCK  
SERIES DIMENSION TABLES



VKS Monoblock Series 4-12 KW Capacity Range Selection Table

Model No	VKS 420/YD	VKS 550/YD	VKS 720/YD	VKS 850/YD	VKS 1050/YD	VKS 1200/YD
Cooling capacity Ambient Temperature: 60°C Refrigerant: R134a	4,2 KW	5,5 KW	7 KW	8,2 KW	10,2 KW	12,5 KW
Cooling capacity Ambient Temperature: 80°C Refrigerant: R227Ea	4 KW	5,5 KW	7,2 KW	8,5 KW	11 KW	12,5 KW
Cooling capacity Ambient Temperature: 90°C Refrigerant: R236Fa	4,1 KW	6 KW	7 KW	8,5 KW	10,2 KW	11,5 KW
Heating Capacity	3 KW	4 KW	5 KW	6 KW	6 KW	6 KW
Nominal Air Flow	1250 m3/h	1800 m3/h	2200 m3/h	2200 m3/h	2500 m3/h	3000 m3/h
External Static Pressure	40 Pa	40 Pa	60 Pa	60 Pa	80 Pa	120 pa
Power Consumption min/max. 60°C Refrigerant R134a	3,3 / 3,8 KW	3,6 / 4,5 KW	4,5 / 5,7 KW	5,4 / 6,9 KW	7,6 / 9,4 KW	9,1 / 11,5 KW
Power Consumption min/max. 80°C Refrigerant R227Ea	4,1 / 6,8 KW	5,7 / 10,1 KW	6,9 / 12,7 KW	8,1 / 15,1 KW	11,3 / 19,3 KW	12,8 / 22,5 KW
Power Consumption min/max. 90°C Refrigerant R236Fa	4,6 / 10,1 KW	6,4 / 14,9 KW	7,4 / 17,7 KW	9,1 / 21,1 KW	11,5 / 25,9 KW	12,8 / 29,4 KW
Area of usage	Operator Cabinets / Small Electric Rooms				Electric Rooms	
Power Supply Options	400V50Hz3Ph / 500V50Hz3Ph / 690V50Hz3Ph					

VKS Monoblock Series 14-30 KW Capacity Range Selection Table

Model No	VKS 1450/YD	VKS 1650/YD	VKS 1850/YD	VKS 2050/YD	VKS 2500/YD	VKS 3200/YD
Cooling capacity Ambient Temperature: 60°C Refrigerant: R134a	14 KW	16,5 KW	19,2 KW	21,5 KW	24,5 KW	31,5 KW
Cooling capacity Ambient Temperature: 80°C Refrigerant: R227Ea	14,5 KW	16,5 KW	19 KW	21,5 KW	24,5 KW	31,5 KW
Cooling capacity Ambient Temperature: 90°C Refrigerant: R236Fa	13,5 KW	15,2 KW	17,5 KW	20,2 KW	26,5 KW	30,5 KW
Heating Capacity	6 KW	6 KW	9 KW	9 KW	12 KW	12 KW
Nominal Air Flow	3500 m3/h	4000 m3/h	6500 m3/h	7000 m3/h	7400 m3/h	8200 m3/h
External Static Pressure	100 Pa	120 Pa	120 Pa	120 Pa	120 Pa	120 Pa
Power Consumption min/max. 60°C Refrigerant R134a	10,9 / 13,9 KW	12,7 / 16,4 KW	17,3 / 21,6 KW	18,4 / 22,3 KW	21,4 / 26,1 KW	27,8 / 34,6 KW
Power Consumption min/max. 80°C Refrigerant R227Ea	14,4 / 26,1 KW	16,3 / 29,5 KW	20,7 / 37,3 KW	22,9 / 43,1 KW	26,5 / 45,2 KW	34,7 / 60,6 KW
Power Consumption min/max. 90°C Refrigerant R236Fa	14,4 / 34,62 KW	16,3 / 40,5 KW	20,7 / 44,3 KW	23,2 / 50,6 KW	30,2 / 65,7 KW	35,5 / 71,2 KW
Area of usage	Electric Rooms					
Power Supply Options	400V50Hz3Ph / 500V50Hz3Ph / 690V50Hz3Ph / 220V50Hz1Ph / 380V60Hz3Ph / 460V60Hz3Ph					

Evaporator inlet temperature to be used for the operator cabinets are designed according to 22-24 ° C %50 RH.  
Evaporator inlet temperature to be used for electrical rooms is designed according to 26-28 ° C, %50 RH conditions.  
Standard power input 400V / 50Hz / 3 Ph. Please specify the other alternative power options when ordering.



# VKS

## SPLIT SERIES

## APPLICATION

## SAMPLES



# VKS SERIES

## SPLIT TYPE

## UNITS

Recommended in cases where TMS /VKS Split Series application areas are limited and/or high cooling capacity is required.

Split type VKS Series are formed of outdoor unit and indoor unit as compressor/condenser and evaporator unit. For units with high cooling capacity, multiple indoor units and single outdoor unit application is carried out. VKS Split Type Crane Cabin cooling Units are manufactured as standard with 4KW and 30KW cooling capacity.

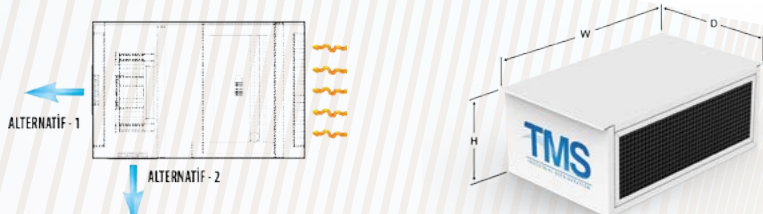
TMS offers customized solutions to projects by carrying out alternative industrial type designs and keeping the engineering in the foreground with Split type VKS Series.

Commissioning processes are carried out after completing the necessary test procedures by carrying out the copper piping between the outdoor and indoor units on site of the end user in order to provide cooling cycle in split type applications.



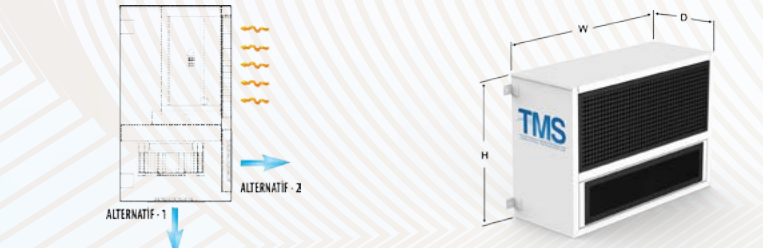


VKS SPLIT SERIES ALTERNATIVE INTERNAL UNIT TECHNICAL SPECIFICATIONS



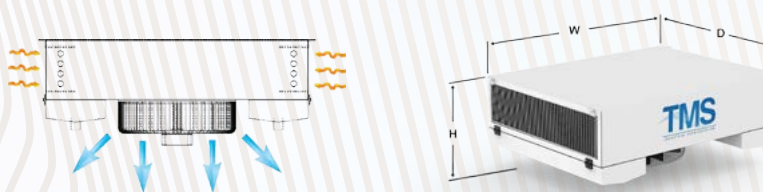
VKS/TE Single Suction Ceiling Type Internal Unit Selection Table

Ceiling Type Internal Unit	Cooling Capacity (kW)	Air Flow (m3/h)	Fan Power Input (kW)	Dimensions			Weight kg
				W/Width	D/Depth	H/Height	
TE 420	4.2	1000	0.185	750	640	370	65
TE 600	6	1750	0.26	1000	640	420	95
TE 720	7.2	1900	0.37	1000	640	420	100
TE 850	8.5	2300	0.37	1000	640	420	100
TE 1050	10.5	3300	0.55	1600	640	490	145
TE 1250	12.5	3300	0.55	1600	640	490	155
TE 1600	16	4400	0.55	1675	640	490	165



VKS/DE Single Suction Wall Type Internal Unit Selection Table

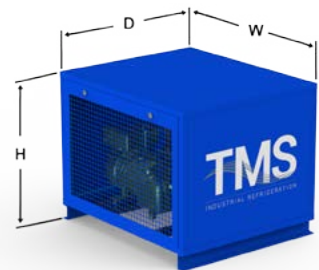
Wall Type Internal Unit	Cooling Capacity (kW)	Air Flow (m3/h)	Fan Power Input (kW)	Dimensions			Weight kg
				W/Width	D/Depth	H/Height	
DE 420	4.2	1000	0.185	750	400	600	65
DE 600	6	1750	0.26	1000	400	700	95
DE 720	7.2	1900	0.37	1000	400	700	100
DE 850	8.5	2300	0.37	1000	400	700	100
DE 1050	10.5	3300	0.55	1600	400	750	145
DE 1250	12.5	3300	0.55	1600	400	750	155
DE 1600	16	4400	0.55	1675	400	750	165



VKS/TTE Double Suction Ceiling Type Internal Unit Selection Table

Ceiling Type Internal Unit	Cooling Capacity (kW)	Air Flow (m3/h)	Fan Power Input (kW)	Dimensions			Weight kg
				W/Width	D/Depth	H/Height	
TTE 420	4.2	1350	0.062	700	890	350	22
TTE 600	6	2600	0.135	860	890	400	32
TTE 720	7.2	2600	0.135	860	890	400	32
TTE 850	8.5	2600	0.135	1160	890	400	47
TTE 1050	10.5	4800	0.27	1320	890	400	62
TTE 1250	12.5	4800	0.27	1320	890	400	62

VKS SPLIT SERIES SELECTION TABLE AND DIMENSION



VKS Split Series 4-12 KW Capacity Range Selection Table

Model No	VKS 420/S	VKS 550/S	VKS 720/S	VKS 850/S	VKS 1050/S	VKS 1200/S
Cooling capacity Ambient Temperature: 60°C Refrigerant: R134a	4,2 KW	5,5 KW	7 KW	8,2 KW	10,2 KW	12,5 KW
Cooling capacity Ambient Temperature: 80°C Refrigerant: R227Ea	4 KW	5,5 KW	7,2 KW	8,5 KW	11 KW	12,5 KW
Cooling capacity Ambient Temperature: 90°C Refrigerant: R236Fa	4,1 KW	6 KW	7 KW	8,5 KW	10,2 KW	11,5 KW
Heating Capacity	3 KW	4 kw	5 KW	6 KW	6 KW	6 KW
Power consumption min/max. 60°C Refrigerant R134a	3,3 / 3,8 KW	3,6 / 4,5 KW	4,5 / 5,7 KW	5,4 / 6,9 KW	7,6 / 9,4 KW	9,1 / 11,5 KW
Power consumption min/max. 80°C Refrigerant R227Ea	4,1 / 6,8 KW	5,7 / 10,1 KW	6,9 / 12,7 KW	8,1 / 15,1 KW	11,3 / 19,3 KW	12,8 / 22,5 KW
Power consumption min/max. 90°C Refrigerant R236Fa	4,6 / 10,1 KW	6,4 / 14,9 KW	7,4 / 17,7 KW	9,1 / 21,1 KW	11,5 / 25,9 KW	12,8 / 29,4 KW
External Unit Dimensions WxDxH mm	1050x700x780	1050x700x780	1150x750x880	1150x750x880	1300x1100x1030	1300x1100x1030
External Unit Weight kg	220	240	260	290	310	340
Area of usage	Operator Cabinets / Small Electric Rooms				Electric Rooms	
Power Supply Options	400V50Hz3Ph / 500V50Hz3Ph / 690V50Hz3Ph / 220V50Hz1Ph / 380V60Hz3Ph / 460V60Hz3Ph					

VKS Split Series 14-30 KW Capacity Range Selection Table

Model No	VKS 1450/S	VKS 1650/S	VKS 1850/S	VKS 2050/S	VKS 2500/S	VKS 3200/S
Cooling capacity Ambient Temperature: 60°C Refrigerant: R134a	14 KW	16,5 KW	19,2 KW	21,5 KW	24,5 KW	31,5 KW
Cooling capacity Ambient Temperature: 80°C Refrigerant: R227Ea	14,5 KW	16,5 KW	19 KW	21,5 KW	24,5 KW	30,5 KW
Cooling capacity Ambient Temperature: 90°C Refrigerant: R236Fa	13,5 KW	15,2 KW	17,5 KW	20,2 KW	26,5 KW	30,5 KW
Heating Capacity	6 KW	6 KW	9 KW	9 KW	12 KW	12 KW
Power consumption min/max. 60°C Refrigerant R134a	10,9 / 13,9 KW	12,7 / 16,4 KW	17,3 / 21,6 KW	18,4 / 22,3 KW	21,4 / 26,1 KW	27,8 / 34,6 KW
Power consumption min/max. 80°C Refrigerant R227Ea	14,4 / 26,1 KW	16,3 / 29,5 KW	20,7 / 37,3 KW	22,9 / 43,1 KW	26,5 / 45,2 KW	34,7 / 60,6 KW
Power consumption min/max. 90°C Refrigerant R236Fa	14,4 / 34,62 KW	16,3 / 40,5 KW	20,7 / 44,3 KW	23,2 / 50,6 KW	30,2 / 65,7 KW	35,5 / 71,2 KW
External Unit Dimensions WxDxH mm	1300x1100x1030	1300x1100x1030	1700x750x2050	1700x750x2050	Please contact us	
External Unit Weight kg	370	400	450	485	Please contact us	
Area of usage	Electric Rooms					
Power Supply Options	400V50Hz3Ph / 500V50Hz3Ph / 690V50Hz3Ph / 220V50Hz1Ph / 380V60Hz3Ph / 460V60Hz3Ph					

Evaporator inlet temperature to be used for the operator cabinets are designed according to 22-24 ° C %50 RH. Evaporator inlet temperature to be used for electrical rooms is designed according to 26-28 ° C, %50 RH conditions. Standard power input 400V / 50Hz / 3 Ph. Please specify the other alternative power options when ordering.



# INTRODUCTION OF BACK-UP PRINCIPLES

## GENERAL EXPLANATION OF AIR-CONDITIONER BACK-UP SYSTEMS: IDENTICAL AGING SYSTEM:

In process cranes used in heavy industry plants; backup of the air-conditioning systems is a significant matter either in crane electric rooms or crane operator rooms. In particular, air conditioning backup principle is an important element in the Casting and Charging cranes. The failure of the electric drives of this type of process cranes depending on the air-conditioners when the plant is enabled causes very serious loss of time and money to the establishments. As TMS, based on our experience and knowledge we acquired for long years, in order to prevent the establishments from losing money and time for the said situations, we recommend alternative backup systems in air conditioning used in crane electric and operator cabinets.

An air-conditioner unit and a backup air-conditioner unit with the same capacity required in low cooling capacities are recommended. Backup air conditioning unit is enabled automatically in cases of failure.

As for the electric rooms where high cooling capacities are required, two air-conditioner units and one additional air-conditioner unit with the same capacity are recommended to meet the required cooling capacity. Two air-conditioner units meet the required cooling by being constantly enabled. In case either of these two air-conditioner units fails, the necessary cooling capacity is continued to be met by enabling the other backup air-conditioner units. Thus, the air-conditioner units failures and the other failures resulting from air-conditioner units will be prevented and thereby the establishment will not suffer from money and time loss caused by the cranes.

## TURN OF WORK SYSTEM:

In addition to the above mentioned backup systems, Identical Aging System is integrated. The basic logic of Identical Aging System is to provide the operation of the air-conditioner unit which is reserved as backup to be enabled occasionally. Thus, the air-conditioner units continuously are enabled and disabled among themselves. Briefly, we can call this system turn of work operating system. The air-conditioners can work in turn of work without the need for manual control due to this automation system applied.

The layout and the general definitions about this backup system are given at the side.

## Backup systems in electric rooms pack type air-conditioner applications. (Sample application 1 and 2)

Air-conditioner units can be installed vertical or horizontal to either the walking platforms or the electric rooms according to the changes experienced in projects of VKS Series pack type back air-conditioner applications. In these applications healthy cooling is provided by the supply of a homogenous air flow into the electric room with the help of air ducts. Motor volumetric air adjustment dampers are used for the control of the air flow in the outlet of the device for the backup systems in both applications.



Sample application 1



Sample application 2

## Backup systems in electric rooms split type air-conditioner applications. (Sample application 3 and 4)

Air-conditioner units can be installed vertical or horizontal to either the walking platforms or the electric rooms according to the changes experienced in projects of VKS Series pack type back air-conditioner applications. In these applications healthy cooling is provided by the supply of a homogenous air flow into the electric room with the help of air ducts.



Sample application 3



Sample application 4

## Air-conditioner backup principle can be applied to the process cranes operator cabinets. (Sample application 5,6 and 7)

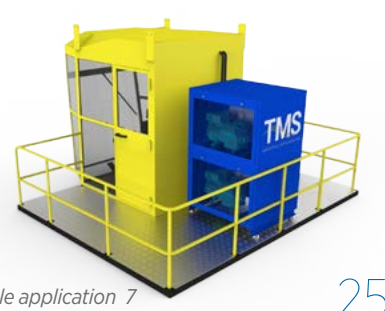
As seen in the pictures, compact type backup in low cooling capacities; backup systems in pack and split air-conditioner systems can be applied in cases where high cooling capacity is required. Identical Aging System can separately be integrated into the air-conditioner backup systems carried out in operator cabinets.



Sample application 5



Sample application 6



Sample application 7



REQUEST FORM

PLANNING DATA

Region / Customer \_\_\_\_\_

Application Sector ☐ Aluminum Plants ☐ Iron-Steel Plants ☐ Coke Manufacturing Plants  
☐ Electrolysis ☐ \_\_\_\_\_

Crane Type ☐ Bulk Cranes ☐ Slab Cranes ☐ \_\_\_\_\_

Sizes of Electric Rooms (mm) \_\_\_\_\_ length \_\_\_\_\_ width \_\_\_\_\_ height

Isolation / Wall Composition \_\_\_\_\_

Radiation Heat ☐ Low ☐ Normal ☐ High especially in the most intense times

Operator Cabinet Glass Surface Area (m²) \_\_\_\_\_

Maximum Outdoor Temperature (°C) \_\_\_\_\_

Minimum Ambient Temperature the Unit Will Operate (°C) \_\_\_\_\_

Requested Internal Ambient Temperature (°C) \_\_\_\_\_

Positive pressure supply needed? ☐ Yes ☐ No

Requested Filter Type \_\_\_\_\_

Backup needed? ☐ Yes ☐ No

Internal heat loads formed due to effects like driver / converter / braking resistance / controller etc:

Heat Load	Hourly Use (%)	Lost Heat (kW)	Total waste heat capacity (kW)

Voltage (V) \_\_\_\_\_

Frequency (Hz) \_\_\_\_\_

Control Voltage (V) \_\_\_\_\_

Special working standards needed? \_\_\_\_\_

Special working standards requested? \_\_\_\_\_

Special local conditions \_\_\_\_\_

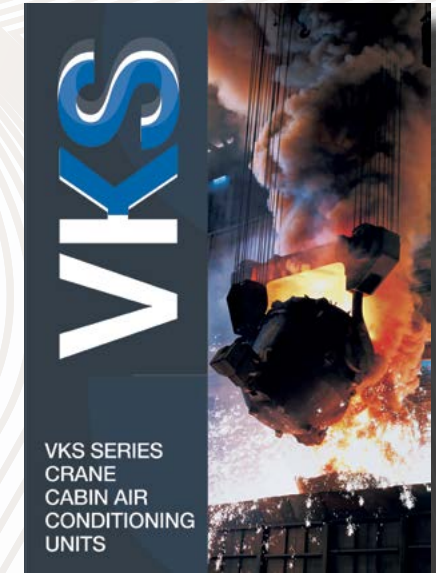
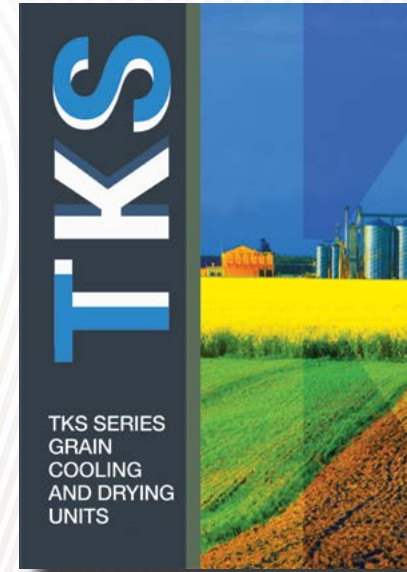
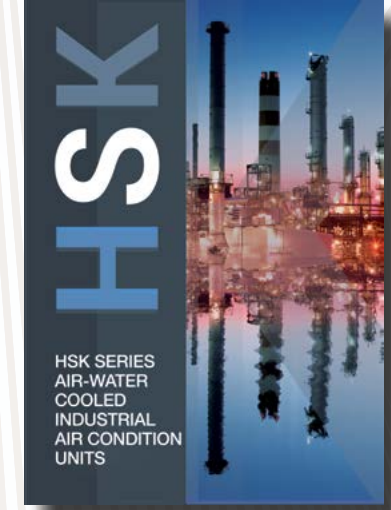
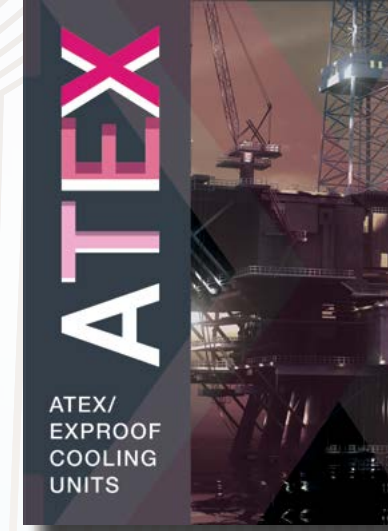


Strong Cooling Solutions  
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VKS

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