Cooling Synergies

KIRLOSKAR CHILLERS PRIVATE LIMITED

Enriching Lives

Leadership, Innovation, Advanced Technology Synergise Here!

KIRLOSKAR CHILLERS PRIVATE LIMITED

Enriching Lives

125 years of Engineering Innovation

Kirloskar Chillers is proud to be a part of 125 years old Kirloskar Group.

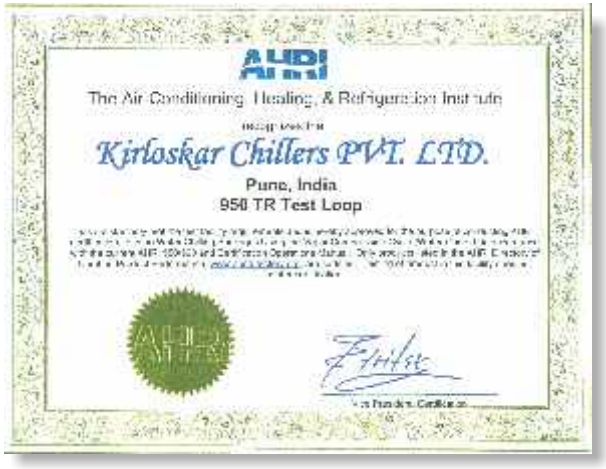
The diversified engineering conglomerate gave India its first iron plough, water pump, electric motor, compressor & engine; inventions that were born from the need of the hour & went on to become signs of the times. In today's era, we spearhead the effort to introduce energy efficient & eco-friendly 'GREEN' products to the Indian market. Today, the Group not only has a strong presence in India, but also in more than 70 countries across the globe.

KIRLOSKAR CHILLERS PRIVATE LIMITED

Kirloskar Chillers, a future-focused organisation, is committed to introducing innovative products for comfort cooling, process cooling & heating applications. The company commenced its operations in 1996 & since then has been demonstrating its commitment to achieving customer delight in every aspect of its business.

We are the only chillers manufacturer in India to offer both Centrifugal & Screw chillers, produced under one roof. Our chillers are designed for a wide range of operating conditions for both comfort air-conditioning & process cooling applications. Our chillers lead the industry in energy efficiency & comply with or exceed prevailing environment norms. We take pride in the fact that we were the first chiller company in India to establish an AHRI-certified test bed at our manufacturing facility at Pune, India.

Our ability to offering customers superlative product quality, flexibility in meeting their needs, prompt & competent services are our USP's, keeping us ahead in the HVAC industry & enabling us to achieve the status of 'preferred chiller supplier' for our customers.



AHRI CERTIFIED
www.ahridirectory.org
Ask About Our Certified Products

ISO 9001 REGISTERED
DNV
MGMT. SYS.
RvA C 024
DNV Certification B.V., The Netherlands

Indian Green Building Council
FOUNDING MEMBER

Comprehensive solutions for comfort cooling & process cooling needs

Kirloskar Chillers is known for offering Centrifugal & Screw chillers which are not only highly energy efficient & reliable but also use environment friendly technologies. Our chillers serve applications which include both comfort cooling & process cooling. Apart from catering to cooling applications, we also offer various heat recovery options like chillers with Partial Heat Recovery, Total Heat Recovery & Reverse Cycle Heat Pumps. Generating hot water using heat recovery chillers is the most economical & hence preferred alternative to generation of hot water by burning fossil fuels.

Kirloskar Chillers' product portfolio covers a wide range of capacities & options from 50 TR to 2,400 TR. The AHRI certification evidences our commitment to offer products meeting global standards.

Equipment totaling more than 400,000 TR capacity, with over 2500 chillers are successfully operating in the field over the years. Responsive after-sales support ensures reliable operation through the life of the equipment.

TURBOTEK™

- KSC Series - Single Compressor Centrifugal Chillers
- KDC Series - Dual Compressor Centrifugal Chillers

PRODIGY™ SERIES

- KWI Series - Water cooled Screw Chillers (Flooded with Inverter drive)
- KWK Series - Water cooled Screw Chillers (Flooded)
- KWS Series - Water cooled Screw Chillers (Dx)
- KAS Series - Air cooled Screw Chillers (Dx)

BRAVURA™ SERIES

- KWF Series - Water cooled Screw Chillers (Flooded)

TURBOTEK™ Centrifugal Chillers

KSC Series: Single Compressor Centrifugal Chillers

Features & Benefits

Kirloskar TURBOTEK™ single compressor centrifugal chillers are certified in accordance with AHRI Standard 550 / 590 - 2009. The IkW/TR for KSC series TURBOTEK™ chillers is as high as 0.55 (COP > 6.3) at standard AHRI rating conditions.

Each TURBOTEK™ centrifugal chiller is equipped with:

- A self-supporting steel frame with corrosion-resistant Polyurethane paint.
- Single stage, gear-driven centrifugal compressor with high strength aluminum alloy impeller. The compressor is provided with loading / unloading mechanism using inlet guide vanes (for seamless capacity modulation from 10 to 100%), gear drive & semi-hermetic, liquid refrigerant cooled, squirrel cage 2-pole induction motor.
- Shell & tube condenser with enhanced-surface copper tubes & removable water heads.
- Flooded shell & tube evaporator with enhanced surface copper tubes & removable water heads.
- Lubrication system with submersible oil pump. The oil pump supplies pressurized lubricating oil to hydro-dynamic bearings of the compressor as well as to the hydraulic mechanism of the inlet guide vanes.
- Intelligent & user friendly 'K-Smart' controller, with 13” LED touch screen graphic display, temperature & pressure sensors. The 'K-Smart' controller is equipped to communicate with the building management systems over Modbus, BACnet or LONWorks protocols.

Standard Factory Supplied Accessories

All TURBOTEK™ centrifugal chillers are supplied with following accessories as standard along with the chiller

- Free standing type, closed transition star-delta starter.
- Water pressure differential switches for evaporator & condenser to ensure adequate water flow through the heat exchangers.
- Anti-vibration rubber pads, supplied loose for field installation.

Options & Accessories

The following options are available for all TURBOTEK™ centrifugal chillers:

- Various voltages for compressor motors: 380 ~ 460 V, 3300 V, 6600 V, 11000 V.
- Various starters for compressor motors: Closed transition star-delta starter, Soft starter, Variable Frequency Drives for low voltages & Auto transformer starters, Soft starters, or Direct On Line starters for medium / high voltages.
- Copper, 90:10 Cupro-Nickel, Stainless Steel, Titanium tubes in the heat exchangers.
- Marine water boxes for heat exchangers.
- High water side design pressure for heat exchangers.
- Witness testing on AHRI certified test bed, at design conditions at full and part loads.

Offering 250 TR (880 kW) up to 1,200 TR (4,200 kW)

The Range:

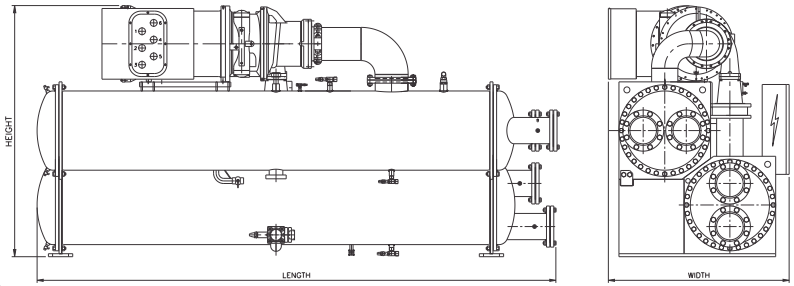
KSC 063:	250	-	325 TR	(880 - 1,140 kW)
KSC 079:	300	-	425 TR	(1,050 - 1,500 kW)
KSC 087:	400	-	600 TR	(1,400 - 2,100 kW)
KSC 100:	575	-	750 TR	(2,000 - 2,625 kW)
KSC 113:	700	-	900 TR	(2,450 - 3,150 kW)
KSC 126:	875	-	1,200 TR	(3,050 - 4,200 kW)

Physical Data & Dimensions

- The lengths given here are for 2 pass models.
- For heat exchangers & compressor combinations other than mentioned or any additional details, please contact Kirloskar Chillers' local sales office.

Physical Dimensions Diagram

SINGLE COMPRESSOR - SERIES KSC



TURBOTEK™ Centrifugal Chillers (HFC 134a)

Parameter / Model	Vessel Code		Length (mm)	Height (mm)	Width (mm)	Shipping Wt. (Kg)	Operating Wt. (Kg)
	Evaporator	Condenser					
KSC 063	E2209	C2209	3445	1925	1165	4271	4643
200 TR - 320 TR	E2609	C2209	3495	2025	1315	4648	5107
	E2609	C2609	3495	2085	1315	4982	5547
	E3009	C2609	3535	2225	1445	5848	6462
	E2212	C2212	4335	1935	1165	4790	5250
	E2612	C2212	4380	2030	1315	5250	5800
	E2612	C2612	4170	2190	1220	5700	6400
	E3012	C2612	4425	2225	1445	6300	7100
KSC 079	E2609	C2209	3495	2025	1315	4981	5439
285 TR - 400 TR	E2609	C2609	3495	2085	1315	5314	5879
	E3009	C2609	3535	2225	1445	5848	6462
	E3009	C3009	3535	2375	1480	6385	7096
	E2212	C2212	4170	1890	1150	5150	5600
	E2612	C2212	4360	2040	1315	5585	6150
	E2612	C2612	4170	2110	1320	6000	6700
	E3012	C2612	4240	2240	1420	6650	7400
	E3012	C3012	4405	2385	1480	7315	8195
	E3612	C3012	4590	2475	1735	8320	9448
KSC 087	E2609	C2609	3495	2085	1315	5314	5879
400 TR - 600 TR	E3009	C2609	3535	2225	1445	5848	6462
	E3009	C3009	3535	2375	1480	6385	7096
	E3609	C3009	3560	2390	1880	7218	8133
	E2612	C2212	4170	1980	1250	5600	6150
	E2612	C2612	4170	2110	1320	6000	6700
	E3012	C2612	4405	2225	1445	6640	7395
	E3012	C3012	4240	2370	1480	7300	8200
	E3612	C3012	4270	2390	1890	8350	9450
	E3612	C3612	4590	2670	2080	9340	10765
KSC 100	E3012	C3012	4240	2470	1550	8800	9700
550 TR - 750 TR	E3612	C3012	4270	2520	1890	9800	10900
	E3612	C3612	4570	2530	2115	10810	12270
	E4212	C3612	4650	2590	2230	12005	13730
	E4212	C4212	4320	2590	2340	13300	15450
	E4812	C4212	5220	2995	2860	14530	17070
KSC 113	E3612	C3012	4270	2520	1890	9850	10950
725 TR - 850 TR	E3612	C3612	4270	2520	2030	10850	12300
	E4212	C3612	4320	2520	2190	12000	13750
KSC 126	E4212	C4212	4320	2590	2340	13300	15450
850 TR - 1200 TR	E4812	C4212	4450	2700	2490	14550	17100
	E4812	C4812	4450	2700	2650	15900	19000

TURBOTEK™ Centrifugal Chillers

KDC Series: Dual Compressor Centrifugal Chillers

Features & Benefits

Kirloskar TURBOTEK™ dual compressor centrifugal chillers offer all the advantages that a single compressor centrifugal chiller offers & also has some additional benefits as listed below. These chillers are also AHRI certified in accordance with AHRI standard 550 / 590 – 2009.

- The IkW/TR for KDC series TURBOTEK™ chillers is as high as 0.55 (COP > 6.3) at standard AHRI rating conditions.
- In the KDC series centrifugal chillers, two compressors along with two oil pumps are mounted on a single set of heat exchangers. This provides built in redundancy, as any compressor can be isolated for any service requirements.
- Being dual compressor configuration, seamless capacity modulation is achieved from 5 to 100%. Further, excellent part load efficiencies are possible, especially if the chillers are operating below 60% load. In fact, IPLV figures for dual compressor chillers are comparable with variable speed chillers.
- A dual compressor chiller will have smaller footprint compared to two identical chillers of equal capacity. This also reduces piping costs & thus is economical when compared with two independent chillers.

Standard Factory Supplied Accessories

All TURBOTEK™ centrifugal chillers are supplied with following accessories as standard along with the chiller:

- Free standing type closed transition star-delta starter.
- Water pressure differential switches for evaporator & condenser to ensure adequate water flow through the heat exchangers.
- Anti-vibration rubber pads, supplied loose for field installation.

Options & Accessories

The following options are available for all TURBOTEK™ centrifugal chillers:

- Various voltages for compressor motors: 380 ~ 460 V, 3300 V, 6600 V, 11000 V.
- Various starters for compressor motors: Closed transition star-delta starter, Soft starter, Variable Frequency Drives for low voltages & Auto transformer starters, Soft starters, or Direct On Line starters for medium / high voltages.
- Copper, 90:10 Cupro-Nickel, Stainless Steel, Titanium tubes in the heat exchangers.
- Marine water boxes for heat exchangers.
- High water side design pressure for heat exchangers.
- Witness testing on AHRI certified test bed, at design conditions at full and part loads.

Offering 500 TR (1,760 kW) up to 2,400 TR (8,400 kW)

The Range:

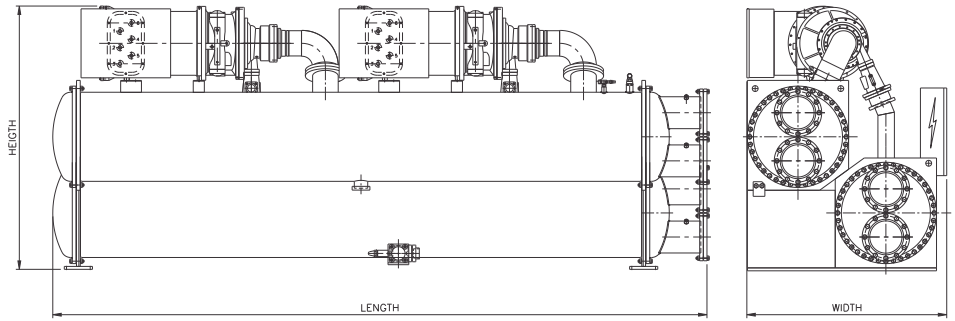
KDC 063:	500	-	650 TR	(1,750 ~ 2275 kW)
KDC 079:	600	-	850 TR	(2,100 ~ 3000 kW)
KDC 087:	800	-	1,200 TR	(2,800 ~ 4200 kW)
KDC 100:	1,150	-	1,500 TR	(4,000 ~ 5250 kW)
KDC 113:	1,400	-	1,800 TR	(4,900 ~ 6300 kW)
KDC 126:	1,750	-	2,400 TR	(6,100 ~ 8400 kW)

Physical Data & Dimensions

- The lengths given here are for 2 pass models.
- For heat exchangers & compressor combinations other than mentioned or any additional details, please contact Kirloskar Chillers' local sales office.

Physical Dimensions Diagram

DUAL COMPRESSOR - SERIES KDC



TURBOTEK™ Centrifugal Chillers (HFC 134a)

Parameter / Model	Vessel Code		Length (mm)	Height (mm)	Width (mm)	Shipping Wt. (Kg)	Operating Wt. (Kg)
	Evaporator	Condenser					
KDC 063	E2616	C2616	5430	2040	1470	9100	9940
400 TR - 620 TR	E3016	C3016	5450	2280	1620	10700	11850
	E3616	C3016	5520	2500	1810	12600	14100
	E3616	C3616	5520	2690	1890	14600	15950
KDC 079	E3016	C3016	5450	2410	1460	11400	12550
560 TR - 800 TR	E3616	C3016	5530	2540	1810	13050	14550
	E3616	C3616	5530	2690	1890	14550	16400
	E4216	C4216	5560	2540	2350	20200	23400
KDC 087	E3016	C3016	5450	2410	1460	11900	13000
800 TR - 1200 TR	E3616	C3016	5530	2540	1810	13500	15000
	E3616	C3616	5530	2690	1890	15000	16850
	E4216	C4216	5560	2540	2350	20200	23400
KDC 100	E3616	C3616	5530	2670	2830	19000	21100
1100 TR - 1500 TR	E4216	C4216	5560	2750	2870	22900	26100
	E4816	C4816	5710	2970	3130	26850	31300
KDC 113	E3616	C3616	5530	2670	2830	19000	21100
1450 TR - 1700 TR	E4216	C4216	5560	2750	2870	22900	26100
	E4816	C4816	5710	2970	3130	26850	31300
KDC 126	E4216	C4216	5560	2750	2830	22900	26100
1700 TR - 2400 TR	E4816	C4816	5710	2970	2870	26850	31300

PRODIGY™ Water Cooled Screw Chillers

KWI Series: Flooded Evaporator Screw Chillers with Variable Speed Drives

Offering 145 TR (500 kW) up to 475 TR (1,660 kW)

Features & Benefits

Kirloskar PRODIGY™ KWI series water cooled flooded screw compressor chillers with variable speed drives are equipped with one or two high efficiency Kirloskar screw compressors. These chillers use variable speed drives for capacity control to achieve very high IPLV value up to 0.38 IkW/TR (IPLV COP 9.2).

Each PRODIGY™ KWI series water cooled screw chiller with variable speed drive is equipped with:

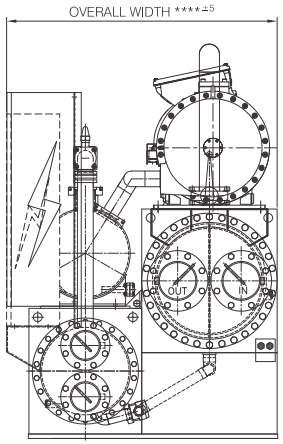
- A self-supporting steel frame protected with polyurethane paint.
- One or two 'Kirloskar' twin screw compressors. Kirloskar screw compressors are equipped with semi-hermetic, refrigerant cooled, squirrel cage two pole induction motor. The motor is controlled using variable speed drive for capacity control. These high efficiency compressors are designed for very quiet operation & have step-less capacity control from 35 ~ 100% load.
- Well-designed external oil separator, efficient & reliable oil recovery system to recover even traces of oil that carries over into the heat exchangers.
- Shell & tube type condenser with enhanced surface copper tubes & removable water heads.
- Flooded shell & tube type evaporator with enhanced surface copper tubes & removable water heads.
- Electrical panel housing intelligent 'K-Smart' control system, with 7" LED touch screen graphic display. The variable speed drives are unit mounted & pre-wired in factory.
- Anti-vibration rubber pads for field installation.

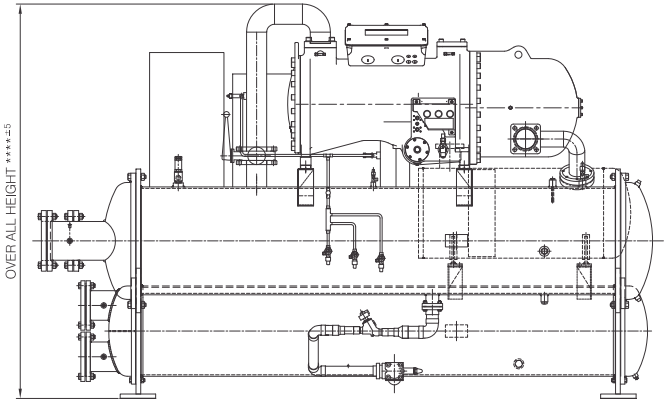
Options & Accessories

The following options are available for all PRODIGY™ KWI series water cooled screw chillers:

- 90:10 Cupro-Nickel, Stainless Steel, Titanium tubes in the heat exchangers.
- Marine water boxes for heat exchangers.
- Water flow switches or differential water pressure switches.
- Spring isolators for vibration isolation.
- High water side design pressure for heat exchangers.
- Also suitable for low temperature applications, with brine as secondary cooling media.
- Witness testing on AHRI certified test bed, at design conditions at full and part loads.

Physical Dimensions Diagram





PRODIGY™ Water Cooled Screw Chillers – KWI Series (HFC 134a)

Parameter / Model	UOM	KWI 150.14	KWI 170.14	KWI 195.14	KWI 220.14	KWI 240.14	KWI 265.14	KWI 265.24	KWI 295.24	KWI 320.24	KWI 340.24	KWI 365.24	KWI 390.24	KWI 415.24	KWI 445.24	KWI 460.24	KWI 485.24
Nominal Cooling capacity	TR	147	171	195	223	242	263	264	295	318	339	364	391	417	446	462	484
Compressor type	-	Semi hermetic twin screw															
No. of compressors	#	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Capacity control	%	35 ~ 100% Stepless						17.5 ~ 100% Stepless									
Approx. ref. charge	Kg	165	180	220	220	244	265	265	275	290	300	325	344	460	523	590	612
Evaporator type	-	Shell & Tube - Flooded															
Evaporator Water Volume	LTR	134	155	164	180	187	203	203	211	242	250	257	343	382	413	511	523
Evap. Water nozzle size	NB	200	200	200	200	200	200	200	200	200	200	200	250	250	250	300	300
Condenser type	-	Shell & Tube															
Condenser Water Volume	LTR	126	148	158	184	184	200	200	228	245	252	276	331	415	491	513	535
Cond. Water nozzle size	NB	125	150	125	150	150	150	150	150	200	200	200	200	200	250	250	250
Length	mm	3450	3500	4315	4375	4375	4375	4450	4450	4400	4650	4650	4725	4725	4700	4850	4850
Width	mm	1500	1550	1350	1425	1475	1475	1850	1850	1850	1850	1850	2075	2075	2050	2200	2200
Height	mm	2100	2035	2135	2158	2350	2350	2035	2035	2230	2220	2220	2550	2500	2450	2550	2550
Shipping Wt. (approx.)	Kg	3870	4380	4640	4580	4695	4680	4790	4870	5750	5790	5820	6675	6675	6675	6775	6875
Operating Wt. (approx.)	Kg	4570	4990	5340	4770	4790	4780	5500	5720	6500	6590	6940	7425	7425	7450	7525	7725

Notes:

1. Cooling capacity: For condenser water inlet/outlet temperatures 30° / 34°C and evaporator water outlet/inlet temperatures 7° / 12°C respectively
2. Input power supply: 400 V / 50 Hz / 3-Ph
3. Fouling factors according to AHRI 550/590

To select optimised chiller configuration & for options other than listed above, please contact your local Kirloskar Chillers sales office.

PRODIGY™ Water Cooled Screw Chillers

KWK Series: Flooded Evaporator Screw Chillers

Offering 120 TR (420 kW) up to 395 TR (1,400 kW)

Features & Benefits

Kirloskar PRODIGY™ KWK series water cooled flooded screw compressor chillers are equipped with one or two high efficiency Kirloskar screw compressors. These chillers use flooded evaporators enabling to achieve efficiency as high as 0.58 IkW/TR (COP 6.0) at standard AHRI rating conditions.

Each PRODIGY™ KWK series water cooled screw chiller is equipped with:

- A self-supporting steel frame protected with polyurethane paint.
- One or two Kirloskar twin screw compressors. Kirloskar screw compressors are equipped with semi-hermetic refrigerant cooled squirrel cage two pole induction motor. The motor is suitable for voltages between 380 ~ 460V. These high efficiency compressors are designed for very quiet operation & have step-less capacity control from 25 ~ 100% load.
- Well-designed external oil separator & an efficient & reliable oil recovery system that can recover even the slightest amount of oil that carries over into the heat exchangers.
- Shell & tube type condenser with enhanced surface copper tubes & removable water heads.
- Flooded shell & tube type evaporator with enhanced surface copper tubes & removable water heads
- Electrical panel housing star delta starters & intelligent 'K-Smart' control system, with 7” LED touch screen graphic display.
- Anti-vibration rubber pads for field installation.

Options & Accessories

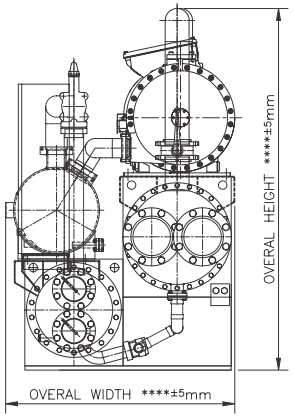
The following options are available for all PRODIGY™ KWK series water cooled screw chillers:

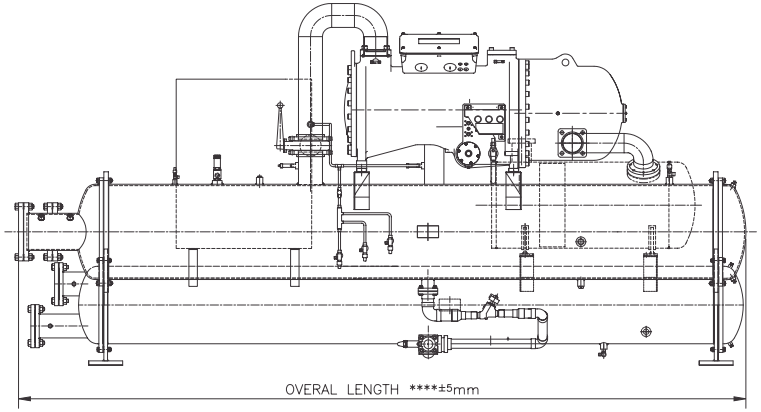
- Available with Soft Starter.
- 90:10 Cupro-Nickel, Stainless Steel, Titanium tubes in the heat exchangers.
- Marine water boxes for heat exchangers.
- Water flow switches or differential water pressure switches.
- Spring isolators for vibration isolation.
- High water side design pressure for heat exchangers.
- Also suitable for low temperature applications, with brine as secondary cooling media.
- Witness testing on AHRI certified test bed, at design conditions at full and part loads.

Heat Recovery

These chillers can be offered with 100% heat recovery in condensers, with maximum hot water outlet temperature of 40°C.

Physical Dimensions Diagram





PRODIGY™ Water Cooled Screw Chillers – KWK Series (HFC 134a)

Parameter / Model	UOM	KWK 120.14	KWK 140.14	KWK 160.14	KWK 180.14	KWK 195.14	KWK 240.24	KWK 260.24	KWK 280.24	KWK 300.24	KWK 325.24	KWK 345.24	KWK 365.24	KWK 380.24	KWK 395.24
Nominal Cooling capacity	TR	121	141	162	183	199	242	262	282	303	323	345	366	382	398
Nominal Heating capacity	kW	414	475	552	625	685	828	890	950	1027	1105	1178	1250	1310	1370
Compressor type	-	Semi hermetic twin screw													
No. of compressors	#	1	1	1	1	1	2	2	2	2	2	2	2	2	2
Capacity control	%	25 ~ 100% Stepless					12.5 ~ 100% Stepless								
Approx. ref. charge	Kg	160	160	180	180	220	220	220	244	275	290	300	325	344	423
Evaporator type	-	Shell & Tube - Flooded													
Evaporator Water Volume	LTR	114	135	155	150	165	180	190	205	212	245	250	260	287	345
Evap. Water nozzle size	NB	200	200	200	200	200	200	200	200	200	200	200	200	200	250
Condenser type	-	Shell & Tube													
Condenser Water Volume	LTR	97	115	135	140	145	170	170	185	210	230	235	257	257	320
Cond. Water nozzle size	NB	125	125	150	125	125	150	150	150	150	200	200	200	200	200
Length	mm	3450	3450	3500	4350	4350	4450	4625	4598	4598	4650	4700	4700	4700	4700
Width	mm	1350	1350	1550	1400	1400	1550	1550	1529	1529	1550	1550	1550	1550	1305
Height	mm	2300	2300	2275	2150	2150	2035	2250	2221	2221	2300	2450	2300	2300	2345
Shipping Wt. (approx.)	Kg	3870	4300	4380	4510	4640	4790	5500	5680	5680	5750	6210	6375	6530	6675
Operating Wt. (approx.)	Kg	4570	4990	4990	5210	5340	4920	6270	6380	6380	6500	6940	7150	7280	7425

Notes:

1. Cooling capacity: For condenser water inlet/outlet temperatures 30° / 34°C and evaporator water outlet/inlet temperatures 7° / 12°C respectively
2. Heating capacity: For condenser inlet/outlet water temperature 45° /50°C and evaporator outlet/inlet water temperature 7° /12°C respectively
3. Input power supply: 400 V / 50 Hz / 3-Ph
4. Fouling factors according to AHRI 550/590

To select optimised chiller configuration & for options other than listed above, please contact your local Kirloskar Chillers sales office.

PRODIGY™ Water Cooled Screw Chillers

KWS Series: DX Evaporator Screw Chillers

Features & Benefits

Kirloskar PRODIGY™ KWS series water cooled, DX evaporator screw compressor chillers are equipped with one or two high efficiency Kirloskar screw compressors. These chillers have efficiency in the range of 0.67 ~ 0.73 IkW/TR (COP of 5.3 ~ 4.8) at standard AHRI rating conditions.

Each PRODIGY™ KWS series water cooled screw chiller is equipped with:

- A self-supporting steel frame protected with polyurethane paint.
- One or two Kirloskar twin screw compressors. Kirloskar screw compressors are equipped with semi-hermetic, refrigerant cooled, squirrel cage two pole induction motor. The motor is suitable for voltages between 380 ~ 460V. These high efficiency compressors have step-less capacity control from 25 ~ 100% load.
- The compressor is also equipped with a well-designed built-in oil separator for efficient & reliable oil management. The entire compressor including the oil separator is designed to achieve high oil separation efficiency with very quiet operation.
- Shell & tube type condenser with enhanced surface copper tubes & removable water heads.
- DX type shell & tube type evaporator with internally enhanced copper tubes. The evaporators are designed for individual tube replacement, in case of tube failure.
- Electrical panel housing star delta starters & intelligent 'K-Smart' control system.
- Anti-vibration rubber pads for field installation.

Options & Accessories

The following options are available for all PRODIGY™ KWS series water cooled screw chillers:

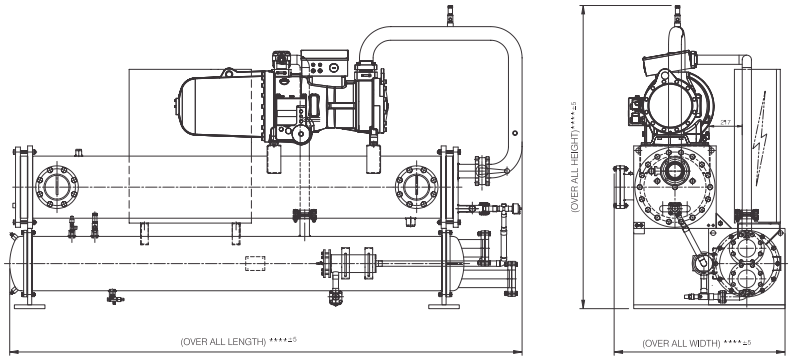
- Various starters for compressor motors: Soft starter or Variable Frequency Drive.
- 90:10 Cupro-Nickel, Stainless Steel, Titanium tubes for the condensers.
- Marine water boxes for condensers.
- Water flow switches or differential water pressure switches.
- Spring isolators for vibration isolation.
- High water side design pressure for condenser.
- Also suitable for low temperature applications, with brine as secondary cooling media.
- Witness testing on AHRI certified test bed, at design conditions at full and part loads.
- Available with the options of HFC 134a & HFC 407C refrigerants.

Heat Recovery

These chillers can be offered with desuperheaters for partial heat recovery or 100% heat recovery in condensers, with maximum hot water outlet temperature of 50°C.

Offering 50 TR (175 kW) up to 385 TR (1,350 kW)

Physical Dimensions Diagram



PRODIGY™ Water Cooled Screw Chillers – KWS Series (HFC 134a)

Parameter / Model	UOM	KWS 050.14	KWS 060.14	KWS 075.14	KWS 090.14	KWS 105.14	KWS 125.14	KWS 155.14	KWS 175.14
Nominal Cooling capacity	TR	51	58	80	92	108	127	164	180
Nominal Heating capacity	kW	188	212	300	340	394	453	597	654
Compressor type	-	Semi hermetic twin screw							
No. of compressors	#	1	1	1	1	1	1	1	1
Capacity control	%	25 ~ 100% Stepless							
Approx. ref. charge	Kg	40	44	60	77	85	95	95	100
Evaporator type	-	Shell & Tube - DX Type							
Evaporator Water Volume	LTR	105	206	198	181	220	218	312	300
Evap. Water nozzle size	NB	100	150	150	150	150	150	200	200
Condenser type	-	Shell & Tube - Flooded							
Condenser Water Volume	LTR	58	77	77	83	82	84	104	114
Cond. Water nozzle size	NB	100	100	100	100	100	100	125	125
Length	mm	2442	3355	3415	3415	3420	3415	3480	3480
Width	mm	974	1120	1125	1125	1105	1130	1200	1200
Height	mm	1944	2000	2155	2155	2100	2230	2470	2470
Shipping Wt. (approx.)	Kg	1782	2095	2215	2255	3070	3765	4092	4160
Operating Wt. (approx.)	Kg	1918	2375	2420	2460	3280	3975	4450	4500

Parameter / Model	UOM	KWS 100.24	KWS 120.24	KWS 140.24	KWS 160.24	KWS 180.24	KWS 210.24	KWS 230.24	KWS 265.24	KWS 285.24	KWS 320.24	KWS 350.24
Nominal Cooling capacity	TR	101	128	144	161	183	216	236	273	293	329	361
Nominal Heating capacity	kW	376	494	563	598	680	788	846	981	1057	1193	1308
Compressor type	-	Semi hermetic twin screw										
No. of compressors	#	2	2	2	2	2	2	2	2	2	2	2
Capacity control	%	12.5 ~ 100% Stepless										
Approx. ref. charge	Kg	84	88	106	120	132	152	160	180	190	198	240
Evaporator type	-	Shell & Tube - DX Type										
Evaporator Water Volume	LTR	241	220	335	312	296	527	498	627	600	600	586
Evap. Water nozzle size	NB	150	150	200	200	200	200	200	250	250	250	250
Condenser type	-	Shell & Tube - Flooded										
Condenser Water Volume	LTR	134	142	168	166	178	172	183	202	212	212	212
Cond. Water nozzle size	NB	100	100	100	100	100	100	100	100	100	100	100
Length	mm	3650	3660	3650	3775	3775	4650	4650	4667	4667	4667	3865
Width	mm	1570	1570	1725	1750	1750	1350	1350	1350	1350	1350	1945
Height	mm	2060	2060	2175	2275	2275	2223	2290	2500	2500	2577	2450
Shipping Wt. (approx.)	Kg	2880	3321	4410	4705	4760	4850	5557	6643	6656	6525	6565
Operating Wt. (approx.)	Kg	3080	3748	4830	5025	5066	5190	6087	7299	7314	7186	7215

Notes:

1. Cooling capacity: For condenser water inlet/outlet temperatures 30° / 34°C and evaporator water outlet/inlet temperatures 7° / 12°C respectively
2. Heating capacity: For condenser inlet/outlet water temperature 45° /50°C and evaporator outlet/inlet water temperature 7° /12°C respectively
3. Input power supply: 400 V / 50 Hz / 3-Ph
4. Fouling factors according to AHRI 550/590

To select optimised chiller configuration & for options other than listed above, please contact your local Kirloskar Chillers sales office.

PRODIGY™ Water Cooled Screw Chillers – KWS Series (HFC 407C)

Parameter / Model	UOM	KWS 55.17	KWS 70.17	KWS 95.17	KWS 110.17	KWS 135.17	KWS 180.17	KWS 205.17	KWS 230.17
Nominal Cooling capacity	TR	55	70	100	110	135	180	205	235
Nominal Heating capacity	kW	202	268	358	387	492	618	739	848
Compressor type	-	Semi hermetic twin screw							
No. of compressors	#	1	1	1	1	1	1	1	1
Capacity control	%	25 ~ 100% Stepless							
Approx. ref. charge	Kg	44	60	82	103	123	175	204	245
Evaporator type	-	Shell & Tube - DX Type							
Evaporator Water Volume	LTR	134	195	178	229	295	315	471	561
Evap. Water nozzle size	NB	150	150	150	150	200	200	200	200
Condenser type	-	Shell & Tube - Flooded							
Condenser Water Volume	LTR	53	75	83	94	103	174	202	220
Cond. Water nozzle size	NB	100	100	100	125	125	150	150	150
Length	mm	2442	3357	3415	3410	3480	3850	4650	4670
Width	mm	1160	1206	1186	1160	1293	1500	1440	1545
Height	mm	2155	2015	2155	2450	2470	2410	2410	2690
Shipping Wt. (approx.)	Kg	1914	2241	2317	2878	3081	4250	4609	5023
Operating Wt. (approx.)	Kg	2026	2391	2458	3081	3329	4588	5132	5604

Parameter / Model	UOM	KWS 110.27	KWS 130.27	KWS 150.27	KWS 180.27	KWS 215.27	KWS 270.27	KWS 315.27	KWS 360.27	KWS 385.27
Nominal Cooling capacity	TR	110	130	155	180	215	270	315	365	385
Nominal Heating capacity	kW	405	470	570	660	773	985	1142	1300	1390
Compressor type	-	Semi hermetic twin screw								
No. of compressors	#	2	2	2	2	2	2	2	2	2
Capacity control	%	12.5 ~ 100% Stepless								
Approx. ref. charge	Kg	104	124	145	175	194	225	261	308	320
Evaporator type	-	Shell & Tube - DX Type								
Evaporator Water Volume	LTR	229	295	256	315	471	561	658	952	916
Evap. Water nozzle size	NB	150	200	200	200	200	200	250	250	250
Condenser type	-	Shell & Tube - Flooded								
Condenser Water Volume	LTR	68+68	68+75	75+75	75+88	96+96	144+144	191+202	202+202	202+234
Cond. Water nozzle size	NB	100	100	100	100	100	125	200	200	200
Length	mm	3660	3715	3775	3850	4650	4670	4730	4910	4910
Width	mm	1655	1810	1815	1440	1440	1520	1750	1750	1750
Height	mm	2010	2175	2275	2225	2225	2600	2920	3025	3025
Shipping Wt. (approx.)	Kg	3570	3775	3904	4223	5210	5926	7354	8465	8592
Operating Wt. (approx.)	Kg	3747	4022	4085	4470	5597	6431	7958	9319	9426

Notes:

1. Cooling capacity: For condenser water inlet/outlet temperatures 30° / 34°C and evaporator water outlet/inlet temperatures 7° / 12°C respectively
2. Heating capacity: For condenser inlet/outlet water temperature 45° /50°C and evaporator outlet/inlet water temperature 7° /12°C respectively
3. Input power supply: 400 V / 50 Hz / 3-Ph
4. Fouling factors according to AHRI 550/590

To select optimised chiller configuration & for options other than listed above, please contact your local Kirloskar Chillers sales office.

PRODIGY™ Air Cooled Screw Chillers

KAS Series: DX Evaporator Screw Chillers

Features & Benefits

Kirloskar PRODIGY™ KAS series air cooled DX evaporator screw compressor chillers are equipped with one, two or three high efficiency Kirloskar screw compressors. These chillers have an efficiency in the range of 1.00 ~ 1.10 IkW/TR (COP of 3.2 ~ 3.5) at standard rating conditions.

Each PRODIGY™ KAS series air cooled screw chiller is equipped with:

- A self-supporting galvanized & polyurethane coated steel frame.
- One, two or three 'Kirloskar' twin screw compressors. Kirloskar screw compressors are equipped with semi-hermetic, refrigerant cooled, squirrel cage two pole induction motor. The motor is suitable for voltages between 380 ~ 460V. These high efficiency compressors have step-less capacity control from 25 ~ 100% load.
- The compressor is also equipped with a well-designed built-in oil separator for efficient & reliable oil management. The entire compressor including the oil separator is designed to achieve high oil separation efficiency with very quiet operation.
- Copper tube & aluminum fin condenser coils with adequate number of fans for air circulation over the coils. The fans are designed for quiet operation & are equipped with IP-55 protected squirrel cage induction motors.
- DX type shell & tube type evaporator with internally enhanced copper tubes. The evaporators are designed for individual tube replacement, in case of any tube failure.
- Electrical panel housing star delta starters & intelligent 'K-Smart' control system.
- Anti-vibration rubber pads for field installation.

Options & Accessories

The following options are available for all PRODIGY™ KAS series air cooled screw chillers:

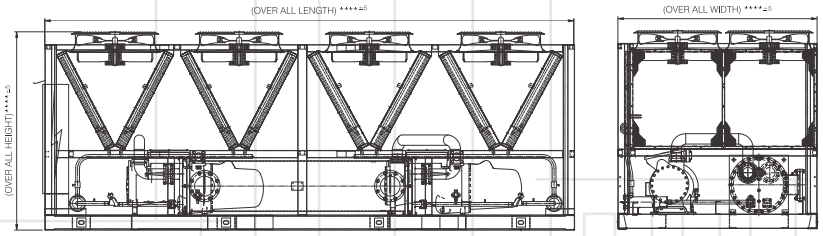
- Various starters for compressor motors: Soft starter or Variable Frequency Drive.
- Anti-corrosive blue coatings on the condenser coils.
- Water flow switches or differential water pressure switches.
- Spring isolators for vibration isolation.
- Acoustic enclosure for noise reduction.
- High water side design pressure for heat exchangers.
- Also suitable for low temperature applications, with brine as secondary cooling media.
- Witness testing, at available ambient conditions.
- Adiabatic cooling kit for condenser coils for high ambient, low humidity applications.
- Available with the options of HFC 134a & HFC 407C refrigerants.

Heat Recovery

These chillers can be offered with desuperheaters for partial heat recovery or 100% heat recovery in condensers, with maximum hot water outlet temperature of 55^{0}C.

Offering 45 TR (160 kW) up to 425 TR (1,490 kW)

Physical Dimensions Diagram



PRODIGY™ Air Cooled Screw Chillers – KAS Series (HFC 134a)

Parameter / Model	UOM	KAS 045.14	KAS 070.14	KAS 095.14	KAS 110.14	KAS 150.14	KAS 160.14E	KAS 125.24	KAS 165.24	KAS 185.24
Nominal Cooling capacity	TR	43	70	94	107	152	160	124	168	185
Compressor type	-	Semi hermetic twin screw								
No. of compressors	#	1	1	1	1	1	1	2	2	2
Capacity control	%	25 ~ 100% Stepless						12.5 ~ 100% Stepless		
Approx. ref charge	Kg	36	50	55	68	78	88	68	88	94
Evaporator type	-	Shell & Tube - DX Type								
Evaporator Water Volume	LTR	96	126	181	212	295	271	311	271	367
Evap. Water nozzle size	NB	100	150	150	150	200	200	200	200	200
Condenser type	-	Aluminum fins & copper tube coils								
No. of fans	#	2	4	6	6	8	8	6	8	10
Length	mm	2490	3070	4460	4460	5820	5820	4460	5820	7230
Width	mm	1550	2200	2200	2200	2200	2200	2200	2200	2290
Height	mm	2180	2180	2180	2180	2180	2180	2180	2180	2180
Shipping Wt. (approx.)	Kg	1920	2975	3730	4400	5275	5315	5045	5675	6375
Operating Wt. (approx.)	Kg	2020	3100	3910	4610	5570	5585	5355	5945	6740

Parameter / Model	UOM	KAS 205.24	KAS 230.24	KAS 265.24	KAS 300.24	KAS 320.24E	KAS 355.34	KAS 380.34	KAS 400.34	KAS 425.34
Nominal Cooling capacity	TR	207	229	263	298	319	357	379	403	427
Compressor type	-	Semi hermetic twin screw								
No. of compressors	#	2	2	2	2	2	3	3	3	3
Capacity control	%	12.5 ~ 100% Stepless					8.33 ~ 100% Stepless			
Approx. ref charge	Kg	114	136	154	162	166	208	216	230	246
Evaporator type	-	Shell & Tube - DX Type								
Evap. Shell side Volume	LTR	315	443	561	541	532	984	965	930	891
Evap. Water nozzle size	NB	200	200	200	200	200	250	250	250	250
Condenser type	-	Aluminum fins & copper tube coils								
No. of fans	#	10	12	14	16	16	18	20	22	24
Length	mm	7230	8570	9950	11350	11350	13100	14100	15900	17300
Width	mm	2290	2290	2290	2290	2290	2390	2390	2390	2390
Height	mm	2180	2180	2280	2280	2280	2370	2370	2370	2370
Shipping Wt. (approx.)	Kg	7780	8550	9465	10255	10270	13135	13825	14740	15660
Operating Wt. (approx.)	Kg	8020	8990	10025	10800	10800	14120	14790	15670	16550

Notes:

1. Cooling capacity: For evaporator water outlet/inlet temperatures 7° / 12°C respectively & ambient temperature 35°C
2. Input power supply: 400 V / 50 Hz / 3-Ph
3. Fouling factors according to AHRI 550/590

To select optimised chiller configuration & for options other than listed above, please contact your local Kirloskar Chillers sales office.

PRODIGY™ Air Cooled Screw Chillers – KAS Series (HFC 407C)

Parameter / Model	UOM	KAS 045.17	KAS 070.17	KAS 095.17	KAS 115.17	KAS 150.17	KAS 195.17	KAS 225.17
Nominal Cooling capacity	TR	45	70	95	115	150	195	225
Compressor type	-	Semi hermetic twin screw						
No. of compressors	#	1	1	1	1	1	1	1
Capacity control	%	25 ~ 100% Stepless						
Approx. ref charge	Kg	26	45	55	68	78	114	136
Evaporator type	-	Shell & Tube - DX Type						
Evaporator Water Volume	LTR	96	126	181	212	295	315	443
Evap. Water nozzle size	NB	100	150	150	150	200	200	200
Condenser type	-	Aluminum fins & copper tube coils						
No. of fans	#	2	4	6	6	8	10	12
Length	mm	2680	3070	4460	4460	5820	7230	8570
Width	mm	1550	2200	2200	2200	2200	2290	2290
Height	mm	2180	2180	2180	2180	2180	2180	2180
Shipping Wt. (approx.)	Kg	1743	2264	3145	3233	4555	5190	5854
Operating Wt. (approx.)	Kg	1840	2390	3355	3445	4850	5505	6297

Parameter / Model	UOM	KAS 120.27	KAS 160.27	KAS 200.27	KAS 230.27	KAS 265.27	KAS 300.27	KAS 345.27**	KAS 390.27*	KAS 415.27*	KAS 450.27*
Nominal Cooling capacity	TR	120	160	200	230	265	300	345	390	415	450
Compressor type	-	Semi hermetic twin screw									
No. of compressors	#	2	2	2	2	2	2	2	2	2	2
Capacity control	%	12.5 ~ 100% Stepless									
Approx. ref charge	Kg	68	88	114	136	154	162	208	216	230	250
Evaporator type	-	Shell & Tube - DX Type									
Evap. Shell side Volume	LTR	311	271	315	443	561	541	984	965	930	874
Evap. Water nozzle size	NB	200	200	200	200	200	200	250	250	250	250
Condenser type	-	Aluminum fins & copper tube coils									
No. of fans	#	6	8	10	12	14	16	18	20	22	24
Length	mm	4460	5820	7230	8570	9950	11350	12650	14100	15900	17300
Width	mm	2200	2200	2290	2290	2290	2290	2390	2390	2390	2390
Height	mm	2180	2180	2180	2180	2280	2280	2370	2370	2370	2370
Shipping Wt. (approx.)	Kg	3805	4264	5539	6216	7579	8816	9898	10409	11143	11909
Operating Wt. (approx.)	Kg	4116	4535	5854	6659	8140	9357	10882	11374	12073	12783

Notes:

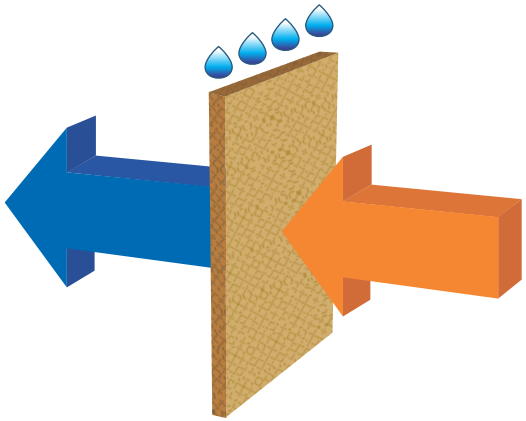
1. Cooling capacity: For evaporator water outlet/inlet temperatures 7° / 12°C respectively & ambient temperature 35°C
2. Input power supply: 400 V / 50 Hz / 3-Ph
3. Fouling factors according to AHRI 550/590

To select optimised chiller configuration & for options other than listed above, please contact your local Kirloskar Chillers sales office.

PRODIGY™ Air Cooled Screw Chillers with Adiabatic Kit

KAA Series: Air Cooled Screw Chillers with Adiabatic Cooling Kit

The KAS series chillers can be provided with Adiabatic cooling kits for mounting on condenser coils. Adiabatic kits help reduce the peak power consumption of air cooled chillers, especially in dry & hot ambient conditions.



What are Adiabatic Kits:

Adiabatic kits make use of lower Wet Bulb temperature in places with hot & dry ambient conditions to reduce the entering air temperature over the condenser coils. Adiabatic pads along with water spray system are used to cool the hot & dry entering air. The annual water consumption of these systems is approximately 1/6th of the annual water requirement in a cooling tower for water cooled chillers. Further, water circulation is required only during periods of operation in hot weather, the system automatically switches to normal air cooled operation mode in periods of moderate temperature. Thus on an average yearly basis, the water consumption drops to less than 10% of the total water required in a cooling tower.

The system consists of adiabatic pads mounted in front of the condenser coils. A water spray system sprays finely atomized water over these pads depending on the ambient air temperature. The spray system is intermittent & the ON & OFF times depend on the ambient temperature. For example, during periods with very high ambient temperature, say 40°C & above, the water spray will be on for about 30 seconds on each pad. During these 30 seconds, the pads get wet & cool the air flowing over them by about 5 ~ 8 °C. Thus, the air entering the condenser coils, will now be cooler by 5 ~ 8°C than the actual ambient, thus reducing the condensing temperature in the system, in turn reducing the power consumption of the unit. The pads retain this water for about one minute after the sprays are switched off & keep cooling the air flowing over it. After about one minute, the spray of water again starts & continues for another 30 seconds & this cycle continues. The ON time & OFF time will depend on the ambient temperature.Lower the ambient temperature, higher will be OFF time & vice versa, in order to optimize the water consumption. In chillers with adiabatic kits, the chiller controller, 'K-Smart' will have software programmed to monitor & control the operation of the sprays.

The adiabatic system comes complete with water piping for the spray nozzles, high pressure water pump, water tank, etc. This entire system can be factory fitted & tested prior to dispatch.

PRODIGY™ Air Cooled Screw Chillers, with Adiabatic Kit - KAA Series (HFC 134a)

Parameter / Model	UOM	KAA 045.14	KAA 075.14	KAA 115.14	KAA 160.14	KAA 170.14E	KAA 130.24	KAA 180.24	KAA 195.24	KAA 220.24
Nominal Cooling capacity	TR	45	75	115	160	170	135	180	195	220
Compressor type	-	Semi hermetic twin screw								
No. of compressors	#	1	1	1	1	1	2	2	2	2
Capacity control	%	25 ~ 100% Stepless					12.5 ~ 100% Stepless			
Approx. ref charge	Kg	36	50	68	78	88	68	88	94	114
Evaporator type	-	Shell & Tube - DX Type								
Evaporator Water Volume	LTR	96	126	212	295	271	212	271	367	315
Evap. Water nozzle size	NB	100	150	150	200	200	150	200	200	200
Condenser type	-	Aluminum fins & copper tube coils								
No. of fans	#	2	4	6	8	8	6	8	10	10
Length	mm	2490	3070	4460	5820	5820	4460	5820	7230	7230
Width	mm	1550	2200	2200	2200	2200	2200	2200	2290	2290
Height	mm	2180	2180	2180	2180	2180	2180	2180	2180	2180
Shipping Wt. (approx.)	Kg	2020	3073	4600	5475	5612	5243	5874	6674	8004
Operating Wt. (approx.)	Kg	2115	3200	4811	5770	5883	5554	6145	7041	8320

Parameter / Model	UOM	KAA 245.24	KAA 280.24	KAA 320.24	KAA 340.24E	KAA 380.34	KAA 405.34	KAA 430.34	KAA 450.34
Nominal Cooling capacity	TR	245	280	320	340	380	405	430	455
Compressor type	-	Semi hermetic twin screw							
No. of compressors	#	2	2	2	2	3	3	3	3
Capacity control	%	12.5 ~ 100% Stepless				8.33 ~ 100% Stepless			
Approx. ref charge	Kg	136	154	162	166	208	216	230	246
Evaporator type	-	Shell & Tube - DX Type							
Evap. Shell side Volume	LTR	443	561	541	532	984	965	930	891
Evap. Water nozzle size	NB	200	200	200	200	250	250	250	250
Condenser type	-	Aluminum fins & copper tube coils							
No. of fans	#	12	14	16	16	18	20	22	24
Length	mm	8570	9950	11350	11350	13100	14100	15900	17300
Width	mm	2290	2290	2290	2290	2390	2390	2390	2390
Height	mm	2180	2280	2280	2280	2370	2370	2370	2370
Shipping Wt. (approx.)	Kg	8948	9865	10756	10770	13632	14325	15240	16160
Operating Wt. (approx.)	Kg	9391	10426	11300	11302	14616	15290	16170	17050

Notes:

1. Cooling capacity: For evaporator water outlet/inlet temperatures 7^{0} / 12^{0}C respectively & ambient temperature 35^{0}C
2. Input power supply: 400 V / 50 Hz / 3-Ph
3. Fouling factors according to AHRI 550/590

To select optimised chiller configuration & for options other than listed above, please contact your local Kirloskar Chillers sales office.

PRODIGY™ Air Cooled Screw Chillers, with Adiabatic Kit - KAA Series (HFC 407C)

Parameter / Model	UOM	KAA 050.17	KAA 075.17	KAA 120.17	KAA 160.17	KAA 210.17	KAA 240.17	KAA 130.27	KAA 170.27	KAA 210.27
Nominal Cooling capacity	TR	45	70	115	150	195	225	120	160	200
Compressor type	-	Semi hermetic twin screw								
No. of compressors	#	1	1	1	1	1	1	2	2	2
Capacity control	%	25 ~ 100% Stepless						12.5 ~ 100% Stepless		
Approx. ref charge	Kg	36	50	68	78	114	136	68	88	114
Evaporator type	-	Shell & Tube - DX Type								
Evaporator Water Volume	LTR	96	126	212	295	315	443	311	271	315
Evap. Water nozzle size	NB	100	150	150	200	200	200	200	200	200
Condenser type	-	Aluminum fins & copper tube coils								
No. of fans	#	2	4	6	8	10	12	6	8	10
Length	mm	2490	3070	4460	5820	7230	8570	4460	5820	7230
Width	mm	1550	2200	2200	2200	2290	2290	2200	2200	2290
Height	mm	2180	2180	2180	2180	2180	2180	2180	2180	2180
Shipping Wt. (approx.)	Kg	1843	2364	3433	4755	5440	6104	4005	4464	5789
Operating Wt. (approx.)	Kg	1940	2490	3645	5050	5755	6547	4316	4735	6104

Parameter / Model	UOM	KAA 245.27	KAA 285.27	KAA 320.27	KAA 370.27	KAA 415.27	KAA 445.27	KAA 480.27
Nominal Cooling capacity	TR	230	265	300	345	390	415	450
Compressor type	-	Semi hermetic twin screw						
No. of compressors	#	2	2	2	2	2	2	2
Capacity control	%	12.5 ~ 100% Stepless						
Approx. ref charge	Kg	136	154	162	208	216	230	250
Evaporator type	-	Shell & Tube - DX Type						
Evap. Shell side Volume	LTR	443	561	541	984	965	930	874
Evap. Water nozzle size	NB	200	200	200	250	250	250	250
Condenser type	-	Aluminum fins & copper tube coils						
No. of fans	#	12	14	16	18	20	22	24
Length	mm	8570	9950	11350	13100	14100	15900	17300
Width	mm	2290	2290	2290	2390	2390	2390	2390
Height	mm	2180	2280	2280	2370	2370	2370	2370
Shipping Wt. (approx.)	Kg	6466	7879	9116	10198	10809	11543	12309
Operating Wt. (approx.)	Kg	6909	8440	9657	11182	11774	12475	13183

Notes:

1. Cooling capacity: For evaporator water outlet/inlet temperatures 7° / 12°C respectively & ambient temperature 35°C
2. Input power supply: 400 V / 50 Hz / 3-Ph
3. Fouling factors according to AHRI 550/590

To select optimised chiller configuration & for options other than listed above, please contact your local Kirloskar Chillers sales office.

BRAVURA™ Water Cooled Screw Chillers

KWF Series: Flooded Evaporator Screw Chillers

Offering 115 TR (400 kW) up to 555 TR (1,950 kW)

Features & Benefits

Kirloskar BRAVURA™ KWF series water cooled flooded screw compressor chillers are equipped with one, two or three high efficiency screw compressors. These chillers use flooded evaporators to achieve efficiency as high as 0.58 IkW/TR (COP 6.0) at standard AHRI rating conditions.

Each BRAVURA™ KWF series water cooled flooded screw chiller is equipped with:

- A self-supporting steel frame protected with polyurethane paint.
- One, two or three mono screw compressors. The compressors are equipped with semi-hermetic, refrigerant cooled, squirrel cage two pole induction motors. The motor is suitable for voltages between 380 ~ 460 V. These high efficiency compressors have step-less capacity control from 25 ~ 100% load.
- Well-designed external oil separator, efficient and reliable oil recovery system to recover even traces of oil that carries over into the heat exchangers.
- Shell & tube type condenser with enhanced surface copper tubes and removable water heads.
- Flooded shell & tube type evaporator with enhanced surface copper tubes and removable water heads.
- Electrical panel housing star delta starters and intelligent 'K-Smart' control system.
- Anti-vibration rubber pads for field installation.

Options & Accessories

The following options are available for all BRAVURA™ KWF series water cooled screw chillers:

- Soft starters for compressor motors.
- 90:10 Cupro-Nickel, Stainless Steel, Titanium tubes in the heat exchangers.
- Marine water boxes for heat exchangers.
- Spring isolators for vibration isolation.
- Water flow switches or differential water pressure switches.
- High water side design pressure for heat exchangers.
- Also suitable for low temperature applications, with brine as secondary cooling media.
- Witness testing on an AHRI certified test bed, at design conditions with full & part loads.

BRAVURA™ Water Cooled Screw Chillers – KWF Series (HFC 134a)

Parameter / Model	UOM	KWF 115.14	KWF 140.14	KWF 160.14	KWF 185.14	KWF 225.24	KWF 250.24	KWF 275.24	KWF 300.24
Nominal Cooling capacity	TR	114	138	161	185	227	251	275	299
Compressor type	-	Semi hermetic mono screw							
No. of compressors	#	1	1	1	1	2	2	2	2
Capacity control	%	25 ~ 100% Stepless				12.5 ~ 100% Stepless			
Approx. ref. charge	Kg	160	160	180	180	188	205	220	265
Evaporator type	-	Shell & Tube - Flooded							
Evaporator Water Volume	LTR	130	150	165	180	205	235	255	265
Evap. Water nozzle size	NB	200	200	200	200	200	200	200	200
Insulation	-	Self bubbling type nitrite foam							
Condenser type	-	Shell & Tube - Flooded							
Condenser Water Volume	LTR	145	170	180	190	215	245	270	305
No. of cond.	#	1	1	1	1	1	1	1	1
Cond. Water nozzle size	NB	125	125	125	125	125	150	150	150
Length	mm	3750	3750	3750	3750	4300	4685	4375	4375
Width	mm	1290	1290	1290	1290	1300	1430	1375	1375
Height	mm	2100	2100	2100	2100	2100	2250	2250	2250
Shipping Wt. (approx.)	Kg	3355	3450	3575	3660	4820	4870	5070	5170
Operating Wt. (approx.)	Kg	3895	4045	4220	4345	5650	5800	6070	6150

Parameter / Model	UOM	KWF 325.24	KWF 345.24	KWF 370.24	KWF 415.34	KWF 440.34	KWF 485.34	KWF 510.34	KWF 555.34
Nominal Cooling capacity	TR	323	346	369	413	436	484	508	554
Compressor type	-	Semi hermetic mono screw							
No. of compressors	#	2	2	2	3	3	3	3	3
Capacity control	%	12.5 ~ 100% Stepless			8.33 ~ 100% Stepless				
Approx. ref. charge	Kg	290	300	325	380	391	590	636	660
Evaporator type	-	Shell & Tube - Flooded							
Evaporator Water Volume	LTR	315	325	340	490	520	640	662	700
Evap. Water nozzle size	NB	200	200	200	250	250	250	250	250
Insulation	-	Self bubbling type nitrite foam							
Condenser type	-	Shell & Tube - Flooded							
Condenser Water Volume	LTR	330	340	370	585	610	670	697	745
No. of cond.	#	1	1	1	1	1	1	1	1
Cond. Water nozzle size	NB	200	200	200	250	250	250	250	250
Length	mm	4360	4360	4360	4410	4410	4580	4580	4580
Width	mm	1320	1320	1320	2050	2050	2550	2550	2550
Height	mm	2260	2260	2260	2660	2660	2660	2660	2660
Shipping Wt. (approx.)	Kg	5200	5450	5500	9000	9100	9200	9250	9300
Operating Wt. (approx.)	Kg	6285	6600	6695	10720	10850	11290	11395	11520

Notes:

1. Cooling capacity: For condenser water inlet/outlet temperatures 30° / 34°C and evaporator water outlet/inlet temperatures 7° / 12°C respectively
2. Input power supply: 400 V / 50 Hz / 3-Ph
3. Fouling factors according to AHRI 550/590

To select optimised chiller configuration & for options other than listed above, please contact your local Kirloskar Chillers sales office.

De-Superheaters

Kirloskar KWS series, KAS series & KWK series PRODIGY™ screw chillers can be offered with a unique heat recovery option, the Desuperheater.

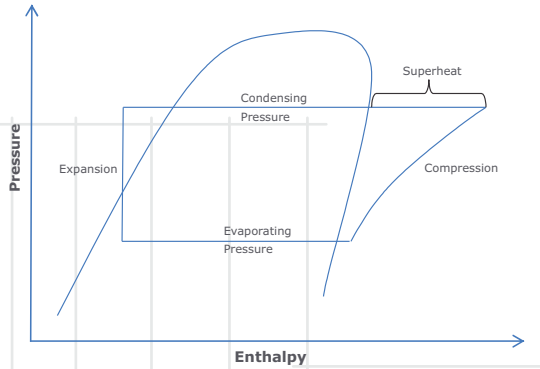
Principle of Operation

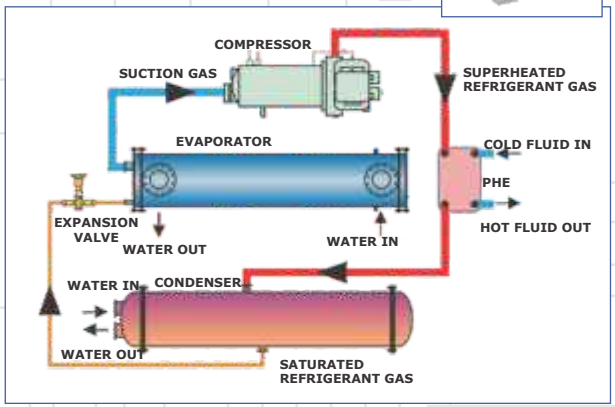
Desuperheaters are basically Plate Type Heat Exchangers (PHEs) fitted in the discharge line of the compressor. The superheat of the refrigerant gas leaving the compressor (see figure) is removed by water / fluid before the refrigerant gas enters the normal condenser, which may be either air cooled or water cooled. The latent heat of the refrigerant is then rejected to the cooling media in the condenser.

The basic advantage of a desuperheater over normal heat recovery condenser is that the heat recovery is at normal condensing pressure, unlike in total heat recovery condensers where the condensing pressure must be elevated. Thus, there is no increase in the compressor power. The heat recovered is absolutely free and hence increases the efficiency of the water chiller.

In the KWS and KAS series chillers, since the refrigerant discharge temperatures can be as high as 65°C, the heat is generally recovered at a high temperature of 50°C. In the KWK series chillers, normally the heat recovery would be at approx. 40°C, however, with some additional accessories, it can be increased to 48°C. Since PHEs are used instead of conventional shell & tube type heat exchangers, the heat recovery efficiency is also very high. The plate heat exchanger also enables to achieve high temperature differential between entering & leaving hot fluid temperatures, to the extent of 10 ~ 12°C. Approximately 15% of the chiller's cooling capacity can be recovered as heat from a desuperheater.

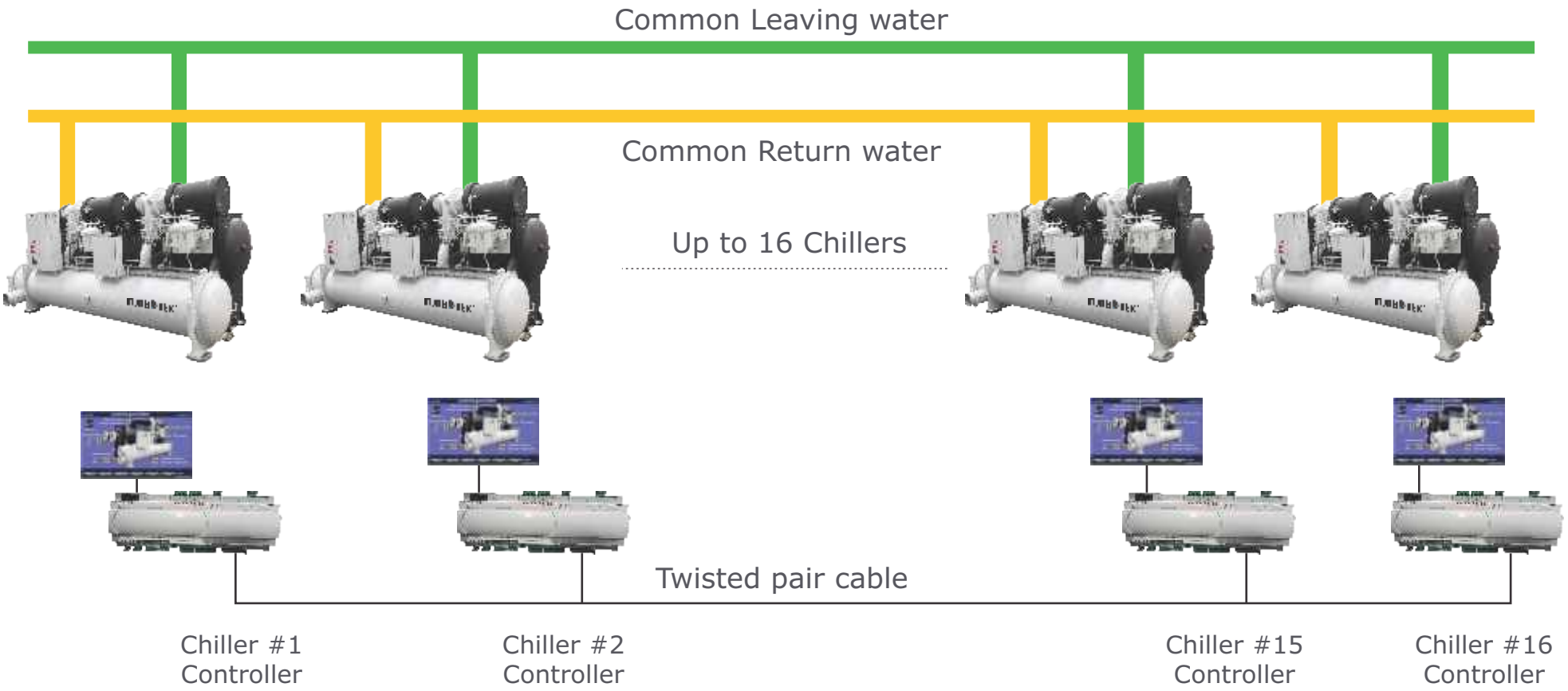
The amount of heat recovered is a direct saving, thus increasing the efficiency considerably. To illustrate the amount saved, let us consider a case of a 100 TR (350 kW) capacity KWS Series screw chiller. The chiller would consume approximately 70 IkW (0.70 IkW/TR) at standard rating conditions. If a desuperheater is used for this chiller, the heat recovered would be approximately 50 kW (approx. 15% of 100 TR / 350 kW). This is a direct saving, thus meaning that effective power consumption is about 20 kW (0.20 IkW/TR) to satisfy the cooling requirement of 100 TR.





‘K-Smart’ Multi Chiller Control

'K-Smart' controller for all Kirloskar chillers has built in capabilities of controlling multiple chillers.



'K-Smart' Plant Manager

Kirloskar Chillers can optionally supply 'K-Smart' plant manager for controlling & optimally running a chiller system. A typical large chiller system can consist of the following equipment which will be controlled by the 'K-Smart' Plant Manager.

- Various chillers operating in the plant
- Chilled water primary pumps
- Chilled water secondary pumps with variable speed drives
- Condenser water pumps
- Cooling tower fans & cooling tower motorized valves
- Chilled water inlet / outlet motorized valves
- Condenser water inlet / outlet motorized valves

Depending on the sophistication required in the Plant Manager System, additional equipment can be added to the above list of equipment that is to be controlled by the Plant Manager. The features of the Plant Manager would also depend on the level of automation required by the customer. However, typically, a Plant Manager System can achieve all functions of the 'K-Smart' multi chiller control system & in addition the following:

- Depending on how many chillers are operating, the 'K-Smart' Plant Manager shall decide how many chilled water primary & condenser water pumps should run. It will switch off the motorized valves in chilled water & condenser water lines for the off chillers.
- The 'K-Smart' Plant Manager can control the water flow to the cooling towers depending on the no. of chillers operating & by controlling the cooling tower motorized valves.
- The 'K-Smart' Plant Manager can control the speed of the secondary chilled water pumps, depending on the pressure signal received from the pressure transducer at the farthest air handling unit.

The extent of sophistication that can be incorporated into a 'K-Smart' Plant Manager is limitless & would be influenced by the available budget. Graphic display, fault & alarm displays at remote locations, data logging, etc. are some of the features which can be added to the 'K-Smart' Plant Manager depending on customer requirements & budgets.

Features of the multi chiller control capability of the 'K-Smart' controller:

- We can connect up to 16 chiller controllers through twisted pair cables as shown in the picture above. These can be any combination of the TURBOTEK™, PRODIGY™ or BRAVURA™ chillers.
- Any one controller can then be assigned as 'Master' & remaining controllers assigned as 'Slaves'.
- Temperature sensors in the chilled water inlet & outlet header are then connected to the 'Master' controller.
- The 'Master' controller will then automatically switch on the required number of chillers depending on the total system load. In case of increase or decrease in load, the master will then decide which chiller is to be switched on or off depending on run hours of the chillers. The master tries to achieve run time equalisation of all the chillers.
- In case any chiller trips on any fault, the 'Master' controller will then assign it as 'under breakdown' & switch on the next available or standby chiller. The chiller under breakdown will remain under breakdown until the fault in that chiller is reset.
- The plant operator can also configure any chiller as 'Standby' or 'Under Maintenance' depending on the desired status of that chiller.

Maintenance Contracts

Kirloskar Chillers has a strong commitment to 'customer delight,' & in line with this philosophy, has built a strong team for after-sales support. Chillers are technologically advanced products & need proper care & support for trouble free operation on a long term & optimized basis. In line with these requirements, we offer maintenance contracts to our customers, post warranty of the chillers. The maintenance service contracts are of various types & durations. The following are the two main types of contracts we offer:

1. Annual Service Contract: In these contracts, Kirloskar Chillers offers four preventive maintenance schedules & unlimited number of breakdown visits. The preventive maintenance schedule ensures trouble free operation of the chiller throughout its life & also keeps the performance of the chiller optimised. Any spare parts required for proper operation of the chiller are procured by the customer at an additional cost from Kirloskar Chillers.

2. Comprehensive Annual Maintenance Contract: In these contracts all benefits of an annual service contract are available to the customer along with inclusion of all major spare parts required for the chiller. Only consumable items & certain electrical / electronic items are generally excluded from such contracts. Thus, customers opting for comprehensive contracts entrust the entire maintenance responsibility of the chiller to Kirloskar Chillers for a predetermined amount.

Customers have a lot to benefit from such contracts: they ensure that chillers are under care of competent personnel & it is an obvious choice that a manufacturer is the best position to provide such services. Customers are also assured of quick availability of genuine spare parts for their chillers & most importantly peace of mind as they can be assured of trouble free chiller operation for many years.

Our Strengths

Manufacturing & Testing Facilities

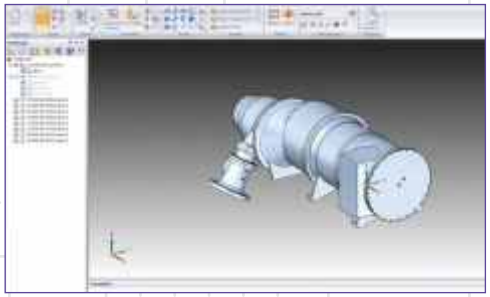
Kirloskar Chillers is an ISO 9001 : 2008 certified Company with a state-of-the-art engineering, manufacturing & testing facility located at Saswad near Pune (India). The manufacturing plant spread over 40,000 sq. ft. is the only facility in India which manufactures both Centrifugal & Screw chillers under one roof.

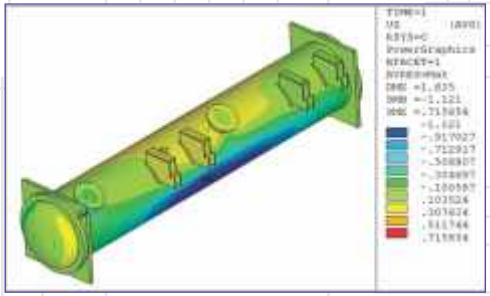
The comprehensive production facility includes sections for centrifugal compressor assembly, heat exchanger fabrication, chiller assembly & testing. The heat exchanger shop is equipped with facilities for shell rolling, tube sheet machining, tube expansion & pressure testing. Other sections cover various stages of the chiller manufacturing process, such as electrical & control panel assembly, chiller assembly, pressure testing, painting & insulation.

We were the first chiller manufacturer in India to offer chillers certified under the AHRI 550/590 certification program since 2006. In 2008, we were the first to establish an AHRI-certified test bed in India.

Engineering, Research & Development Capabilities

Kirloskar Chillers prides itself on being a technology-driven company, responsive to the needs of its customers, alert to emerging global trends. Our focus on offering increasingly efficient & reliable products, new features & value-added services drives our efforts to continuous innovation. Our engineering team uses advanced software tools like SolidEdge, Concept NREC, Autocad & 1Tool for various aspects of chiller design. Our Engineering team has vast experience in refrigeration system design with particular expertise in thermal & mechanical design. Controller programming & logic development to optimize chiller operation are done in-house. For specialized engineering requirements like CFD analysis for impeller design, FEA for seismic studies, stress analysis, acoustic & vibration studies, we enlist the help of external expertise.





Supply Chain Management

Adopting a collaborative approach with all stakeholders allows us to maximize the efficiency & effectiveness of our operations. Our vendors are one of the key partners in our endeavour to deliver quality products & services to our customers. Our continuous efforts at vendor development to upgrade their knowledge, competence & facilities ensure that we get right components at the right time with optimum cost & desired quality. We involve our vendors in various initiatives to promote exchange of information, which helps build trust & confidence in each other ensuring they are partners in our growth & jointly achieving the Company's short term goals & long range plans.

Some of the Prestigious Projects

Installation in India

Sr. No.	Project details	Total capacity (TR)
1	Toyota Kirloskar Motors Pvt. Ltd., Bangalore	7,000
2	Hindustan Unilever Ltd., Multiple Locations in India	4,100
3	Hotel JW Marriott, Mumbai	4,000
4	Hotel Marriott & Inorbit Mall, Bangalore	3,000
5	Bosch Ltd., Nashik	2,600
6	Radisson Spa & Resort, Alibaug & Pune	1,500
7	Ahlstrom Fibercomposites India Pvt. Ltd., Mundhra	1,500
8	Owens Corning India Ltd., Taloja	1,200
9	Adani Wilmar Limited, Kakinada	1,200
10	Bekaert Wire Industries Ltd., Pune.	1,000
11	Foxconn India Pvt. Ltd., Sriperumbudur	800
12	PepsiCo India Holdings, Sangur & Howrah	800
13	SKF India Ltd., Bangalore	600
14	L'Oreal Pvt. Ltd., Pune	600
15	Cadbury India Limited, Pune	600
16	Cargill India Pvt. Ltd., Kurkumbh	600
17	Raptakos Brett Co. Ltd., Mumbai & Bangalore	600
18	Johnson & Johnson, Aurangabad	500
19	3M India Limited, Pune	400
20	Rehau Polymers Ltd., Pune	300
21	AMRI India Pvt. Ltd., Aurangabad	300
22	John Deere Equipment Pvt. Ltd., Pune	250
23	Johnson Matthey, Kanpur	200
24	WF Baird, Chennai	200
25	Astrazeneca Pharma India Limited, Bangalore	200
26	Ferring-Bayer, Mumbai	200
27	Agila Specialities, Bangalore	200
28	Mylan / Agila Specialities, Bangalore	200
29	Tranter India Ltd., Pune	150
30	AMCOR Pet Packaging Asia Pvt. Ltd., Pune	150

Overseas Installation

Sr. No.	Project details	Total capacity (TR)
1	Continental Tyres, Moscow, Russia	3,500
2	Indorama Synthetics, Jakarta, Indonesia	1,500
3	KLJ Organics, Qatar	1,275
4	Palermo Hospital, Italy	1,000
5	GSIS, Manila, Philippines	1,000
6	Al Dhafra Union Paper Mill, Abu Dhabi	1,000
7	Indo Bharat Rayon, Indonesia	1,000
8	Presidential Palace, Phillipines	500
9	Malacanang Palace, Manila	500
10	Ranbaxy, Nigeria	500
11	Nouvelles Brasseries, Ivory Coast	400
12	Taj Airport Garden, Sri Lanka	350
13	Pharma Land Pharmaceuticals, Sudan	350
14	Addar Speciality Chemicals, Dubai	300
15	Belluno Hospital, Italy	300
16	Lung Center, Manila	300
17	Medica Pharmaceutical Industries, Yemen	300
18	Nigeria Chemicals, Nigeria	250
19	Kourosh Foods, Iran	250
20	Al Mukha Power Station, Sana'a, Yemen	250
21	Fibre Plus, Ras Al Khaima, UAE	240
22	Unilever Sri Lanka Ltd., Colombo	200
23	Unicare, Riyadh, Saudi Arabia	200
24	Pan Oil, Ras Al Khaima, UAE	150
25	Pyramid Edible Oil, Egypt Project	150
26	Oasis Grease & Lubricants, UAE	125
27	Mount Meru, Zambia	100
28	Mount Meru, Uganda	100
29	Klenzaids Contamination Control - Ghana Project	100
30	Maruti Pharma Pvt. Ltd., Nepal	100

Kirloskar Chillers has been a pioneer in the chiller industry, with revolutionary advancements enabling it to make a mark in India as well as across the globe. Numerous satisfied customers have favoured Kirloskar Chillers with repeat orders as a testimony to the minute attention paid to product quality & excellent after sales support rendered over the years.

Making Customers Happy!

We nurture Trust & Responsibility in all relationships. Through every action, we demonstrate our intent to be an organisation responsible towards Society & Nature. We drive various initiatives to extend a helping hand to society & help protect the environment.

Enriching Lives

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