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# GREEN AIR CONDITIONING

REVOLUTIONARY COOLING, HEATING, HUMIDIFICATION & REFRIGERATION  
SOLUTION FOR HEALTHY FUTURE

Commercial, Industrial, Residential & Governmental Projects HVAC & Power Solutions

windmason Arabia Company

شركة مصنع ويندماسون العربية



2024  
www.windmason.com

# INTRODUCING

## IDEC Supercool Air Conditioning Units

### WHAT IS IDEC?

IDEC, short for Indirect, Direct, Evaporative Cooling, is a central ducted air conditioning unit that provides excellent evaporative cooling for optimal human comfort. This unit offers water-based evaporative cooling without the need for a compressor.

### Saving on Bills and Reducing Carbon Footprint

Traditional cooling methods can lead to increased bills, a higher carbon footprint, and environmental heating. IDEC tackles these issues by using water for evaporative cooling, reducing electricity consumption by up to 80%, and providing effective indoor comfort. Unlike regular desert coolers, IDEC achieves the desired indoor temperature through its advanced features.

### IDEC

IDEC units come with an indirect evaporative stage, air filtration, and self-draining and cleaning features. They are designed to offer complete or partial cooling, ensuring the best possible human comfort.

### SUPERCOOL Technology for Ultimate Efficiency

Our specially designed 2-stage (direct and indirect) evaporative cooling technology, known as SUPERCOOL, not only saves significant electricity costs but also cools the air by 14°C to 16°C. This innovative approach consumes 80% less energy, delivers 100% fresh air cooling, and stands out as a compressor-free product.

### Compressor-Free Cooling

SUPERCOOL Central A/C utilizes a dual water radiator technology water flow cooling system, replacing Freon gas and traditional compressors. This technology excels in high ambient temperatures without the risk of overheating failures. With no compressor in the system, there's no fear of compressor failure even in challenging conditions.



**80%** Energy Saving

**95%** Dust Buster

**14-16 °C** Air Supply Temperature

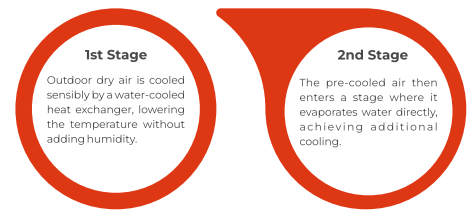
# INNOVATIVE TECHNOLOGY

windmason leads the way in creating and promoting IDEC Super Cool Units (Indirect, Direct, Evaporative, and Cooling) across the Middle East, Africa, and Asia. This special technology offers "cost-effective super cooling" in all kinds of weather, and IDEC Systems are designed for both dry and humid weather conditions.

## WHAT IS IDEC TECHNOLOGY?

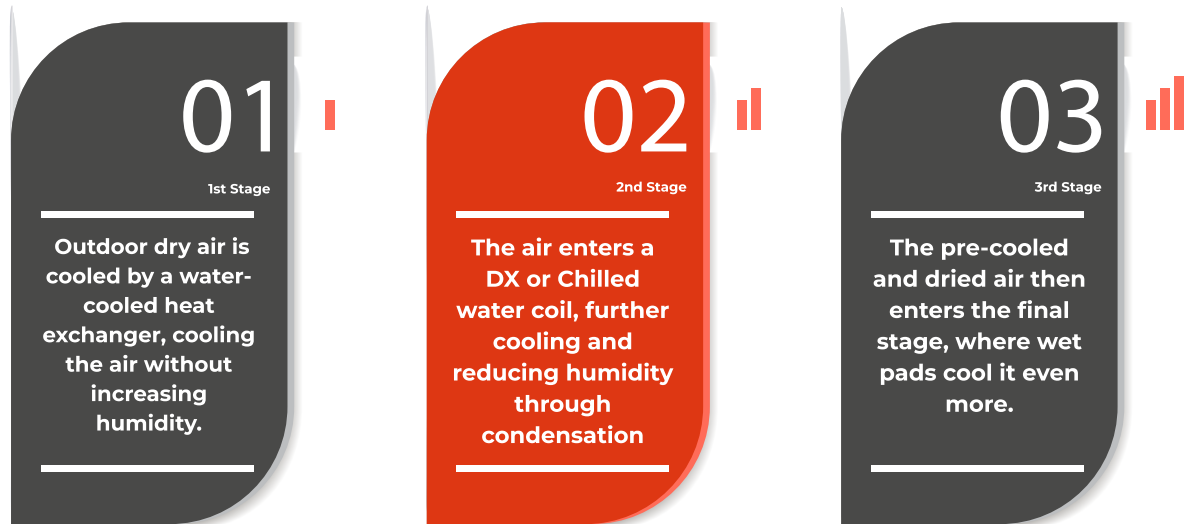
### 2-Stage Evaporative Cooling for Dry Weather:

For areas with low humidity and a wet bulb temperature below 25°C, known as 'dry weather' areas, IDEC systems use a 2-stage process:



### 3-Stage Evaporative Cooling for Humid Weather:

In 'humid weather' areas with high humidity and a wet bulb temperature above 25°C, IDEC systems employ a 3-stage process:



3-Stage IDEC Units deliver "Highly efficient cooling" in humid weather conditions, making Windmason's technology versatile for various climates.

# INNOVATIVE FEATURES

## **SUPER COOL AIR CONDITIONING REPLACES CENTRAL AIR CONDITIONING:**

The Supercool Air Conditioner comes with unique features that make it a great replacement for traditional Freon-based (Compressor based) Package type rooftop central Air Conditioners. You can use it with the same ducts and controls as your existing package A/C units, and it saves an impressive 70%-85% electricity compared to Central Freon A/C units.

## **SUPPLY AIR TEMPERATURE LESS THAN 18 °C:**

Supercool A/C units cool the air in two stages. First, they cool the air from 45 °C to 28 °C without adding humidity. Then, in the second cooling stage, the air flows through water and undergoes direct evaporation, cooling further to a comfortable 14 °C - 16 °C.

## **COMFORTABLE HUMIDITY:**

The sensible cooling in the first stage means less water vapor is picked up compared to direct hot air evaporation. This results in lower and more comfortable humidity levels in the room.

## **HOT AND COOL - OPTIONAL:**

Supercool A/C units can be equipped with an electric duct heater, similar to central air conditioners. The controller provides a heating mode for maintaining room temperature during the winter season.

## **STOP DUST 99% - OPTIONAL:**

Supercool A/C offers the option of adding fine filters to ensure fresh, cool air with up to 99% less dust and pollen entering the area. This feature guarantees clean and cool air for your room.

## **AIR FILTERS:**

Equipped with G4 aluminum washable dust filters, Supercool A/C units reduce dust in the air, providing cleaner air to the room.

## **BODY PANELS:**

All body panels have a 30mm thick insulated double skin PU foam, preventing ambient heat from entering the cabinet. This protection from solar heat gain ensures higher energy savings. Wet areas and the water tank are safeguarded by a reinforced fiberglass internal layer.

## OTHER KEY FEATURES:

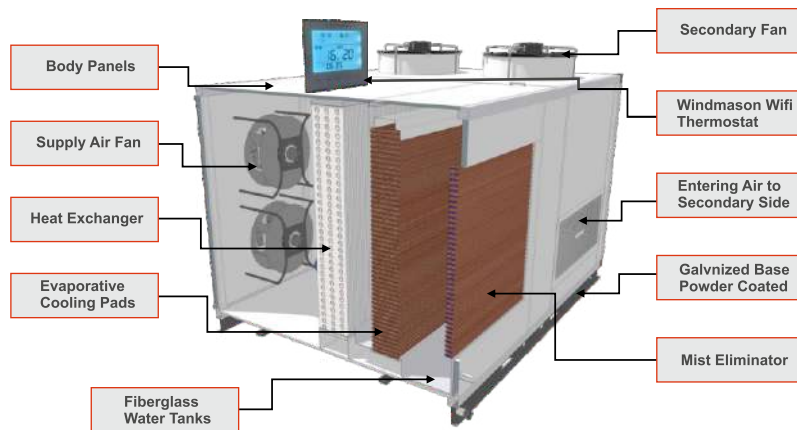
Comfortable maintenance of temperatures below 24 °C in dry weather conditions.

Touch screen smart thermostat, auto water drain, cleaning system, and water softener enhance overall performance and ensure additional cost-savings.

Supercool provides natural 100% fresh air.

Dry running protection: In case of no water, the unit will stop working.

- ✔ Comfortable maintenance of temperatures below 24 °C in dry weather conditions.
- ✔ Touch screen smart thermostat, auto water drain, cleaning system, and water softener enhance overall performance and ensure additional cost-savings.
- ✔ Supercool provides natural 100% fresh air.
- ✔ Dry running protection: In case of no water, the unit will stop working



### BASE FRAME

The unit's base frame is made of galvanized steel with a powder-coated finish.



### CASING

The body structure is built using aluminium profiles with a 30mm double-skin sandwich panel metal profile.



# MAJOR COMPONENTS

## SENSIBLE COOLING, HEAT EXCHANGER COIL:

The coil heat exchanger is a tube and fins type air-to-water heat exchanger. The tubes are made of heavy-gauge copper with thicker walls. The fins are wavy aluminum, with 13 fins per inch density. The frame is galvanized steel, reinforced with bends. It has heavy-gauge oversized headers with threaded connections to PVC water circulation pipes. The copper tubes are mechanically bonded to aluminum fins, and the coils have been tested for leakages under high-pressure air.



## SECONDARY AIR FAN

The fans are axial type top discharge, protected by a metal mesh fan guard. The blades are coated to prevent corrosion, designed with the best air foiling for high performance and low noise. The water-sealed electric motor is directly coupled with the fan, and sturdy round brackets provide support.



## PRIMARY AIR FAN

A direct drive external rotor plug fan with a variable speed inverter. It features an aluminum heavy-gauge impeller, round heavy-gauge brackets, a smooth air inlet cone, and the inverter (VFD) provides electrical protection to the motor.



## PRIMARY WATER PUMP

A direct drive external rotor plug fan with a variable speed inverter. It features an aluminum heavy-gauge impeller, round heavy-gauge brackets, a smooth air inlet cone, and the inverter (VFD) provides electrical protection to the motor.



## SECONDARY WATER PUMP

A direct drive external rotor plug fan with a variable speed inverter. It features an aluminum heavy-gauge impeller, round heavy-gauge brackets, a smooth air inlet cone, and the inverter (VFD) provides electrical protection to the motor.



## AIR FILTERS

Equipped with G4 Aluminum air filters that are washable, easily accessible, removable, and have a 20mm thick filter media.



## VARIABLE SPEED DC INVERTERS

The DC inverter receives feedback from the room temperature controller and provides PID functionality to control the room temperature by adjusting the speed of fans. This function not only saves water and power but also ensures smooth indoor comfort.



# HOW IT WORKS

The SUPERCOOL-IDEC unit operates based on water evaporation principles.

Here's how it works:

## Indirect Sensible Cooling Stage:

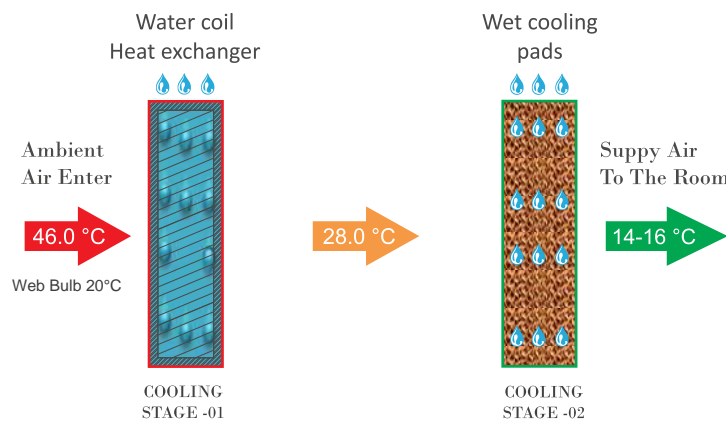
The hot and dry outdoor air enters the first stage for sensible cooling.

Here, the water coil (heat exchanger) cools down the air without adding humidity.

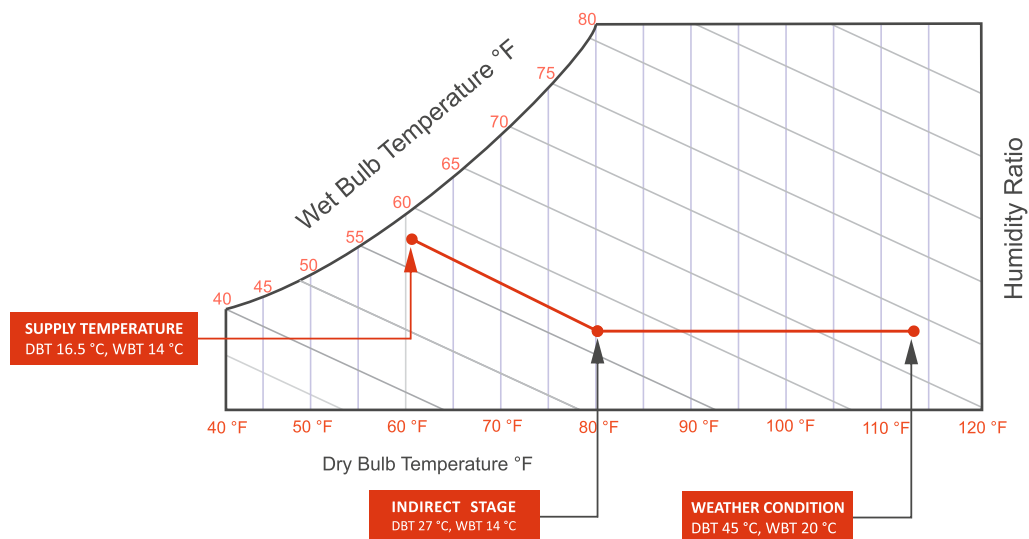
## Direct Evaporation Stage:

In the second stage, the air undergoes direct evaporation through the wet cooling pads.

This process achieves the maximum wet bulb temperature, ensuring effective cooling.



(2-STAGE IDEC COOLING AT PSYCHROMETRIC CHART)



# 2 Stage IDEC Cooling Unit

## Technical Data:

FEATURES	IDEC MODEL				
	IDEC-2.4KCD	IDEC-3.6KCD	IDEC-4.8KCD	IDEC-7KCD	IDEC-10KCD
Supply Air CFM -Rated	2400	3600	4800	7000	10000
Ext. Static Press Pascal	100	150	175	220	250
Cooling Capacity -Nom. TR	5	7.5	10	15	25
Cooling Area -Approx. m2	68	103	140	250	450
Heating Capacity kW	10	15	20	36	36
Performance- EER(Btu/h/w)	31	36	40	42	36
Achievement of wet bulb	115%				
Electrical Power	220/380v-60hz/3ph				
Input Power-kW Cooling Only	1.50	1.65	3.00	3.50	5.50
Current Amp cooling only	7.0 - 4.0	7.0 - 4.0	11 - 8.0	11 - 8.0	18 - 13
Current Amp heating	48	75	45	77	80
Water Cons. Max. M3/24 hrs (Peak temp)	1.00	1.50	2.00	3.00	5.00
Weight Operating-kg	750	850	1300	1350	1500
Net Weight-Kg	550	650	1100	1150	1200

## Important Notes:

Water usage is calculated based on 15 hours of daily operation.

Design weather conditions:

Dry Bulb Temperature (DBT) and Wet Bulb Temperature (WBT) of 45 °C / 20 °C.





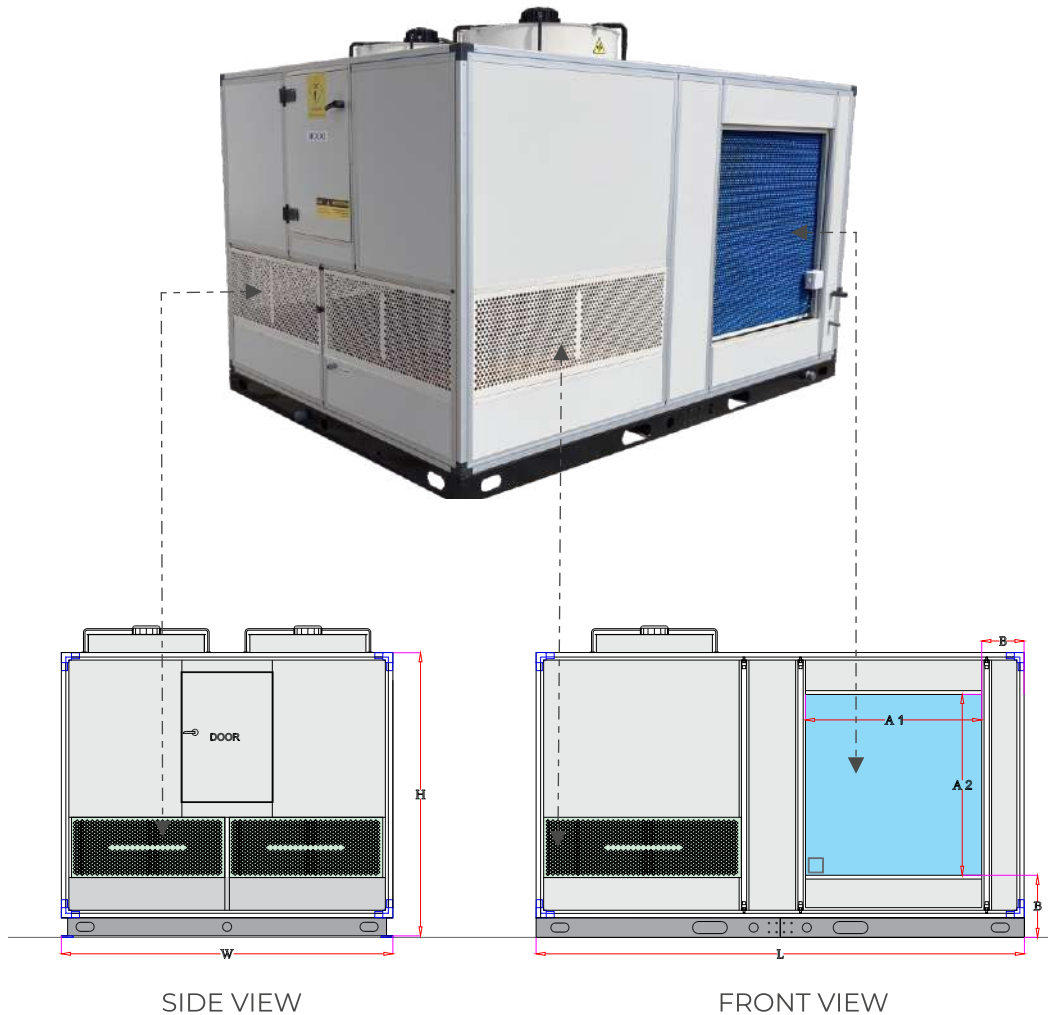
# 2 Stage IDEC Cooling Unit

## Physical Dimensions

MODEL No.	CAPACITY	L (mm)	W (mm)	H (mm)	A1 (mm)	A2 (mm)	E (mm)	B (mm)
IDEC-2.4KCD	5.0 TR	1666	1550	1340	600	800	105	350
IDEC-3.6KCD	7.5 TR	1660	1740	1470	720	950	130	350
IDEC-4.8KCD	10 TR	2300	1650	1390	900	900	200	350
IDEC-7KCD	15 TR	2480	1850	1580	1000	1000	230	380
IDEC-10KCD	25 TR	3240	2200	1880	1200	1200	275	380

Note:

As we are constantly evolving, the unit's dimensions may change. Please reach out to [windmason](http://www.windmason.com) for updates before incorporating the physical dimensions into your project design.



3-STAGE UNIT

# 3 Stage IDEC Cooling Unit

## Technical Data:

FEATURES	IDEC MODEL				
	IDEC-2.4KCD	IDEC-3.6KCD	IDEC-4.8KCD	IDEC-7KCD	IDEC-10KCD
Supply Air CFM -Rated	2400	3600	4800	7000	10000
Ext. Static Press Pascal	100	150	175	220	250
Cooling Capacity -Nom. TR	5	7.5	10	15	25
Cooling Area -Approx. m <sup>2</sup>	68	103	140	250	450
Performance-EER(Btu/h/w)	24	28	26	28	27
Achievement of wet bulb	120%				
Electrical Power	380v /3ph				
Input Power-kW Cooling Only	3.30	3.90	5.74	7.45	8.50
Current Amp cooling only	5.61	6.63	9.76	12.67	14.45
Water Cons. Max. M3/24 hrs (Peak temp)	0.80	1.20	1.60	2.40	3.50
Weight - Operating kg	440	660	825	1265	1485

### Important Notes:

Water usage is calculated based on 15 hours of daily operation.

Design weather conditions include a Dry Bulb Temperature (DBT) and a Wet Bulb Temperature (WBT) of 45°C and 20°C, respectively



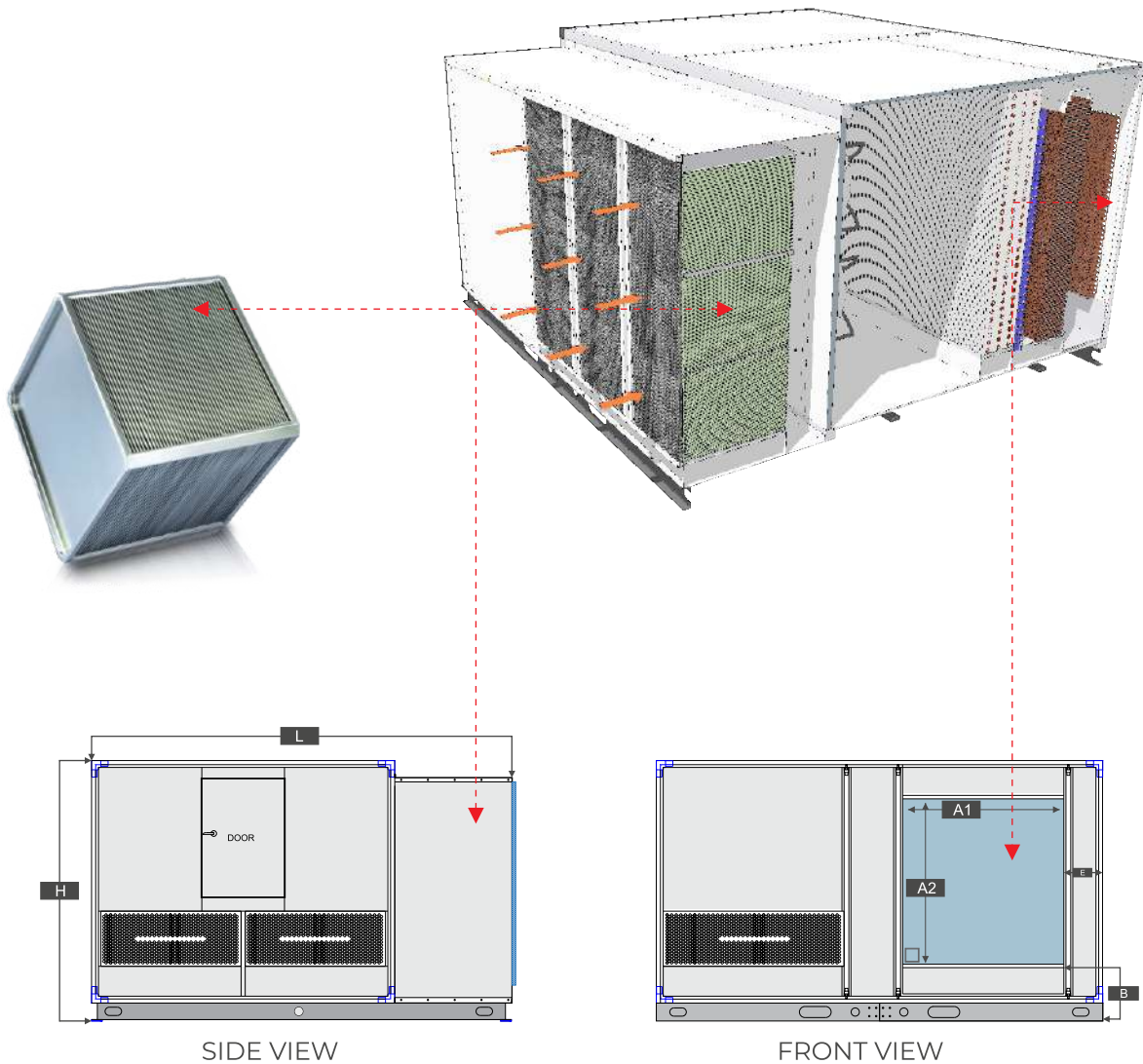
# 3 Stage IDEC Cooling Unit

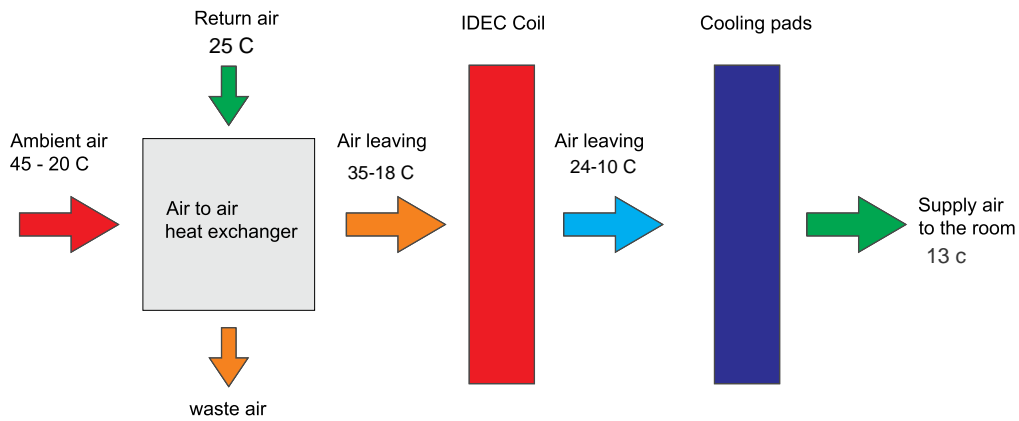
## Physical Dimensions

MODLE No.	CAPACITY	L (mm)	W (mm)	H (mm)	A1 (mm)	A2 (mm)	E (mm)	B (mm)
IDEC-2.4KCD	5.0 TR	1666	1550	1340	600	800	105	350
IDEC-3.6KCD	7.5 TR	1660	1740	1470	720	950	130	350
IDEC-4.8KCD	10 TR	2300	1650	1390	900	900	200	350
IDEC-7KCD	15 TR	2480	1850	1580	1000	1000	230	380
IDEC-10KCD	25 TR	3240	2200	1880	1200	1200	275	380

**Note:**

As we are continuously improving our products, the unit's dimensions may undergo changes. Please reach out to [windmason](http://www.windmason.com) for the latest updates before incorporating the physical dimensions into your project design respectively.

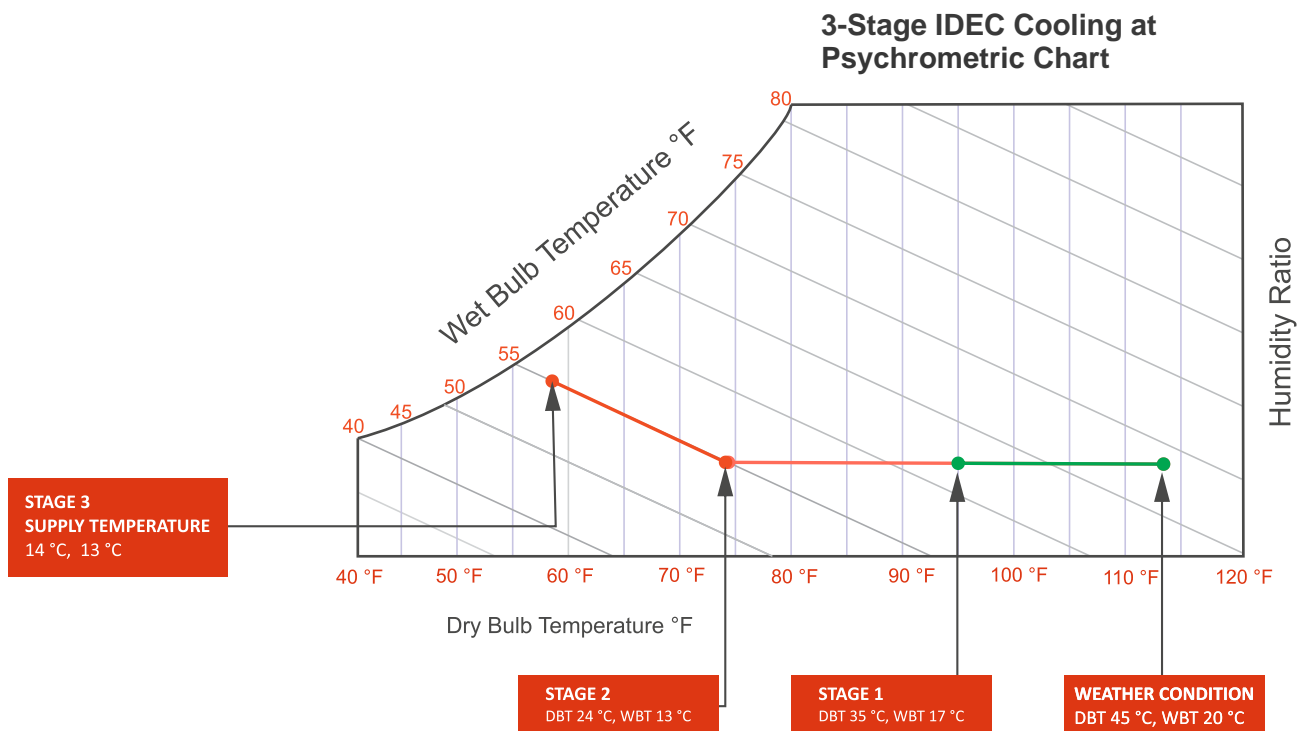




### 3-Stage Evaporative Cooling Diagram

### 3-Stage IDEC Cooling at Psychrometric Chart

TEMPERATURE DATA		
Dry Bulb Temperature Ambient	113 °F	45 °C
Wet Bulb Temperature Ambient	68 °F	20 °C
Supply air Temperature	57 °F	14 °C



# 4 Stage IDEC Cooling Unit

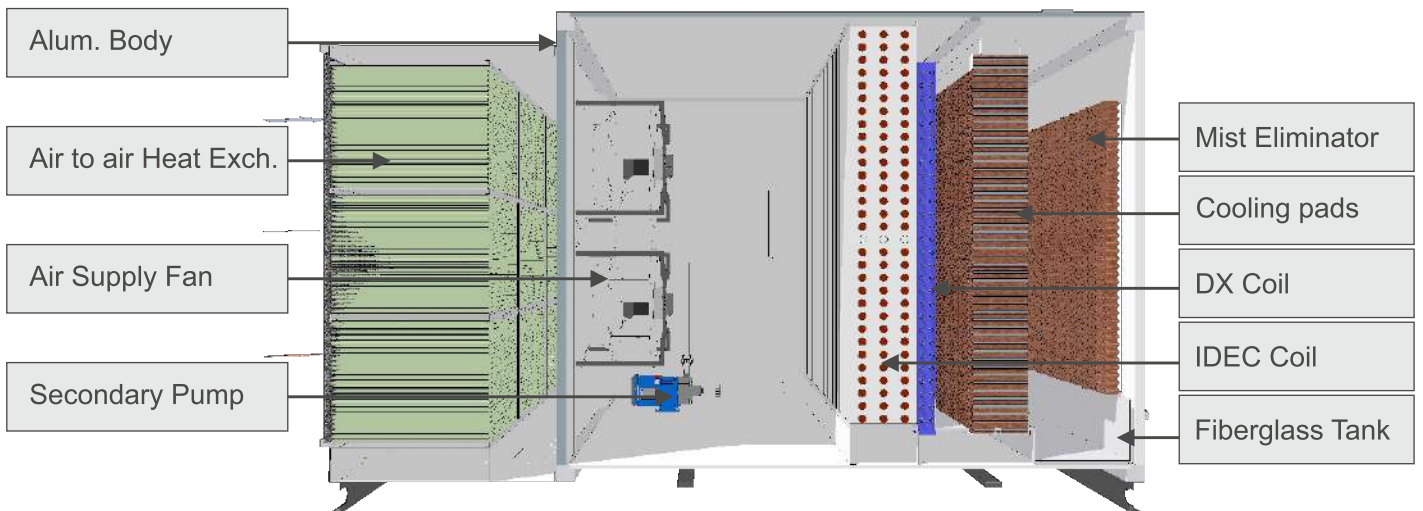
## Technical Data:

FEATURES	IDEC MODEL		
	IDEC-4.8KCD	IDEC-7KCD	IDEC-10KCD
Supply Air CFM -Rated	4800	7000	10000
Ext. Static Press Pascal	175	220	250
Cooling Capacity -Nom. TR	10	15	25
Cooling Area -Approx. m2	140	250	450
DX Stage capacity TR	3.0	7.5	10.0
Performance-EER(Btu/h/w)	26	28	27
Achievement of wet bulb	130%		
Electrical Power	380v /3ph		
Input Power-kW Cooling Only	8.74	14.95	18.50
Current Amp cooling only	14.85	25.42	31.45
Water Cons. Max. M3/24 hrs (Peak temp)	1.60	2.40	3.50
Weight - Operating kg	1350	2070	2430

## Important Notes:

Water consumption for 15hours per day operation.

Design weather conditions DBT, WBT 45 °C / 20 °C





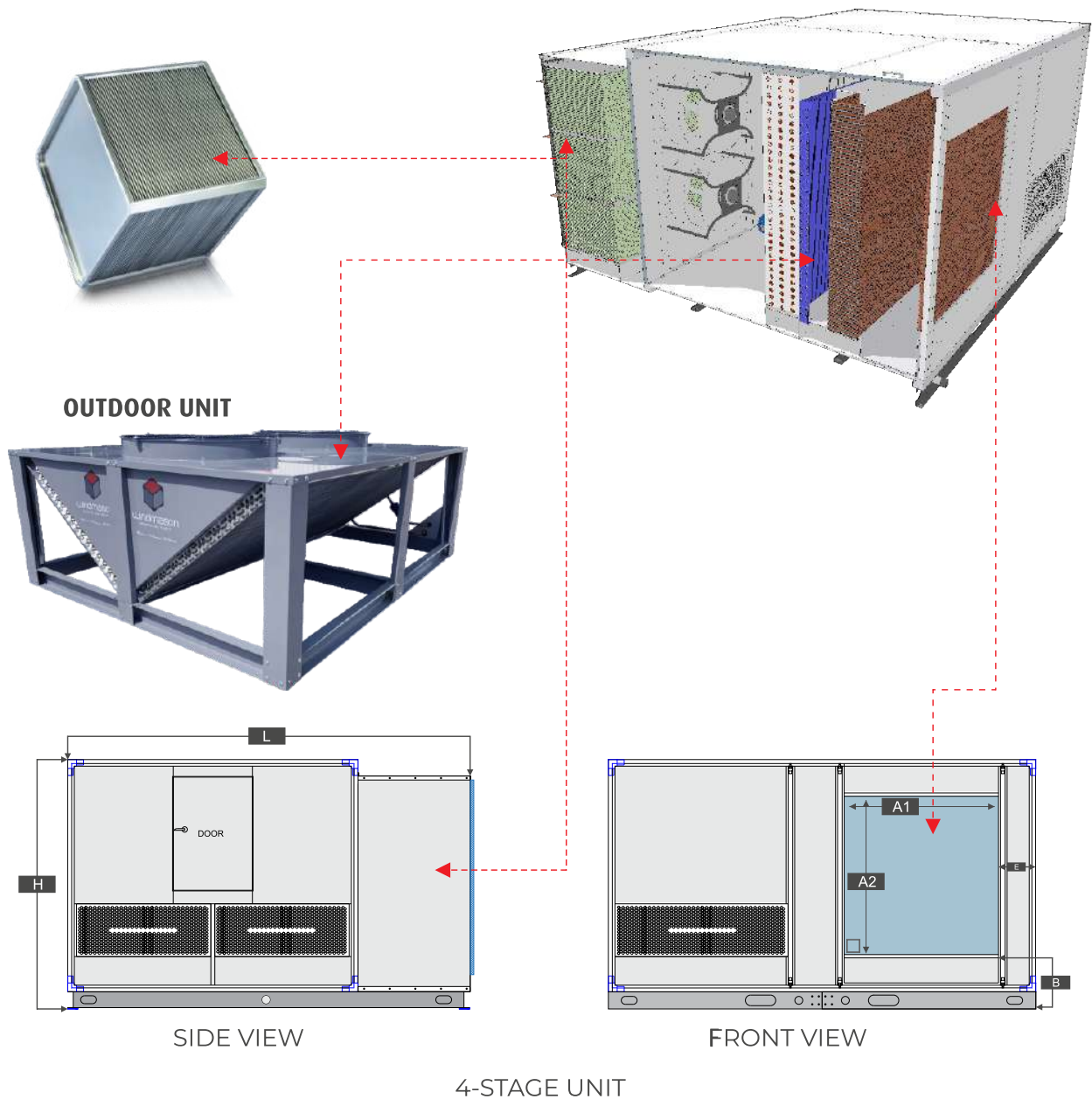
# 4 Stage IDEC Cooling Unit

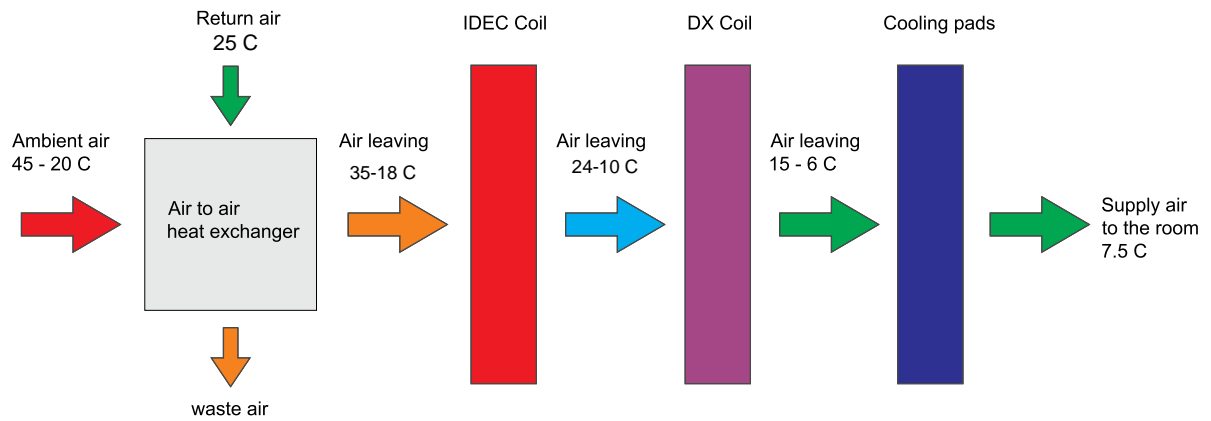
## PHYSICAL DIMENSIONS

MODLE No.	CAPACITY	L (mm)	W (mm)	H (mm)	A1 (mm)	A2 (mm)	E (mm)	B (mm)
IDEC-4.8KCD	10 TR	2300	2500	1390	900	900	200	350
IDEC-7KCD	15 TR	2480	2700	1580	1000	1000	230	380
IDEC-10KCD	25 TR	3240	3050	1880	1200	1200	275	380

### Note:

Due to the continuous development the dimension of the unit may change, please contact [windmason](http://www.windmason.com) for updates before considering the physical dimensions in your project design.

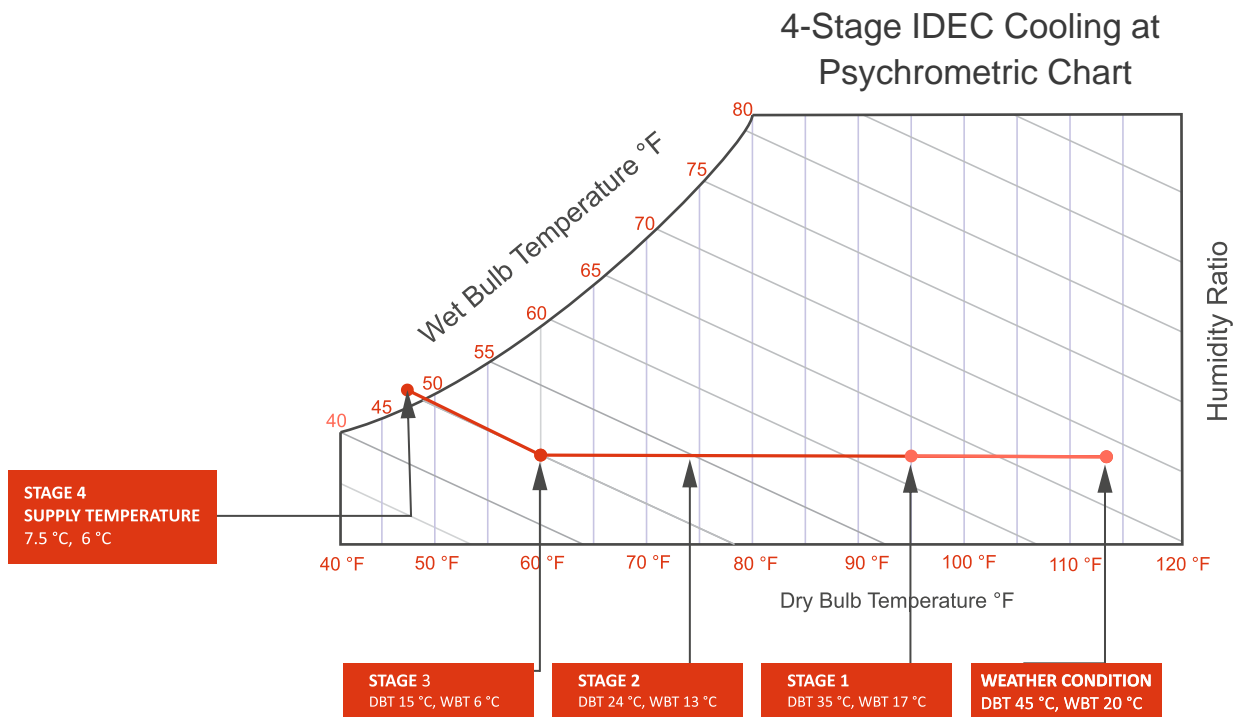




### 4 Stage fresh air cooling unit

### 4-Stage IDEC Cooling at Psychrometric Chart

TEMPERATURE DATA		
Dry Bulb Temperature Ambient	113 °F	45 °C
Wet Bulb Temperature Ambient	68 °F	20 °C
Supply air Temperature	45 °F	7.5 °C



# Installation of IDEC Units



# Our Key Clients

			
Al Tazaj Restaurant	Al Romansiah	Best Harvest Trading Co	LSC
			
Gulf Catering Co	Al Romansiah	Imile Logistic	Multi Brands Trading
			
RAQAM Company	ADEX Company	IHCC	Al-Watania Plastic
			
Al-Babain Food	Sahara Mall	Al Jabar Laundry	Al Yasra Fashion
			
Al rashed Food Group	Dar Al Uloom University	White Crystal For Filling	Packing Product Co.
			
Awarid Cosmetics Co.	National Water Company	First Class Aviation	Saudi Eraad Defense
			
Jarir Book Store	Al Karama Food Co	Creation Source Trading	Continental Hotel Riyadh



# Our Key Clients

 مستشفى الرياض riyadh hospital	 برودان Brodan	 Medical Elements العناصر الطبية	 التقدم الطبي Advance Medical
Riyadh Hospital	BRODAN Medical Co.	Medical Element Co.	Advance Medical Co.
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PANDA Hyper Market	NESTO Hyper Market	OTHAIM Hyper Market	Al Adil Est. Market.
 Arak	 مصانع طريق الشرق للبرستيك Al Sharq Road Factories for Plastic	 DELTA PLASTICS PACKAGING SOLUTIONS الدلتا للبلاستيك	 وقت اللياقة FITNESSTIME PRO
Arak Plastic Co.	Al Sharq Plastic Co.	Delta Plastic Co.	Fitnessen Time Pro.
 PAKISTAN INTERNATIONAL SCHOOL RIYADH 1984 DUTY DEVOTION	 مدارس رياض نجد Riyadh Najed Schools تعلم لتكون	 كياؤ الفنية Kayan Technical	 ADEA MAS-ADEA ARABIA CO. شركة ماس اديا العربية.
Pakistan Inter. School.	Riyadh Najed School	KAYAN Tec. Contr. Co.	Mas Adea Co.
 AL HADAF Al Hadaf Al Deyag Contracting & General Maintenance Co. Ltd. شركة الحداف للتجارة والاستثمار	 DA DECO ART شركة ديكو آرت للتجارة والاستثمار For Trading & Investment Co.	 خطوة جمل CAMEL STEP	 نار الشام Nar Al -Shawaya Rest.
Al Hadaf Serv. Co LTD.	Art Decor Co	Camel Step Company	Nar Al -Shawaya Rest.
 Methaq Contracting Co.	 PREMIER CONSTRUCTION COMPANY	 Deemah	 السعيد ALSAEED مجموعة محمد السعيد للتجارة والصناعة M. ALSAEED GROUP TRD. INDUST.
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