# The Company



AIR CONDITIONING

#### **COMPANY SYNOPSIS**



Sabro Group (Pvt.) Ltd. Is the pioneer Heating Ventilation and Air conditioning (HVAC) System Company in Pakistan.

The history of Sabro corporates dates back to more than five decades of continuous achievements.

Sabro Corporate

was established in the Year 1968.



#### **COMPANY SYNOPSIS**



## The 1970s

Introduced 1st Central station Air Handling Unit (AHU) In Pakistan.
Introduced 1st Commercial-based Self-contain Package type Unit (ASC Model series) In Pakistan.
Introduced 1st Commercial-based Split Package type Unit (ASU Model series) In Pakistan.

## The 1980s

Introduced 1st Commercial-based Water-cooled package Unit (WCP Model series) In Pakistan.
Introduced 1st Commercial-based Water-cooled package Unit (WCP Model series) In Pakistan.
Introduced 1st Commercial-based Split Package type Unit with remote O-U (ARC Model series) In Pakistan.
Introduced 1st Commercial-based Air-cooled package Chiller (AWC Model series) In Pakistan.
Introduced 1st Commercial-based Water-cooled package Chiller (WWC Model series) In Pakistan.
Introduced 1st "Split-Package Wall - mounted A-C" (Mini - Split Models series) for Domestic use In Pakistan.

## The 1990s

Introduced 1st Commercial-based Fan Coil Unit (FCU Model series) In Pakistan. Introduced 1st Commercial-based High efficiency Fan (Fresh Air/Exhaust-vent Fan Models – Forward Curved/Backward Inclined) In Pakistan.

Introduced 1st Commercial-based Hot Water Generator (HWG Model series) In Pakistan.
Introduced 1st Commercial-based Electrical Steam Humidifier (ESH Model series) In Pakistan.
Introduced 1st Commercial-based Air Curtain (A-C Model series) In Pakistan.
Introduced 1st Commercial-based Refrigerated De-humidifier (DH Model series) In Pakistan.

## Achievements In The New Millennium

- 2000- Produced Spark Free Air-conditioners for Qatar army.
- Developed Microprocessor controller.
- 2003- Expanding exports to Saudi Arabia, Kuwait, Qatar and Dubai.
- Design, development and production of Commercial Units for Pak railway.
- 2004- Launching of Polyurethane Foaming Setup (insulation density of 38.5-40 kg/m3)
- Design, development and production of Commercial Units for Pak Navy.
- 2005- Launching of Full-fledged R & D village. Initially started in 1986.
- Foundation of Sabro Technology (Pvt.) Ltd.
- Design, development & production of Commercial Units for PAF.
- Achievement of Biggest Ever Export Order for Kuwait.
- 2006- Development of Thermal Break Aluminum Profile in commercial Air Handling units.
- Development & production in all types of commercial units with CFC Free Refrigerants.
- 2007- Development of Shell & Tube Type Shell.
- 2008- Development & production of Precision Air-conditioners with Infrared Heaters.
- 2009- Development on Propane Heating Systems. International Contract signed with Etiselat.
- 2010- Resolute Development on Latest HVAC equipment with CFC free based refrigerants.
- 2011 Design, Development & Production of Commercial Units for Afghanistan.
- **2012-** Design, Development & Production of BMS Technology.
- 2013- Research & Development on Cost effective & Energy efficient Cooling/Heating systems.
- **2014-** Obtained BS EN ISO 9001:2008.
- 2015- Research & Development on DC Inverter VRF systems.
- 2016- Research, Design & Development of Precision, Draw through floor standing units.
- 2017- Research, Design & Development of Environmental control unit (ECU), for PAF Radar system.
- **2018** Research, design and development of Precision Cabinets-solar based power generation.
- 2019-20- Design & Development of Air/Water cooled Screw Chillers & centrifugal Chillers.
  - Research, Design & Development of DESICCANT ROTOR Based Dehumidification System.
- 2021-22- Research, design and development of Plasma Air Sterilizers against COVID-19...
  - Design & Development of DC Inverter Commercial Air-Conditioners.
- 2022-23 Development of DC 24V-AC Package unit for vehicle air-conditioning.



#### **QUALITY ASSURANCE & QUALITY CONTROL**



- All products manufactured must pass all stringent quality testing procedures. A standard inspection and testing plan is followed for all jobs. Quality is a continuous process at Sabro. This means that we continuously concentrate on improving our own performance to ensure that our clients continuously benefit from it. Our aim is to meet your expectations every time. We take a proactive stance towards quality moving beyond QC to QA, so you can be confident that your requirements will be met with best quality-consistently:.
- Obtained ISO 9002 Certification in 1997.
- Obtained ISO 9001 Certification in 2000.
- Obtained BS EN ISO 9001:2008

  (HVAC Equipment(OEM) From NQA.









## DC INVERTER-Domestic/Commercial

- Provision of Cool / Hot Air
- 1 Ton to 8.5 Ton
- Benefits For Users
- Energy Modeling
- Energy Control
- Quiet Operation
- Precise Comfort Control
- Dehumidification control
- High Efficiency
- Efficient Design
- Benefits For Installers





Wall Mounted Model 1.5 Ton - 2 Ton



Floor Standing Unit 4.25 Ton



Ducted Concealed Unit 1.5 Ton - 2 Ton - 4 Ton



Outdoor Unit 1.5 Ton - 8.5 Ton



Cassette Type Unit 2 Ton - 4.25 Ton



Floor Standing Unit 8.5 Ton

In 1990 Sabro introduced 1st Domestic split AC in Pakistan



# Air Cooled Self Contain Package

- ASC-Air cooled self contain package Series
- Cooling/Heating
- 3.25 Ton 150 Ton
- Available with DC Inverter Technology
- Available in Ducted Front Discharge/Top Discharge arrangement
- Available in single & double skin, Panel thickness-37mm to50 mm, PU foaming & Polystyrene insulation
- Available in Modular & Non modular Arrangement
- Available with Custom make High static pressure applications
- Available with sterile air conditioning gadgets
- Available in customized construction of vertical type to meet space limitations for critical installations
- Available with explosion proof set-up
- Available with Hi-Grade Thermal Break Profile
- Available with acrylic protective coating





# Air Cooled Split Package

- ASU-Air cooled self split package Series
- Cooling/Heating
- 3.25 Ton to 150 Ton
- Available with DC Inverter Technology
- Available in single & double skin, Panel thickness-37mm to50 mm, PU foaming & Polystyrene insulation
- Available in Free/Ducted Front Discharge/Top Discharge
- Available in Modular & Non modular Arrangement
- Available with Custom make High static pressure applications
- Available with sterile air conditioning gadgets
- Available in customized construction of vertical type to meet space
- limitations for critical installations
- Available with explosion proof set-up
- Available with Hi-Grade Thermal Break Profile
  - Available with acrylic protective coating





# Floor Standing Split Unit

- EVJ-EXJ(Precision Draw-through)
- Floor Standing Unit
- Cabinet Type Split Air Conditioner
- Cooling Capacities:
  - 4.125 Ton/49,100 BTU 20 Ton/240,000 BTU
- Heating Capacities:
  - 4.175 Ton/50,100 BTU 20.5 Ton/246,000 BTU
- AVAILABLE WITH DC INVERTER TECHNOLOGY
- Durable, bake painted, metal body
- Service friendly,
- draw-through design for easy coil cleaning
- Synthetic filter media
- protected by aluminum mesh and frame,
  - Hidden thermostat to avoid public misuse,
- Rerfect for high-foot-fall areas,
  - Custom color options.





# Air Handling Units

AHUs(Central Station Air Handling Units)

800 - 40000 CFM (Low, Med & High Static Pr.) Available in single & double skin, Panel thickness-37mm to 50 mm, PU foaming & Polystyrene insulation

- Available with VFD
- Available in Modular & Non modular Arrangement
- Available with Custom make High static pressure applications
- Available with sterile air conditioning gadgets
- Available in customized construction of vertical type to meet space limitations for critical installations
- Available with explosion proof set-up
- Available with Hi-Grade Thermal Break Profile
- Available with Acrylic protective coating
- Available with CHILLED WATER COILS & DX COILS



## Fan Coils

- FCU(Fan Coil Unit)
- 300 to 3200 CFM
- Available with water proof motor arrangement
- Available with acrylic protective coating
- Models up to 6 Tons capacity are available on demand





## Water Cooled Air Conditioner

- WCP(Water Cooled package) Unit
- 3.5 Ton to 150 Ton
- Available with DC Inverter Technology
- Available in single & double skin, Panel thickness-37mm to 50 mm, PU foaming & Polystyrene insulation
- Available with Custom make High static pressure applications
- Available with sterile air conditioning gadgets
- Available in customized construction of vertical type to meet space limitations for critical installations
- Available with explosion proof set-up
- Available with Hi-Grade Thermal Break Profile
- Available with acrylic protective coating



## Chillers

- Chillers(Air cooled/Water cooled)
- AWC: 2.7 Ton 300 Ton
- WWC: 3.0 Ton to 300 Ton
- Available with DC Inverter Technology
- Available with Scroll and S.H Reciprocating Compressors
- Available in Split Package Arrangements- Custom Make
- AWC-Available in Top Discharge, Side Discharge & Bottom Discharge
   Arrangements
- AWC- Available with Acrylic protective coating

## **Chillers Shells**

(Air cooled/Water cooled)

Custom Make





Sabro



# Chillers with Centrifugal Fans

- Chillers (Air cooled with Centrifugal Fans)
- AWC: 2.7 Ton 300 Ton
- Available with DC Inverter Technology
- Available with Scroll and S.H Reciprocating Compressors
- Available in Split Package Arrangements- Custom Make
- AWC-Available in Top Discharge, Side Discharge & Bottom
- Discharge Arrangements
- AWC- Available with Acrylic protective coating







**Custom Make** 

# Sabro

# Cold Storage Series

- CSU(Cold Storage Split package) Unit
- 1.25 Ton to 50 Ton
- Inside Temperature Range: -20°c --- 8°c
- Available in single GI Sheet casing & double skin, Panel thickness-37mm to 50 mm, PU foaming & Polystyrene insulation
- Available with sterile air conditioning gadgets
- Available with explosion proof set-up



# Sabro

# Fan Series

- Exhaust/Ventilation Fans
- Centrifugal Fans
- Forward Curved
- Backward Inclined
- Airfoil
- Available with VFD Drive
- CFM: 350-60000

## **Hot Water Generator**

- Hot water provision
- 3.0 Tons to 100 Tons





## Electrical Steam Humidifier

- Humidity Control
- Humidification: 3.0 to 6.0 Kg/Hr
- Customized/Specialized ESH available on Demand

# Refrigerated De Humidifier

- DH Series
- Metal Body
- Plastic Body
- Refrigeration based Dehumidification;

50 to 200 L/Day



# Sabro

## Fresh Air Units

- Provision of Fresh Air
- 300 to 20000 CFM(Fresh air)
- Available with VFD Drive



# Sabro

## Electric Unit Heater

- Provision of Hot Air
- Commercial / Industrial
- 1 KW To 50 KW

## Air Curtains

- Low Pressure/High Pressure
- Standard: 36", 48" & 60" width
- Customized Specialized widths available on Demand



# Sabro

## Desiccant De Humidifiers

Specialized/Customized D-DH Equipment is available on demand

- D-DH Equipment
- with Desiccant Wheel





Custom Make: Available Up to 12000 CFM-Process Air



## Desiccant De Humidifiers – Standard Models

The state of the s			1	_		7	
Description		DHF 100	DHF200	DHF 400	DHF 600	DHF 900	DHF 1200
Process air				-		· ·	
Air flow rate	Lit/sec	47.2	94.4	172	283	423	565
(Standard)	M3/h	170	310	620	1020	1525	2033
	CFM	100	182	365	600	900	1200
Fan external	Pa	150	150	200	200	200	200
static pr. (ESP)	In H2O	0.6	0.6	0.8	0.8	0.8	0.8
Process fan motor power KW		0.11	0.11	0.37	0.55	1.1	1.5
Motor winding insulation class		F	F	F	F	F	F
Reactivation air							
Air flow rate	Lit/sec	16	28	59	95	142	193
(Standard)	M3/h	56	102	212	340	510	695
	CFM	33	60	125	200	300	409
Fan external	Pa	100	100	150	150	150	150
Static pr. (ESP)	In H2O	0.4	0.4	0.6	0.6	0.6	0.6
Process fan motor power KW		0.09	0.09	0.11	0.37	0.55	0.75
Motor winding insulation class		F	F	F	F	F	F
Reactivation heat	er						
Heater power	KW	1.9	3.5	7.5	12	16	22
Air temperature rise °F (°C)		182(83)	184 (84)	189 (87)	189 (87)	189 (87)	184 (84)
Electrical data							
Total power	KW	2.11	3.71	8.0	12.94	17.7	24.2
Voltage supply		220-1-50HZ			380-415-3- 50-HZ		
Air filter							
Filter class		Eu			3 grade leak tight filter		
Dimensions	Height	500	500	500	550	580	600
(MM)	Width	914	965	1016	1040	1143	1219
	Depth	610	635	685	725	790	865
Weight (APP)	KG	47	58	80	110	165	182

Custom Make: Available Up to 12000 CFM-Process Air



#### Desiccant De Humidifiers – Customers List

- SWISS PHARMA-KARACHI
- AGP- KARACHI
- SAMI PHARMA- KARACHI
- STAR LABPRTORIES-LAHORE
- DEFENCE SECTOR



## Chillers

- Air cooled Screw Chillers
- Available with DC Inverters
- Air cooled Screw Chillers:

#### 20 Tons to 400 Tons

- Sabro technologies is a wholly owned subsidiary of Sabro group Pvt., Ltd., specializing in research, development and manufacturing of screw type products. The company sells air cooled screw chillers with optimum COP (HIGH ENERGY EFFICIENCY RATIO).
- Adhering to the principle of integrity, innovation and excellence, the company constantly creates new products every year according to the market demands. The air cooled screw chillers have the features of high energy efficiency ratio, high reliability, high efficiency, and high automation etc., which continues to lead the domestic refrigeration energy industry, opening a new era of high efficiency screw type of products.





## Chillers

Air cooled Screw Chillers-MAJOR PARTS















## Chillers

Air cooled Screw Chillers-MAJOR PARTS











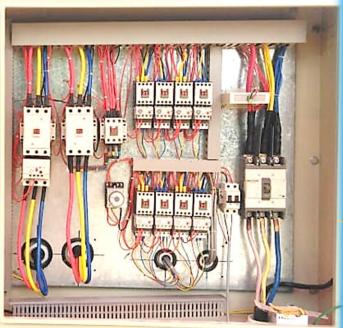




## Chillers

Air cooled Screw Chillers-ELEC. CONTROL PANEL







## Chillers

- Water cooled Screw Chillers
- Available with DC Inverters
- 63 Tons to 600 Tons

## Centrifugal Chillers

- Available with DC Inverters
- Capacity:

500 Tons to 3000 Tons





## **OEM Products**

#### Custom Make



Duct Heater Unit



Motorized Dampers (with louvers)



Manual Air Dampers



Cabinet Type (Fresh Air Unit)



Electric Heater (baseboard)



DX-Evaporating cooling with Diesel Furnace





# Sabro

# Plasma Air Sterilizer Against COVID-19





#### **CUSTOMIZED SOLUTIONS FOR PAK DEFENSE**



- Development of stainless steel special fan and Customized H class motor for radiation area for PAEC.
  - Special fan coil unit, copper to copper heat exchanger with stainless steel heavy gauge casing fan PAEC, Islamabad
- High static high volume exhaust fan of 45" Dia- KANUPP Karachi power plant
- Tunnel package chiller unit first time developed by Sabro for NDC
- Special Make, Self contained package unit for NDC
- Plastic casing molds developed for tear gas shell in 2000 for DESTO Labs
- AC system with explosion proof features for low humidity control Developed for POF Wah.

#### Customize solution for PAF:

- Packaged type mobile air-conditioner (ASM 500S) for F-16 & Falcon
- Sabro precisión environmental control unit (ECU) for RADAR Systems





#### **CUSTOMIZED SOLUTIONS FOR PAK DEFENSE**



#### **Customize Solution for Pak Navy**

- Sea water condenser with 70/30 copper-nickel for engine oil cooler of Shamsher & Zulfiqar battle ships
- Sea water gear oil cooler for small boats of Pak maritime security
- Fully Customized Packaged type mobile air-conditioner, Designed for Pak Navy submarine
- Alternate Air conditioning for MCR room on Naval Ships.
- 24V DC packaged units for Hovercraft Air conditioning.
- Small AHUs for Naval ships, room air conditioning.

#### **Pak Railway**

Customize package type air-conditioner, Designed for Pak Railway













#### **CUSTOMIZED SOLUTIONS FOR PAK DEFENSE**



#### Zero Leakage Dampers (Developed) for SPD

- Bubble Tight Dampers with Zero Leakage
- Sabro Make bubble-tight damper is special design For isolation applications. The damper has the Lowest possible leakage rating: Zero
- The silicon blade seals and double-gland axle seals provide bubble-tight performance.

#### **Applications Include:**

- Medical facilities
- Laboratories
- Microelectronic manufacturing
- Federal Buildings





## COMPUTERIZED FAN BALANCING M/C



#### JP Dynamic Fan Balancing Machine

The Powerful Industrial Control Measuring Instrument JP 580-B

Auxiliary assistance for correction, higher balance efficiency

Rotation Range: 120-12000r/min

Minimum Resolution: 0.01mg

Shortest Measuring Time: 3s

Measuring Dynamic Range: 1:100000

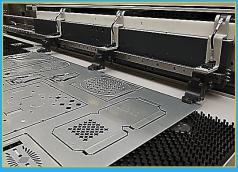
- Place the rotor on the bearings, set the rotor parameters
- and start to run the rotor.
- Adjust the photoelectric head(for belt drive balancing only)
  - until the speed meter signal column changes, showing the speed and signal.
- Process bar starts to show the process once the speed reaches the set Rev. The Unbalance amount displays when the process is half..
  - When the process is 100% done, it displays GOOD for approval or NOT for disapproval of the unbalance, indicated in Green or Red as well. At this time, the digit displayed remains unchanged, suggesting the completion of measuring.



## **CNC PRODUCTION MACHINES**





















## **CNC PRODUCTION MACHINES**

















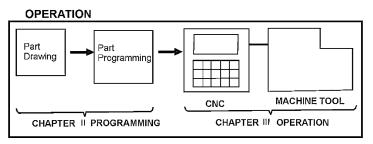




## CNC M/C TOOLS MACHINING

**FANUC Series 180-MC-CNC** 

CNC-3 axis vertical machining Center



Berfor the actual programming, make the machining plan for how to machine the part.

#### Machining Plan

- 1. Determinaton of workpieces machining range
- 2. Method of mounting workpieces on the machine tool
- 3. Machining sequence in every machining process
- 4. Machining tools and machining

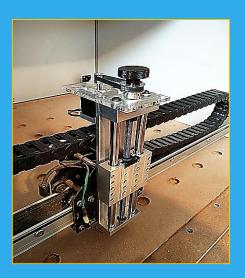
Decide the machining method in every machining process.











#### **NATIONAL SALES & SERVICES**



Sabro is proud to have the biggest sales and service dealers network in Pakistan. Our sales & services network spans all over Pakistan.

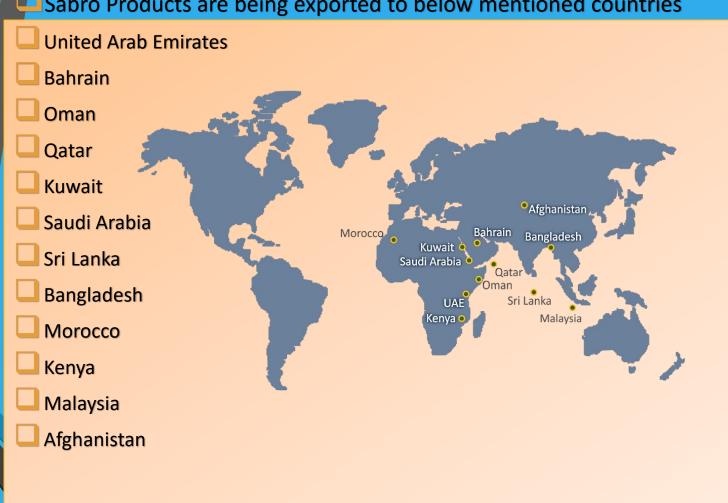
- > Islamabad
- > Rawalpindi
- > Lahore
- > Faisalabad
- > Multan
- > Bahawalpur
- > Hyderabad
- > Sukkur
- > Karachi
- Quetta
- > Peshawar
- > Sialkot
- > Gujranwala
- > Sargodha



#### **EXPORT MARKET**

































#### Pharma

- > AGP Pharma
- > Aventis Pharma
- > Abbott Laboratories
- ➤ Bio Labs
- ➤ GSK Pharma
- ➤ Glitz Pharma
- > Glaxo Welcome Pharma
- ➤ Global Pharma
- ➤ High Noon Laboratories
- Hilton Pharma
- ➤ Hoechst Pharma
- Martin Dow
- > Novartis Pharma
- > Sci-Life Pharma
- > Smithkline Beecham
- > Sami Pharma
- > SANOFI
- > Vision Pharma
- > Wyeth Laboratories

#### Hospitals

- > Allied Hospital Faisalabad
- > Agha Khan Hospital Karachi
- > Civil Hospital Lahore
- > Jinah Hospital Lahore
- > Liaqat National Hospital Karachi
- > Medicsi Hospital
- > PIMS
- > Sheikh Zayyed Hopital & Medical College RYK
- > Shifa International Hospital























#### Universities, Colleges

- > Akhtar Saeed Medical College Lahore
- > Beacon House National University Lahore
- > Islamia University Bahawalpur
- > Lahore University of Management Sciences
- > Pakistan School of Fashion Design Lahore
- > NUST
- > Quaid-e-Azam Medical College Bahwalpur

#### Telecom Sector

- ➤ Al-catel
- > Al-Warid
- > Huawei
- > Mobilink
- ➤ Pak Telecom
- > Telenor Pakistan Ltd.
- ➤ Telecard
- ➤ World Call

#### Poultry

- > Islamabad Farm
- ➤ Islamabad Feeds
- > Jadid Poultry
- > KNN
- > Sadiq Poultry
- Zubair Poultry

#### Pak Defence

- > Army Welfare Trust
- Pakistan Army
- > Pakistan Navy
- > Pakistan Airforce

PAEC

























#### Banks

- > Citibank
- > Hong Kong Association of Banks
- > National Bank of Pakistan Ltd.
- > UBL



- > Avari Hotels
- > Bahria Theatre, Bahria Town Lahore
- > DESOM Club Lahore
- > Holiday Inn
- ➤ Islamabad Club
- Marriott Hotels
- ➤ Mughal-e-Azam Lahore
- ➤ Pearl Continental Hotels
- ➤ Qasr-e-Noor Lahore
- > Qasr-e-Noor Banquet Hall Country Club Lahore Cantt.
- > Siddique Marriage Hall

#### Government Sector

- > FWO- Frontier Works Organization
- > Art Council Sahiwal
- > British High Commission
- ➤ CDA
- > Lok Virsa Museum, Islamabad
- Pakistan Monument, Islamabad
- ➤ PTV
- > Pakistan Railways
- Qatar Embassy
- > State Life Insurance
- Sui Northern Gas Co. Ltd.



















#### Air Ports

- > Islamabad International Airport
- > Alama Iqbal International Airport, Lahore
- > Q.A International Airport, Karachi



#### Commercial Buildings, Work sites

- > FTC Building Karachi
- > Atlas Honda Ltd.
- > Bata
- > Coca Cola
- > Dvcom
- > Fuji Films Ltd.
- ➤ Halliburton
- > ICI Industries
- ➤ KFC
- > Pakistan Tobacco Co.
- > Pepsi
- > Schlumberger
- > Shell Pakistan Ltd.
- > Services Industries
- > Toyota Indus Motors, Karachi
- ➤ Unilever
- ➤ Coronet Foods Pvt Ltd.









-Coronet Foods Private Limited



## **AIR CONDITIONING**

Innovatively Creative ...
TRUST the AIRxperts