ATURE™ INVERTER

INVERTER
HEAT PUMP
PRECONDITIONED
AIR UNITS

ATURE™ INVERTER by the CIAT company, is the first HEAT PUMP PCA unit in the market, the result of adding more than 80 years' experience manufacturing HVAC solutions, such as Heat Pumps, with more than 30 years of CIAT Airports department expertise providing solutions to airports worldwide.

ATURE™ INVERTER, a specifically designed PRE-CONDITIONED AIR solution, Cools, Heats and Ventilates commercial parked aircrafts providing passenger's comfort, indoor air quality and sustainable operation.

CIAT

A Carrier Company

ATURE™ INVERTER Up to 120 tons

ATURE™ INVERTER by CIAT, means Energy Savings, Air Quality and Passenger's Comfort.
From new design to renovation projects, this electric-powered Pre-Conditioned Air unit provides to parked aircrafts, the exact airflow at the precise temperature enhancing passenger's comfort experience along the boarding process.

PASSENGER'S COMFORT

OPTIMUM OPERATION IN ALL CONDITIONS

Based on cooling / heating serial engines mounting, ATURE™ CIAT PCA adapts its operation performance according to Cabin, Outdoor and Telescopic ducts temperature granting the requested comfort conditions on the aircraft thanks to the use of INVERTER technology not only in compressors but in fans.

INDOOR AIR QUALITY IN AIRCRAFT CABIN

Air Quality is a crucial in passenger's welfare. ATURE™ INVERTER features the widest range of air filtration from G4, M6 or M7 + Active Carbon stages permitting the supply of hygienic, clean and kerosene-odor-free air to the aircraft cabin.

SUSTAINABLE AND ECO-FRIENDLY SOLUTION

OPTIMUM OPERATION IN ALL CONDITIONS

Facilities usually operate at their full capacity less than 5% of the time, being the remaining 95% operating at partial capacity.
Thanks to the INVERTER technology, ATURE™ INVERTER range is able to supply all aircrafts categories, since C to F, with low energy consumption adapting its frigorific performance to the requested Comfort conditions, which are variable and subject to aspects such as occupancy, weather and boarding process duration.
Consequently, the investment in operation and CO2 emissions will get decreased.

REFRIGERANT LOAD REDUCTION, ENVIRONMENTAL RESPECT

ATURE™ INVERTER range operates with R410A refrigerant, with ODP (Ozone Depletion Potential) = 0 and lower TEWI (Total Equivalent Warming Impact) than most PCA units in the market.
Comparing to R407C/ R134a based PCA units, achieves a 15% refrigerant load reduction whilst increasing the total capacity.

ATURE™ INVERTER FIRST HEAT PUMP PCA

OUTSTANDING INNOVATION - SUSTAINABLE OPERATION

ATURE™ INVERTER by CIAT, is the first HEAT PUMP PCA unit in the market, result of adding more than 80 years' experience manufacturing HVAC solutions, such as Heat Pumps, with more than 30 years of CIAT Airports department expertise providing solutions to airports worldwide.
Renowned as Renewable Energy the Heat Pump systems provide up to 300% performance in heating mode compared to traditional Electric Heaters, decreasing energy consumption in an average of 60% in mild weather locations significantly reducing the operational costs.

PRE-CONDITIONED AIR
For aircrafts on ground

CIAT AIRPORTS AT YOUR SIDE

By means of a friendly user interface, ATURE™ INVERTER is managed by a tactile digital display with outstanding features since single operation up to advanced maintenance functions, depending onthe user's access level.
Moreover, ATURE™ INVERTER can be integrated and managed by the airport's BMS. Most common used communication protocols such as MODBUS - TCP/IP, LON or BACnet are available.

FACTORY ACCEPTANCE TESTS

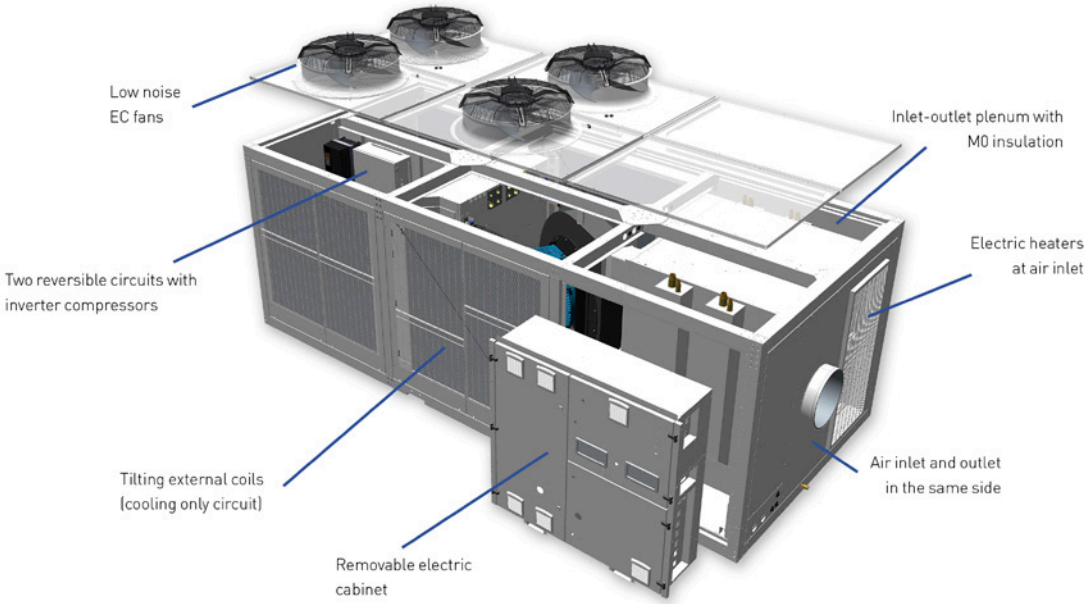
PERFORMANCE OPERATION VERIFICATION

ATURE™ INVERTER by CIAT, is manufactured in Montilla site facilities (Spain) where the newest and largest European climatic chamber laboratory for testing PCA units for aircrafts is located.
On this facility, Cooling or Heating mode FAT tests can be undertaken at outdoor air project conditions.

EASE OF MAINTENANCE

REDUCTION OF LIFE CYCLE COSTS

The Cooling Engine concept, a heritage from CIAT's HVAC know-how, allows for easy access to any component inside the unit. Any part can be easily maintained with no effect on the availability of the unit. With no need of huge spare parts inventory, just critical components should be stocked. Consequently Downtime gets drastically reduced and additionally Ature® Inverter assures a very low MTBF.
In order to help the airport staff in maintenance activities, the Integrated Maintenance Desk is available. With easy access through the tactile digital display, most variables and operation parameters are registered.



DATASHEET

ATURE™ INVERTER RBDX / IBDX (1)	622	723	844	1143	1524	1624
Category (2)	C	C-D	D	D-E	E	E-F
Cooling Nominal Airflow (kg/min)(3)	90	110	135	150	180	220
Cooling Nominal Available Pressure (Pa)(3)	5000	5800	6600	7100	8000	8700
Nominal Cooling Discharge Temperature	-2	-2	-2	-2	-2	-2
Power Fan (kW)	15	30	45	45	45	75
Optional Fan (kW)	-	45	30	75	75	-
Heating Nominal Airflow (kg/min)(3)	72	88	106	120	144	176
Heating Nominal Available Pressure (Pa)(3)	4000	4700	5200	5700	6400	7000
Nominal Heating Discharge Temperature	45	45	45	45	45	45
Nominal Cooling Capacity (kW) (5)	99,0	122,6	148,9	165,2	199,0	244,1
Nominal Absorbed power in cooling mode (kW)	55,4	71,7	87,4	100,2	128,0	181,5
EER	1,79	1,71	1,70	1,65	1,56	1,35
Nominal Heating Capacity (kW) (5)	56,6	67,9	76,9	92,6	115,0	135,5
Nominal Absorbed power in heating mode (kW)	25,3	32,7	35,1	42,8	56,6	70,6
COP	2,24	2,08	2,19	2,16	2,03	1,92
Voltage (4)	400 V / III phases / 50 Hz (+/- 10%)					
Number of Compressors/Circuits	2 / 2	3 / 3	4 /4	3 / 3	4 /4	4 /4
Lenght (mm)	3200	4050	4050	5000	5000	5000
Width (mm)	2200	2200	2200	2200	2200	2200
Heigth (mm)	1956	1956	1956	2058	2058	2058

(1) Outdoor air conditions: Cooling Mode 35ºCDB / 40% - Heating Mode; -1ºCWB.
(2) F CAT aircrafts require two identical units.
(3) Additional selection pints available (consult CIAT Airports department)
(4) Different power supply configuration under consultation.
(5) Net Cooling & Heating Capacity under stated input/output air conditions.

MAIN FEATURES

- Autonomous Direct expansion 100% fresh air unit.
- Galvanised steel casing, 7035 RAL specific weatherproof polyester electrostatic painting.
- Full maintenance access by removable/hinged door panels.

FRIGORIFIC CIRCUIT & OUTDOOR CIRCUIT

- Progressive regulation from 9% to 100% capacity.
- 2 independent refrigerant FULL INVERTER circuits scroll type compressors, permanent magnet motor and integrated oil injection management by CIAT.
- High efficiency Electronic axial EC fans. Variable speed and precise adjustment of Condensing and Evaporation pressure to level of operation.
- Copper pipes and aluminium fins coils.
- Electronic Expansion Valves.

INDOOR CIRCUIT

- Direct coupling Centrifugal high pressure fan, Frequency converter controlled.
- Frequency converter with pressure sensor for airflow control.
- CIAT measure &manage airflow supplied function.
- 14 or 18" Outlet according to unit's size.
- Prefilter and filter G4.
- Galvanized Steel Cooling drain pan.
- Indoor circuit Condensates pump.
- Smoke Detector.

OPTIONAL CONFIGURATION

- RAL colour as per client specification.
- Adaptation to Operational Control Management: consult CIAT Airports department.
- One or Two Motorized Outlets.
- Clean and kerosene-odor-free air supply: M6 or M7 + Active Coal filters.
- Remote Control Box.
- Maintenance & Configuration Service tool terminal.
- Ethernet Supervision card: recording, monitoring and modification of most parameters. Modbus TCP/IP, RS-485, Bacnet IP.
- Power meter.
- Telescopic, Cabin or Outdoor sensor management.
- Screwed Flange connections.
- De-contactor type plugs.
- Coils protection: Polyurethane fins, Copper pipes-Copper fins, INERA™ fins (aluminium alloy with outstanding performance at marine applications).
- Anti-corrosion pack including:
  - Any of coils protection available.
  - Super-durable painting.
  - Stainless Steel Condensates Drain pan.
  - Diamond shaped top panels.
- Ground supporting feet.
- Antivibration mounts.
- Low outdoor temperature protections.
- Outdoor circuit drain pump.

CIAT
AIRPORTS