CHOOSE YOUR AIR



PRODUCT SHOWCASE AND ABOUT THE COMPANY

MANUFACTURERS OF CONTEMPORARY AIR HANDLING UNITS AND RELATED PRODUCTS



AIREF SYSTEMS PRIVATE LIMITED

Formerly Airef Engineers)

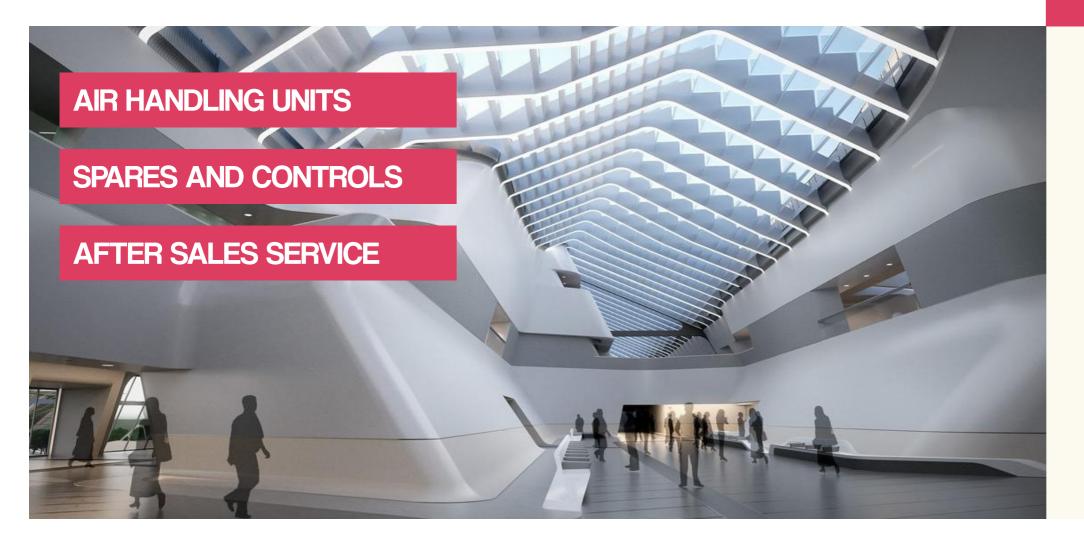
FACTORY & OFFICE: PLOT NO 570, INDUSTRIAL AREA, PHASE 9, MOHALI 160062, PUNJAB (INDIA)
T: +91 172 509 3328 WA: +91 905 659 0909
INQUIRIES: MAIL@AIREFENGINEERS.NET





The masters of handling air

We are industry leaders in manufacturing highly engineered air handling units (AHUs)



Since our establishment in 1982, we have produced energy-efficient and performance-oriented AHUs, suitable for a varied range of applications. With innovation and research being the backbone, we have been providing quality and precision solutions to leading facilities across the country.

Our state-of-art manufacturing facility serves to produce typical as well as bespoke air handling solutions for versatile applications such as healthcare, education, data centers, retail and commercial establishments. Using the latest computer programs and technology, we offer highly engineered products that increase the facility's efficiency and reduce the operating costs.

Our products are installed throughout India in private as well as public sector. Our dedicated after-sales service, controls and spares divisions provide total support to our customer base.

The large range of air handling units manufactured by us caters to a diverse range of applications spread across a variety of sectors, including:

Operation theaters Server rooms
Laboratories Libraries
Clean rooms Gymnasiums
Data Centres Hotels
Offices Production halls
Commercial kitchens Mushroom plants

Legacy of innovation

Airef's vision is to provide technologically advanced air handling solutions, backed by intensive research and continuous improvement.

With a legacy of producing landmark products that carved the way for efficient air handlers and low maintenance machines, Airef stands tall amongst the best in the business. As a specialist in providing bespoke solutions to suit your facility's needs, Airef is determined to develop futuristic solutions that:

Increase the efficiency and productivity

Provide increased flexibility enabling growth

Reduce the overall operating costs





As a leading air handling units manufacturer, Airef effectively carries out its responsibility to ensure designs and products that are sustainable, energy efficient and equipped with the best and latest technologies available. In addition to this, our units boast of unmatched safety features so that the chances of any mishap reduce to the minimum. Designed with the help of computer programs and

manufactured using computer-aided machinery, our AHUs are available with numerous control options to ensure the highest levels of performance efficiency and mechanical characteristics required to make them silent and vibration-free

Read on to have an overall view of these features :



SAFE

SILENT

SMART

STURDY

SUSTAINABLE











ENERGY EFFICIENCY

THE TOP PRIORITY

Amidst the need to save energy for the future, energy efficiency indeed is the foremost priority on every equipment manufacturer's list. Airef too understands the importance of saving energy and hence designs sustainable, low consumption units - for airflow control as well as air treatment. Following are the various energy-saving features available

USE OF HIGH EFFICIENCY FANS

Moving air into or out of a building takes considerable amount of energy, in the form of electrical consumption of fans, losses due to transmission and losses of the motors. In order to reduce this consumption, we use high efficiency fan systems such as **Electronically Commutated (EC)** fans and plug fans as well as control equipment like frequency inverters. Also, motors with efficiency grades from IE 02 to IE 05 are



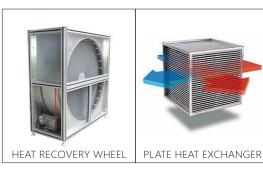
A lot of applications require large amounts of fresh air to be introduced in the area to be treated. And in turn exhausting the return air. During this process, a lot of energy is lost. Also, it takes huge amounts of energy to cool down the fresh air. To lower down these losses, Airef manufactures AHUs with heat recovery devices that pre-cool the fresh air by tapping the energy from return air stream. The devices can recover upto 85% of energy from the exhaust air stream. Various type of devices used are heat recovery wheels, plate heat exchangers and run-

THERMAL BREAK TYPE CASING

The temperature difference between ambient air and air inside the AHU can cause huge energy losses if the casing allows thermal transmittance. To avoid this, Airef uses specially-developed extruded Aluminium mainframe with thermal breaking PVC strips and double walled casing panels injected with Polyurethane foam of low thermal transmittance coefficient (Minimum density 40 kg/m³).



















SMART SOLUTIONS

AHEAD OF THE TIMES

In the era of artificial intelligence and smart machines, our air handling units are no less. Intensive use of latest computer programs to select the components as well as to design the AHUs makes them highly efficient. Moreover, application-specific control units developed by our team of automation experts make them way smarter than the others.

i-CON - THE INTELLIGENT CONTROLLER



It is the brain behind our smart AHUs. Developed by our talented team of automation experts, i-CON, the application-specific controller imparts numerous intelligent features to our units, making them suitable to be used with the most advanced of Building Energy Management Systems (BEMS). Cleanse - our range of packaged, clean-room AHUs comes factory-equipped with i-CON.

Some of the smart features are:

- 1. Optimum fan speed
- 2. Active feedback
- 4. Optimum heat recovery
- 3. Smart VCD and valves control
- 5. Warnings and alerts
- 6. Data and error logs
- 7. Easy touch user interface

COMPUTER AIDED MANUFACTURING PROCESS

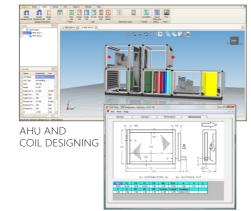
Airef uses the latest computer software to carry out most of the processes involved in the production of air handlers. Right from the planning, preparation of preliminary designs, final drafting, selection of components, unit designing, drawings, fabrication, assembly to testing, the entire process is computer aided and ensures maximum levels of quality in terms of workmanship, ease of maintenance, acceptable sound and vibration levels, thermal bridging, energy efficiency, durability and mechanical strength.

PRE-WIRED UNITS

There is an option of dispatching factory pre-wired and tested units with customized controls.



PROGRAMMABLE CONTROLLER & HMI



SAFETY FIRST

SAFE & SMOOTH OPERATION

Along with the smart features, our devices possess unmatched safety features for the user as well as the building where they are installed. User safety is primarily ensured by use of alerts and equipment, while the building safety is achieved by making the units vibration-free and silent.

MONITORING DEVICES

Conventionally, a view glass is provided at the strategic places on the casing so as to enable the user to have a look inside the unit without opening the doors. Alternatively, smart cameras are installed inside the critical sections to stream live video directly to a screen or smart-phone. LED maintenance lights are supplied in all critical sections.

SAFETY HARDWARE

All doors are equipped with specially designed lock-handles to avoid any accidents. For additional safety, the access doors are interlocked with the fan motors using a rotary limit switch (optionally flame proof type) so as to shut down the unit in case a door is opened while the unit is in use. The LED light is switched on automatically.

Moreover, an additional steel guard can be provided inside the access door of the fan section. An emergency shut-off switch and a door stopper can be supplied on request as well.

VIBRATION ISOLATION SYSTEM

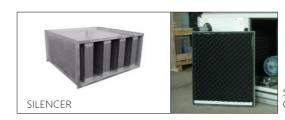
The centrifugal fan motor assembly is mounted on a common-rail frame for easy adjustments. This frame is mounted on casing base via rubber or spring type isolators that absorb the fan vibrations and transmit to the casing to a minimal level. Also, the fan outlet is connected to the casing using a fireretardant and moisture resistant flexible connector. This way, the overall operation of the unit becomes smooth and vibration free and makes the use of the unit safe for building's civil structure.



SILENT OPERATION

Apart from the use of technically advanced fans and motors, there are certain other features that make the units noise free. Firstly, the optional use of sound attenuator sections before or/and after the fan section reduces the decibel levels to the minimum. Alternatively, Active Noise Cancellation (ANC) system can be integrated, generally in the supply duct, to counter the noise created by air flow, eliminating the use of silencers which take up a lot of space.

The noise can also be largely reduced by using sound-absorbent casing. This casing is generally made of a layer of open-cell Nitrile secured with perforated steel skin joined to standard double skin panels.



SOLIND PROOF



SMART MONITORING





ENGINEERING AT ITS BEST

THOUGHTFUL DESIGNS

As far as the mechanical construction of our units is concerned, our design team lays stress to make the units sturdy, compact, easy to maintain and easy to operate for a long time. From selecting the materials of construction to the mounting of components, a huge effort goes in ensuring a durable as well as aesthetically appealing unit:

HEAVY DUTY GRID TYPE BASE

All floor type units are provided with a load-bearing, heavy duty grid base made of fabricated GSS channels. The mountings of internal components, especially the moving parts like the fan and motor, are designed in a way that the load of these components is distributed evenly to the grid base. This makes the units mechanically sturdy and durable. Also, the base is provided with lifting corners for easy shipping and loading etc. The height of the base channels varies from 50 mm to 150 mm depending upon the unit size and weight. All ceiling type units are provided with heavy duty hanging channels made of GSS.



STRATEGICALLY DESIGNED MAINFRAME

The mainframe of all units is designed in modular form so that they can be easily knocked down partially or completely in case the same is required for shipment or movement inside the building. The modules are joined to each other using specially developed channels that are concealed inside the unit. Also, the sheet metal blanks to hold the internal components of the units are designed for easy disassembly and reassembly. In accordance with the available space and possible orientation, the mainframe can be designed in single/double tier, low height/width or horizontally/vertically stacked configurations.



EASY TO MAINTAIN CASING

It is of the utmost importance that the internal components of the AHU be cleaned and maintained regularly. For this, the casing of our AHUs is designed to have access doors at the strategic locations, optionally slidable components, sufficient space for cleaning, removable casing panels for critical areas, customized maintenance options etc. These capabilities are imparted to the unit without compromising on the strength or air tightness of the casing.









COMPLETE PEACE OF MIND

GENUINE SPARES AND BEST AFTER-SALE SERVICE

Our dedicated after-sale service team offers attractive service options, genuine spares and annual maintenance packages to make the experience of using our products a smooth and fulfilling one. Also on the offer are unmatched warranty packages for complete peace of mind, always!

SPARE - AIREF GENUINE PARTS



Airef manufactures, tests and supplies full range of genuine spares to seamlessly replace the faulty, damaged or worn out components in the units in use. Technical assistance to facilitate the replacement of these components is also available. Airef recommends the use of genuine spares (affixed with the above logo) only, to avoid any compatibility issues and consequent damage to other components.

ANNUAL MAINTENANCE PACKAGES

As a part of our initiative to provide highly skilled support to ensure the longest possible use of our products, Airef offers flexibly designed maintenance options on contractual basis for all the products. These maintenance packages are reasonably priced to encourage maximum of our clients to vouch for our services so that their air handlers are in the best hands, always. Please contact our service team for details.

WARRANTY AND EXTENDED WARRANTY

All our products are warranted to be free of manufacturing defects and poor workmanship for a period of one year from the date of sale. Any faulty parts are repaired / replaced, at our option, to ensure smooth running of the unit, provided the unit and supporting equipment are correctly installed. The consumables are not covered in warranty.

There is an option of extending the unit warranty beyond this period by purchasing our attractive extended warranty deals. Please contact our service team for details.

Technical assistance regarding correct installation and operation of our units is available in the form of installation manuals, troubleshooting guides, preventive maintenance schedules and technical representatives.



PRODUCT CATEGORIES

INTELLIGENT, CONTEMPORARY PRODUCTS MAKING YOUR FACILITY MORE PRODUCTIVE AND EFFICIENT

A. TYPICAL UNITS

APPLICATION SPECIFIC UNITS WITH STANDARD SPECIFICATIONS

SUPPLY UNITS

Comfort air treatment	Series AFCU / AFCU-PLUS / CLT / FLT
Clean room air treatment	Series CLEANBOX / FLATBOX / FLATPACK-AIO
Evaporative air cooling	Series VENTEX / ECO-VENTEX / IDECAIR

EXTRACT UNITS

Air exhaust	Series AIRBOX / AIRBOX-D / EXPEL / ECO-EXPEL
Air treatment + Exhaust	Series WETJET / ESPURE / ECO-ESPURE

ENERGY RECOVERY UNITS

Energy recovery ventilation	Series ERVENT
Clean room air treatment	Series CLEANSE (SMART AHU)

B. BESPOKE UNITS

FLEXIBLY DESIGNED, CUSTOMIZED MODULAR UNITS

CUSTOMIZED AIR HANDLING UNITS

Air treatment with/without energy recovery	Series FLEXE
Hygienic design AHU for cleanrooms	Series FLEXE-H

SUPPLY UNITS

UNITS TO ADD TREATED AIR INTO THE FACILITY







Different types of rooms need different types of air treatment based on the recommended values of temperature, humidity, pressure and CO₂ levels etc.

Airef manufactures a series of standard, application-specific supply air units in various

configurations to meet these requirements.

Specially designed compact supply air units carry out air treatment processes such as cleaning, cooling, heating, humidifying, de-humidifying, evaporative cooling etc.

FUNCTIONAL MODULES IN SUPPLY UNITS:



PRE FILTERS G3/G4

FINE FILTERS



63/64

F7/F8/F9



MIXING SECTION

SINGLE/MULTI



ELIMINATORSDRIFT/MIST



COOLING COILS WATER



COOLING COILS
DIRECT EXPANSION



ELECTRIC HEATERSFINNED STRIPS



HEAT & MASS EXCHANGER INDIRECT EVAPORATION



FANS EC/PLUG/DIDW



HUMIDIFIERS PAD/SPRAY

TYPES OF SUPPLY UNITS:



AFCU

5 sizes 400-1200 CFM Ceiling concealed, suspended fan-coil units, available

with optional valve-set









AFCU-PLUS

5 sizes 400-1200 CFM Ceiling suspended, exposed fan-coil units with integrated PICV, supply air grill, temperature controller and wireless remote









CLT

9 sizes 1000-6000 CFM Ceiling suspended air handling units, with belt driven

DIDW fans and chilled water coils







FLT

7 sizes 6000-20000 CFM Floor mounted air handling units, with belt driven DIDW

fans and chilled water coils









CLEANBOX

4 sizes 1000-4000 CFM Ceiling suspended air handling units, with EC-fans, F7

filters and DX coils













FLATBOX

4 sizes 1000-4000 CFM Floor mounted air handling units, with EC-fans, F7 filters and DX coils







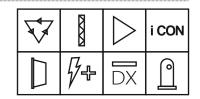






FLATPACK AIO

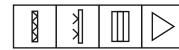
7 sizes 1000-8000 CFM Floor mounted, packaged type roof-top air handling units, with inverter driven plug fans and intelligent controller





VENTEX

13 sizes 2000-40000 CFM Floor mounted, direct evaporative cooling units with belt driven DIDW fans and rigid cellulose humidifier

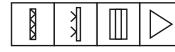




ECO-VENTEX

7 sizes 1500-10000 CFM

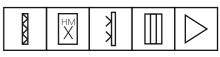
Economical range of floor/ceiling type, direct evaporative cooling units, with single skin casing and insulated top





IDECAIR

4 sizes 6000-16000 CFM Floor mounted, Indirect-direct evaporative cooling units with specially designed HMX and belt driven fans



EXTRACT UNITS

UNITS TO REMOVE UNWANTED AIR FROM THE FACILITY







This category of products manufactured by Airef caters to remove the unwanted, stale or polluted air from a facility. The applications range from toilets, commercial kitchens and manufacturing area to warehouses, engine rooms, grinding area and casting rooms.

In certain cases, the extraction of air involves air treatment via water jets (called scrubbing) or electrostatic filters (called precipitation) before expelling to the environment.

Check all the models in the following pages.

FUNCTIONAL MODULES IN EXTRACT UNITS:



FANS PLUG/DIDW/SISW





ELIMINATORS DRIFT/MIST



ELECTROSTATIC FILTERS

TYPES OF EXTRACT UNITS:



AIRBOX

6 sizes 300-1800 CFM In-line type, ductable SISW centrifugal fans in galvanized

steel casing

In-line type, ductable DIDW centrifugal fans in module type





3 sizes 1000-3000 CFM Cabinet type inline-fans, using DIDW centrifugal fans and

multi-speed split capacitor motors







Direct driven plug fans and encapsulated motors in insulated

cabinets (especially for smoke exhaust)



ECO-EXPEL



Economical range of smoke extract fans with direct driven plug fans

and encapsulated motors in single skin casing

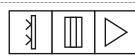






Direct driven plug fans and encapsulated motors, drawing

air through spray type air-cleaners

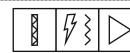


ESPURE



Direct driven plug fans and encapsulated motors, drawing air through

electrostatic precipitation type air-cleaners 2000-16000 CFM



ECO-ESPURE

4 sizes

Economical range of electrostatic precipitation type air cleaners with direct driven plug fans and encapsulated motors in single skin casing











4 sizes















2000-10000 CFM

ENERGY RECOVERY UNITS

UNITS TO ACHIEVE DESIRED IAQ IN THE FACILITY WHILE RECOVERING THE ENERGY LOST IN EXTRACT AIR STREAM





Modern buildings are designed keeping in view the quality of indoor air, in addition to the temperature and humidity levels. It is equally important to achieve desired levels of air quality without substantial rise in the energy consumption. Airef manufactures a series of products that cater to

such needs. The energy recovery ventilators can be used to bring down the carbon levels in the indoor air of conditioned spaces. And the packaged AHUs with heat recovery module have smart controls to achieve desired indoor conditions, automatically. The recovery efficiency can be as high as 80%.

FUNCTIONAL MODULES IN ENERGY RECOVERY UNITS:



PRE FILTERS G3/G4



FINE FILTERS F7/F8/F9



EMPTY SECTIONINLET/OUTLET



COOLING COILS
DIRECT EXPANSION



ELECTRIC HEATERSFINNED STRIPS



FANS EC/PLUG/DIDW



ROTARY HEAT EXCHANGER HRW



INTELLIGENT CONTROLS
MICROPROCESSOR CONTROLLER



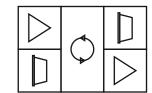
COOLING CIRCUITDX TYPE

TYPES OF ENERGY RECOVERY UNITS:



ERVENT

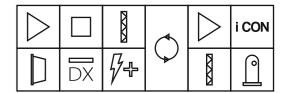
4 sizes 2000-6000 CFM Floor type energy recovery ventilators (ERV) with rotary heat energy wheels and EC fans





CLEANSE

3 sizes 2000-4000 CFM Packaged type, hygienic AHUs with heat recovery wheel, controlled by intelligent controller



BESPOKE UNITS

CUSTOMIZED MODULAR AIR HANDLING UNITS





Apart from the application-specific, typical AHUs, Airef manufactures made-to-order air handling units for specific requirements. There are numerous applications where the typical models of air handling devices do not fit, and require customized solutions. These units are available in the form of Flexe, the range of bespoke, modular AHUs. There is

a wide array of modules available to be arranged in logical sequences to design the units as per project's requirements.

Unfold endless possibilities with following functional modules:

FUNCTIONAL MODULES IN BESPOKE UNITS:



PRE FILTERS G3/G4



FINE FILTERS F7/F8/F9



HEPA FILTERS H13



MIXING SECTION SINGLE/MULTI



EMPTY SECTION INLET/OUTLET



ELIMINATORS DRIFT/MIST



COOLING COILS WATER



HEATING COILS WATER/STEAM



COOLING COILS DIRECT EXPANSION



ELECTRIC HEATERS FINNED STRIPS



FANS EC/PLUG/DIDW



INTELLIGENT CONTROLS



MICROPROCESSOR CONTROLLER



HUMIDIFIERS PAD/SPRAY



HEAT & MASS EXCHANGER INDIRECT EVAPORATION



COOLING CIRCUIT DX TYPE



ROTARY HEAT EXCHANGER



PLATE HEAT EXCHANGER COCURRENT/COUNTERFLOW



ELECTROSTATIC FILTERS

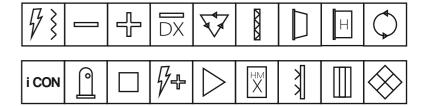
TYPES OF BESPOKE UNITS:





FLEXE

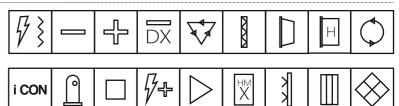
18 sizes 1000-46000 CFM Floor mounted customized air handling units with as well as without energy recovery





FLEXE-H

18 sizes 1000-46000 CFM Hygienic construction customized air handling units made in accordance with VDI 6022-1 and DIN 1946-4



OTHER PRODUCTS

PRODUCTS RELATED TO HVAC PROJECTS

Apart from the standard air handling and treatment products, Airef designs and manufactures products such as air purifiers of commercial and industrial grade, laminar air flow plenums and heat transfer coils which are used in HVAC projects.

Used generally in conjunction with our main products or for replacement purposes, these products form an important part of a building's HVAC system. Below is the overview as well as the brief details of these products:

1. HEAT TRANSFER COILS

Airef manufactures high efficiency heat transfer coils for replacement or special purposes in the following types:

- 1. WATER COILS (CHILLED WATER / HOT WATER)
- 2. DIRECT EXPANSION (DX) COILS
- 3. STEAM COILS

The coils are available in tube OD 9.52 mm, 12.7 mm or 15.8 mm, and fin spacing of 4–13 fins per inch. The coils can be made from 1 to 12 rows deep.

All coils are pressure tested for leakage, with dry air at 650 psi under water.



2. AIR PURIFIERS

Industrial grade air purifiers or dust collectors to arrest welding smoke, oil particles, industrial dust and fumes are manufactured by Airef.

These units have simple designs and easy maintenance capabilities, and can be mounted near the source of impurities, in multiples if required.



3. LAMINAR AIR FLOW (LAF) PLENUMS

Developed specially for the medical clean rooms such as the operation theaters, the laminar air flow plenum forms the final supply unit of the air handling system in order to deliver highly laminar air on to the operating table through H13 HEPA filters.



4. AIR CURTAINS

We manufacture sleek and low-noise air curtains for various door heights & widths that form an air barrier between conditioned and non conditioned spaces and prevent the exchange to air or heat between them. Also, these units prevent the entry of unwanted particles into clean area.



5. HOT AIR BLOWERS

For applications involving space heating for comfort purposes, we manufacture standalone type of electrical heating units. Used generally in hotel rooms, restaurants and lobbies, these units are perfect for small to medium facilities where hot water from boiler is not available.



6. VERTICAL FAN COIL UNITS

Typically used with hot water for space-heating purpose, these are decorative units which can be mounted on the wall, or simply placed on floor. These units find their application mostly in hotels, offices, restaurants, hospital wards etc.



REFERENCES

A FEW HAPPY NAMES FROM A LONG LIST

PHARMACEUTICAL / MEDICAL CLEANROOMS

SUN PHARMACEUTICALS, PUNJAB GLENMARK, H.P. BETA DRUGS LIMITED, H.P. IND SWIFT LABORATORIES LTD, PUNJAB ZEISS PHARMA LIMITED, H.P. HEALTHCAPS LIMITED, PUNJAB ROQUETTE INDIA, UTTARAKHAND

FORTIS HOSPITAL, PUNJAB
P.G.I.M.E.R., CHANDIGARH
ADESH HOSPITAL, PUNJAB
THE ALCHEMIST, HARYANA
SP INSTITUTE OF NEUROSCIENCES. MAHARASHTRA

HOSPITALITY / RETAIL

J.W. MARRIOTT, CHANDIGARH ITC, AMRITSAR HYATT, UTTARAKHAND SAROVAR PORTICO, H.P. PARK PLAZA, PUNJAB

MC DONALDS, PUNJAB HARDROCK CAFÉ, CHANDIGARH

ELANTE MALL, CHANDIGARH
NEXUS MALL AMRITSAR, PUNJAB
V.R. PUNJAB MALL, PUNJAB
BESTECH MALL & BUSINESS TOWERS, PUNJAB

INDUSTRIES / PRODUCTION HOUSES

DABUR INDIA LIMITED, J&K
KANDHARI BEVERAGES (COCA COLA), PUNJAB
PIONEER INDUSTRIES, PUNJAB
C.D.B.L., PUNJAB
H.D.B.L., HARYANA
USHA YARNS LIMITED, PUNJAB
LUMINOUS INVERTERS, H.P.
COROMANDEL FERTILIZERS, J&K

NOTES	