GLOBAL AIR CONDITIONER (AC) MARKET

FOCUS ON TYPES (INCLUDING GEOTHERMAL, RENEWABLE), APPLICATION & REGION

— Estimation & Forecast Through 2015 to 2020

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1 REOPORT SCOPE

1.1 SCOPE OF THE STUDY

The scope of this report is limited to the market for the Air Conditioning (AC) systems. The study includes the analysis of components and end-use verticals in which AC is used, in addition to the market study of the AC devices across different geographical regions. The study presents a detailed analysis of AC systems, end-use verticals and geography along these lines; market volume, drivers, growth opportunity, and challenges.

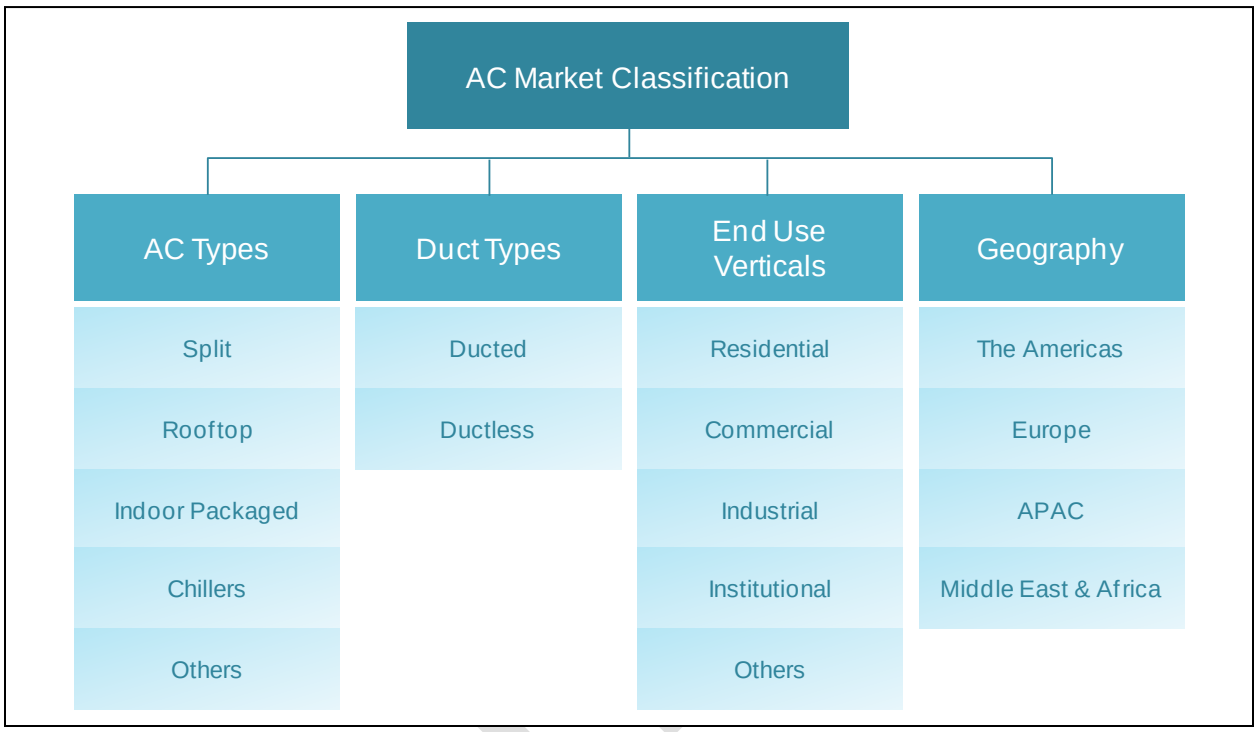
This report includes the market trends across the key geographic regions of the global market. The market size and Compound Annual Growth Rate (CAGR) have been estimated considering and analyzing the use cases in different verticals and are discussed in the report.

1.2 AIR CONDITIONING (AC) SYSTEM: REPORT COVERAGE

The figure below displays the list of market coverage features which have been incorporated in this research study.

FIGURE 1

AC MARKET STUDY COVERAGE AREA



Source: BIS Research Analysis

Market Analysis includes an in-depth analysis of the market drivers, opportunities, challenges, and growth trend in AC systems usage, end-use verticals, and geographies. The Industry Analysis presents detailed insights into the trend followed in the AC market using the Porter's Five Force analysis. It also presents an exhaustive overview of the activities being undertaken by various stakeholders.

1.2.1 BY AC TYPES

AC market is segmented into five different AC types, viz. split, rooftop, indoor packaged, chillers and others. In each of the AC type, different technologies, application areas, regulations, key market trends, developments and participants have been included.

1.2.2 BY DUCT TYPES

AC market is segmented as ductless and ducted. In each of the AC duct type, different configurations, applications, market trends have been discussed. The section also provides detailed insights on geothermal AC system /ground source called heat pumps (GSHPs).

1.2.3 BY END USE VERTICALS

End-Use Verticals of the AC market include five major segments, viz. residential, commercial, industrial, institutional, and others. In each of the segments, end user applications in different regions across the world have been discussed.

1.2.4 BY GEOGRAPHY

The AC market is segmented into The Americas, Europe, Asia-Pacific and Middle East & Africa. The section provides different insights on AC market by different geographies, regulatory standards, key market trends, developments, and participants across different geographies.

1.3 REPORT DESCRIPTION

As the global warming and other environmental concerns are increasing, the government bodies are regulating the manufacturing standards of the air conditioning systems. The major aim of these regulations is to make the ACs more environmental friendly and energy efficient. The consumers/end users are benefitted indirectly by these regulations as their energy spending is reduced. Energy usage has increased a lot and many companies have started manufacturing and promoting the air conditioners which are running on renewable energy like geothermal and solar energy.

The AC market growth is propelled by increasing demand for the Air Conditioners in the commercial and residential applications, reduction of energy consumption and innovative solutions that have created a demand for the ACs. In the U.S., the Middle Eastern and Asia-Pacific regions, the demand of ACs in fighting the weather conditions has significantly boosted. The compliance of the government regulations are resulting in less consumption of energy and environmental friendliness, and has also led to an ever growing demand for ACs across all applications.

Commercial and residential applications are observed (currently) and expected (forecasted) to push the growth of AC market. However, the R&D programs of the AC components and refrigerants are developing new and technically better ACs different applications.

While highlighting the key driving and restraining forces for this dynamic market, the report also provides a comprehensive section of the government regulations and their involvement in the Air Conditioning (AC) industry.

The research tries to answer various aspects of the AC market, such as the factors driving the AC market, its threats that can possibly slow down the market growth and the current growth opportunities that are going to shape the AC market expansion. The research incorporates Porter's Five Force Model for in-depth analysis of the market and an assessment of the factors governing it.

Our study includes overview and analysis of the AC market by AC types, ducting types, different applications and geographical regions allowing the research to develop a comprehensive outlook of market. The application verticals are categorized into four major categories, viz. commercial, institutional, industrial and residential among others in the report. Further, these segments describe different use cases which cover the scope of the value chain from manufacturers to the end users.

Major geographical regions including The Americas, Asia Pacific, Europe and Middle East & Africa have been covered in terms of their market penetration in the AC market as well as their revenue generation to understand and utilize business opportunities. The report also includes the profiles of major players in the industry that shall allow its reader to get an insight into the industry trends.

Towards the end of the report, readers will have a clear understanding of the market dynamics, major drivers and the underlying threats and challenges that the global AC industry is subjected to, including the estimation of the industry's growth in terms of production and revenue.

TABLE 1

LEADING COMPANIES IN THE AC MARKET

S.no.	Company Name
1	Carrier Corporation
2	Daikin Industries Ltd.
3	Fuji Electric
4	Fujitsu General
5	Gree Electric Appliances Inc.
6	Honeywell International
7	Ingersoll Rand

S.no.	Company Name
8	Johnson Controls
9	Lennox International
10	LG Electronics
11	Panasonic Corporation
12	Petra Engineering Industries Co.
13	Samsung Electronics
14	Shaker Group
15	Siemens Building Technologies
16	SKM Air conditioning summary
17	Voltas limited
18	Zamil Air Conditioners

Source: BIS Research Analysis

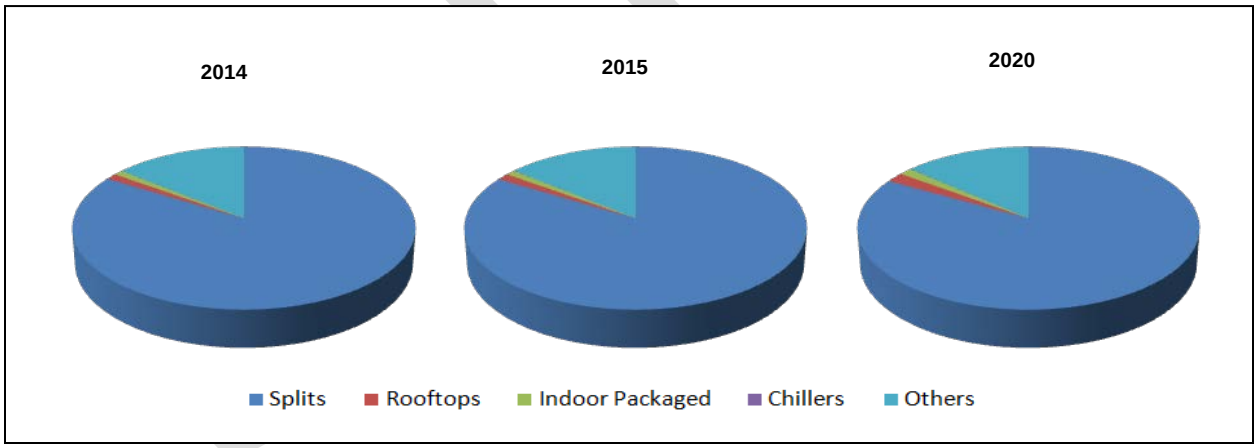
2 EXECUTIVE SUMMARY

Since the air conditioning (AC) market was introduced in early 20th century, the market was showing a promising growth. In late 20th century, the market showed some stagnated growth but again, the AC market has gained momentum and it is showing a significant growth again.

The market growth is gaining speed as increasing global warming is deteriorating the weather conditions and AC demands are increasing. Many regulatory bodies like BEE (Bureau of Energy efficiency), Department of Energy (DOE), ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) among others are releasing regulations benefitting both, the environment and the consumers, at the same time. These regulations are increasing the energy efficiency and eco-friendliness of the AC products.

FIGURE 2

GLOBAL AC MARKET SHARE, BY TYPE, 2014, 2015 & 2020



Source: ME-BIS Research

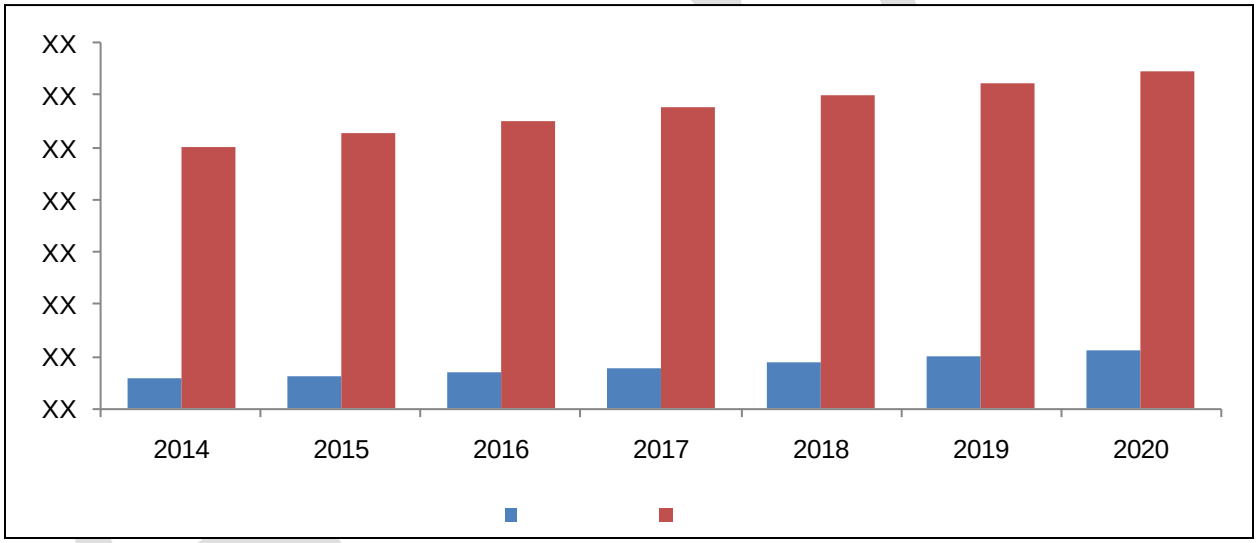
Split ACs held the maximum market share of about XX% of the market volume in 2014 and is expected to grow at a XX% CAGR from 2015 to 2020. The other types of AC include window and portable types, and hold the second largest market share of ~XX% in 2014. Observing

current trends, other type of AC systems are going to lose on the market share and reach ~XX% share in 2020 while growing at XX% CAGR from 2015 to 2020.

Rooftop AC is expected to gain a small amount of market share while chillers are expected to continue its stagnated growth. In ducted AC types, Constant Air Volume (CAV) and Variable Air Volume (VAV) are discussed and it is analyzed and observed that CAVs are more energy efficient than the VAVs.

FIGURE 3

GLOBAL AC MARKET VOLUME, BY DUCT TYPE, 2014–2020 (MILLION UNITS)



Source: ME-BIS Research

Ducted AC systems held a market share of XX% in 2014 of the entire AC market and are expected to gain its share to ~XX% in 2020 while growing at a CAGR of XX% from 2015 to 2020. In 2014, the ductless AC systems market shipment was around XX million units and is expected to grow at XX% CAGR from 2015 to 2020.

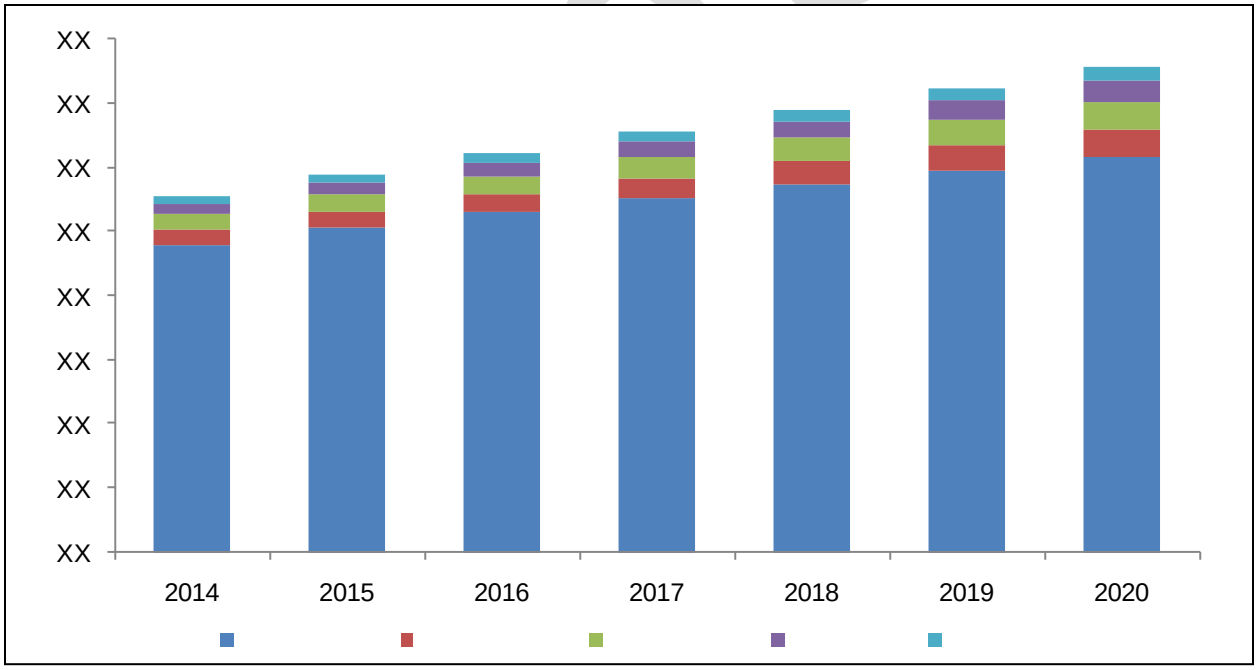
Ducted and ductless air conditioning solutions are presented mainly for residential, commercial and industrial applications among others. The ducted and ductless solutions are chosen on user

requirement, convenience, installation cost, and energy efficiency, among others. As per user's requirements, ductless air conditioners are used for individual room air conditioning. Ductless ACs are much more energy efficient than ducted AC systems. Split, indoor packaged and portable ACs among others are the main ductless systems.

Split, Chillers, Roof top Unit (RTU), and Portable among others are the main AC types which use ducting mode for its operations. Ducted ACs are used across all, commercial, residential, industrial, and institutional among other, applications and provides centralized air conditioning suitable for large gatherings. Latest AC inverter technology provides noiseless air conditioning performance.

FIGURE 4

GLOBAL AC MARKET VOLUME, BY APPLICATIONS, 2014–2020 (MILLION UNITS)



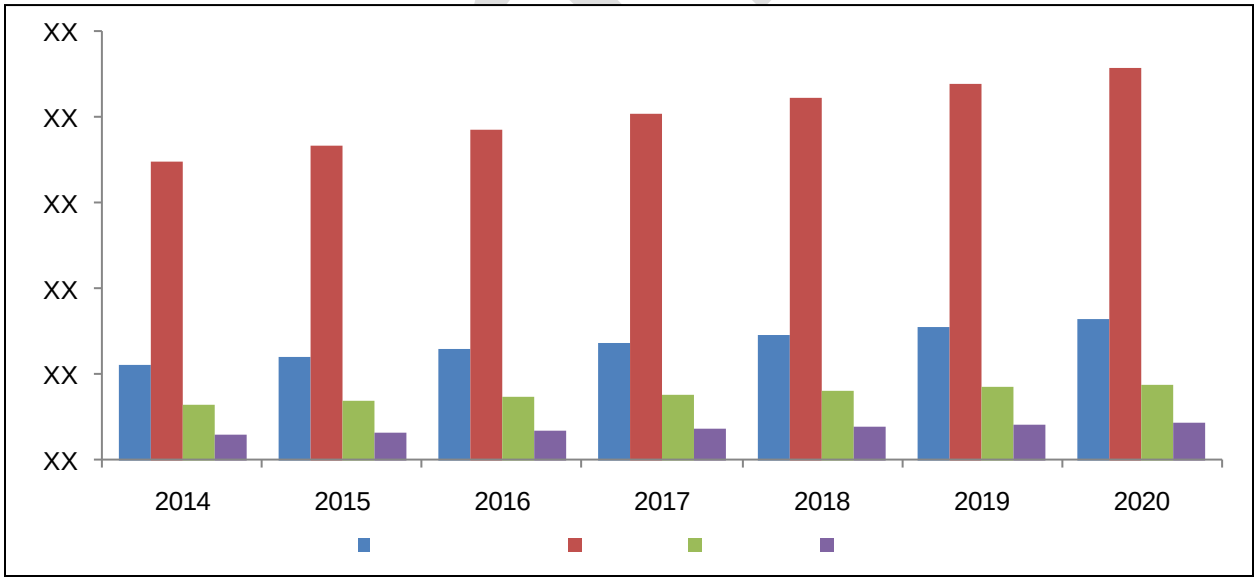
Source: ME-BIS Research

The major application areas of the AC market are commercial, residential, institutional, and industrial among others. The commercial applications, for the AC market, are most famous in the Americas but are gaining traction in the APAC market due to its rapidly growing commercialization. APAC is also showing a fast growth for residential application as there more than XX smart cities and green buildings have been announced in this region.

In Americas, foreign players are expanding their distribution channels through partnerships and collaboration to capture the North American segment. North American local players are entering to capture the South American AC market. Throughout the Asia-Pacific countries, regulatory bodies are rolling out regulations to keep a check on latest technologies and environmental friendly cooling solutions.

FIGURE 5

GLOBAL AC MARKET VOLUME, BY GEOGRAPHY, 2014–2020 (MILLION UNITS)



Source: ME-BIS Research

The Americas held the second largest AC market after APAC region in 2014, but is expected to grow at the fastest CAGR of XX% CAGR from 2015 to 2020. Middle East and Africa region is expected to show the second fastest growth globally, and is forecasted to grow at a XX% CAGR from 2015 to 2020. The APAC region is focusing more on residential and commercial applications and government bodies in several APAC countries are providing subsidies to AC manufacturing companies.

3 MARKET DYNAMICS

3.1 MARKET DRIVERS

The following section discusses the factors that enable the growth of the Air Conditioning industry. It further studies the impact of these drivers during the forecast period.

3.1.1 GROWING POPULATION AND URBANIZATION

The growing population and urbanization (specifically in Asia-Pacific and Middle East & Africa) has been identified as the key driver for the AC market. There are plenty of ongoing and proposed infrastructure projects currently, across different parts of the world that has prompted both local and global players to venture into the rising AC requirements of these regions. For example, in 2013, Daikin Europe N.V. (Oostende, Belgium) entered into a joint venture (JV) agreement with a Saudi Arab company RIRAC (JV between Rajhi Holdings and Al Mutlaq Group) to provide cooling solutions to the rapidly urbanizing Saudi Arab residential and commercial market.

There are plenty of housing development and smart city projects going on in other regions of Middle East such as Dubai that will drive the sales of AC units. For example, in 2014, Dubai announced to build smart sustainable city (Desert Rose) that will have an air-conditioned pedestrian path devised in an eco-friendly way with ACs working only during the hot season.

Many Asian countries are also showing similar developments as rising income levels and expansion of modern retail and exclusive factory outlets across this region is driving the reach of ACs and are anticipated to position strong development in tier-II and tier-III countries and semi-urban areas.

Urbanization is one of the most significant mega developments driving growth and infrastructure expansion, thus providing the platform to the AC market. The growing base of middle-class households presents an enormous opportunity for AC manufacturers.

In Asian countries like India, it is expected that the urban areas will be house to thirty percent (XX%) of the Indian inhabitants and add seventy percent (XX%) of the total GDP by 2025. For

example, government in India has recommended buildings in four different regions by 2025 with each region having a population of over XX million. The expected formation of Delhi-Mumbai, Delhi-Kolkata, and Mumbai-Chennai-Bengaluru trade corridors will further boost urban progress in India.

The number of Indian middle-class families is anticipated to reach over XX million by 2015 and are likely to grow to over XX million families. Presently, around XX percent of middle-class families own ACs, implying that the remaining XX percent of the market has not been tapped.

3.1.2 TECHNICAL IMPROVEMENTS DUE TO GOVERNMENT REGULATIONS AND LEGISLATIONS

The global air conditioning market is faces multiple regulations and legislations that aim towards developing energy efficient and environment friendly [low Global Warming Potential (GWP)] products. AC manufacturers across the world are introducing latest technologies such as Variable Refrigerant Flow (VRF), inverter technology, and R32 compliant cooling solutions, for making their products technically complaint with the global as well as country specific regulations.

For example, leading AC player LG Electronics, in 2015, expanded its “Multi V IV” VRF air conditioning systems for the U.S. market to include 38-, 40-, and 42-ton outdoor unit models with Air-Conditioning, Heating, and Refrigeration Institute (AHRI)-certified efficiency of up to 36.0 IEER (Integrated Energy Efficiency Ratio) rating, to comply with the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standards as well as the U.S. Department of Energy (DOE) regulations.

Another leading AC market player Panasonic Corp. of North America took benefit of the ‘energy star rated product’ trend by launching new Exterios E wall-mounted heat pumps, which show up to 23.0 SEER (Seasonal Energy Efficiency Ratio). The ductless product by the company presents Panasonic’s ECONAVI (intelligent eco sensors) technology, which can identify when people are in the room and the level of activity or motion, then automatically adjust room temperature for best possible comfort and energy efficiency.

The shift towards introducing cutting edge regulation compliant technologies across the world by AC manufacturers will drive the future global AC market.

3.1.3 DECREASING COMPONENT PRICES

As with the advancement of technologies and increase in efficiency, the price of AC equipments is continuously decreasing. The tough competition in AC systems market (specifically in Asia and Middle East), for getting better sales, companies often offer equipments at lower prices. For example, China is expected to be at the forefront with their cost effective equipments capturing the AC market in the near future.

3.2 MARKET CHALLENGES

The following section discusses the restraining factors to the Air Conditioning industry.

3.2.1 RISING ENERGY CONSUMPTION AND INCREASING ELECTRICITY PRICES

The growing energy consumption and electricity requirement in different parts of the world is putting tremendous pressure on the current energy infrastructure of a particular country/region. For example, air conditioning in Saudi Arabia occupy almost XX% of the total energy consumption in the country and it is expected that because of rising population, high per capita consumption, growing economic development in the country and low prices of fuel/electricity, the energy consumption will only increase in the coming years. Because of such a scenario, government is putting harsh measures on limiting the use of ACs. The result is the growing challenge for the AC market to grow.

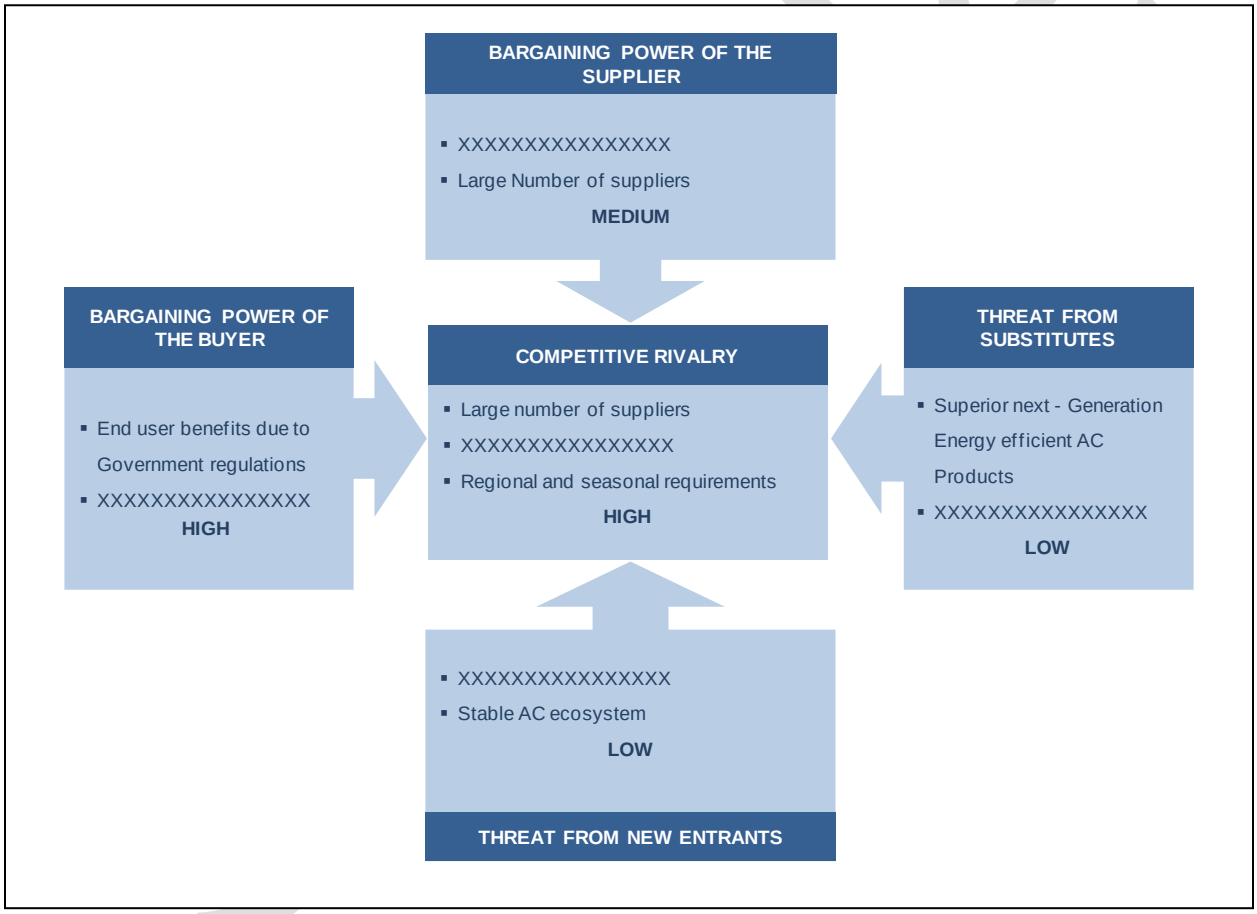
To further add on, regulatory bodies and governments have clearly instructed that all AC manufacturing companies have to incorporate higher Energy Efficient Ratio (EER) in the equipment they manufacture. Violating this law could lead to an eventual destruction of the air conditioning or related equipment. Semi-government and private project holders have become cautious by this move and hence are largely employing latest energy efficient technologies such as District Cooling (DC), multi-split VRF systems, eco-friendly inverter technology based units, and solar energy based ACs.

3.3 INDUSTRY DYNAMICS

3.3.1 PORTER 5 FORCE ANALYSIS

FIGURE 6

PORTER FIVE FORCES



Source: BIS Research Analysis

3.3.1.1 Bargaining Power Of The Supplier

The suppliers have medium bargaining power as they are facing huge competition among themselves. Compliance to the government regulations and providing the customers with technically better product at a lesser price is the main reason of the competition in the AC market. Another reason for the medium impact of the "bargaining power of the suppliers" are regulations, which constrain the cooling capacity of the product. Compliance to these regulations increases the technical specifications and affects the product cost.

Increase in global warming and bad weather conditions are ending up in increasing consumer base for the AC market. Rapid Urbanization in developing nations in Asia, South America, and Middle East among other countries is pushing to the growth of the AC market. Construction of green buildings and smart cities is another positively impacting factor which increases the growth of the market and stabilizes the bargaining power of the supplier as medium.

3.3.1.2 Bargaining Power Of The Buyer

The bargaining power of the buyer is high and it is estimated to remain same. User benefits because of government regulations by getting more energy efficient cooling solutions and environment friendly less hazardous products. There is huge technology and price war among ODMs/OEMs which is benefiting the customer to get a technologically better product at a cheaper price. However, the inconvenience due to heavy services and maintenance is negatively impacting the overall AC market.

3.3.1.3 Threat From New Entrant

The threat from a new entrant is causing a negligible impact to the present players because of heavy R&D and technical requirements needed to enter into the AC market. The AC ecosystem is pretty stable and is dominated by established players such as Daikin Industries, Carrier, Gree Electric Appliances, LG, and Zamil Air Conditioners among others which has very strong brand associations among consumers and hence put a big constraint on new entrants to enter into the AC market.

4 GLOBAL AC MARKET, BY TYPES

4.1 INTRODUCTION

The air conditioning market has been analyzed based on five types namely Splits, Rooftops, Indoor Packaged, Chillers, and Others. While Split type air conditioners are the preferred choice among end users and also the dominant revenue generating type of AC globally, Rooftops and Indoor Packaged will be in close competition as far as the revenue generation is concerned. The subsequent sections will be providing extensive analysis of the key air conditioning types with market statistics broken down by geography and application for each AC type.

4.1.1 MARKET STATISTICS

The following table provides the global AC market volume by the key AC types in million units, estimated for the forecast period 2015 to 2020.

TABLE 2

GLOBAL AC MARKET VOLUME, BY TYPE, 2014 – 2020 (MILLION UNITS)

By Types	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
Splits	XX	XX	XX	XX	XX	XX	XX	XX
Rooftops	XX	XX	XX	XX	XX	XX	XX	XX
Indoor Packaged	XX	XX	XX	XX	XX	XX	XX	XX
Chillers	XX	XX	XX	XX	XX	XX	XX	XX
Others	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: ME—BIS Research

Different type of ACs like; split, rooftop, indoor packaged, chillers and others, contribute to the global AC market. XX million Units of split ACs were shipped in 2014 and the split AC market volume is expected to grow at XX% CAGR from 2015 to 2020 with an estimated shipment of XX million units in 2020. The overall AC market is expected to grow at XX% CAGR from 2015 to 2020.

Others type which include window and portable ACs, generated the second highest shipment of XX million units in 2014. Rooftop units are being adopted at a fast rate and are expected to grow at the fastest CAGR of XX% from 2015 to 2020.

4.2 SPLIT AIR CONDITIONER

A split air conditioning unit consists of two different components which are separated from each other. The first component is the outdoor unit which consists of compressor, condenser, and expansion valve which is fitted outdoors and is responsible for the cooling and condensing the air. The other component is the indoor unit which consists of evaporator or cooling coil, blower, cooling fan which is fitted indoors and is responsible for distributing the air indoors. There are different varieties of indoor units that can be used with a split system such as cassette (ceiling recessed), floor mounted, high wall, under ceiling, and concealed ducted type among others.

4.2.1 MARKET STATISTICS

TABLE 3

GLOBAL SPLIT AC MARKET VOLUME, BY GEOGRAPHY, 2014 – 2020 (MILLION UNITS)

By Regions	2014	2015	2016	2017	2018	2019	2020	CAGR % (2015-2020)
The Americas	XX	XX	XX	XX	XX	XX	XX	XX
APAC	XX	XX	XX	XX	XX	XX	XX	XX
Europe	XX	XX	XX	XX	XX	XX	XX	XX
M.E.A	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: ME—BIS Research

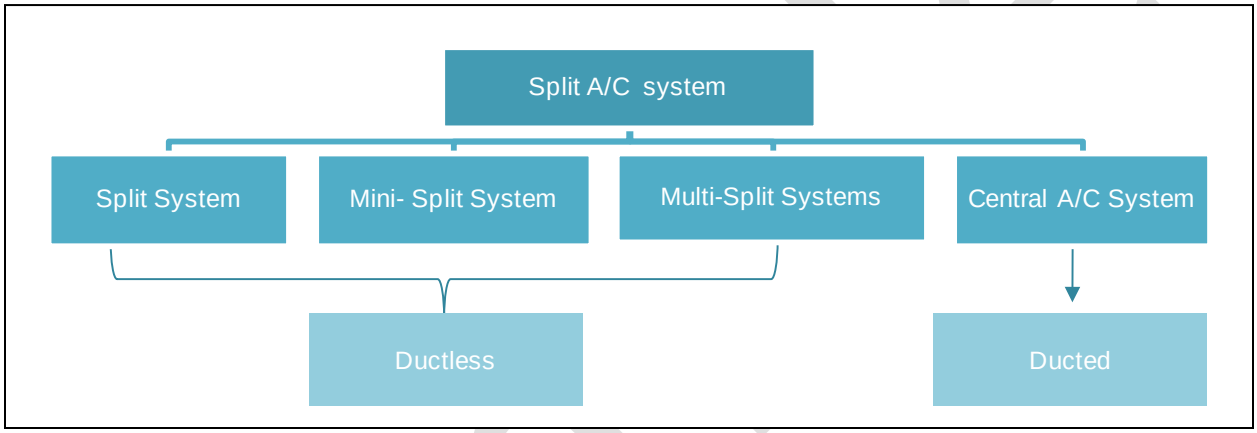
The total Split ACs shipped in 2014 was XX million units and is expected to grow at XX% CAGR from 2015 to 2020. APAC region had the largest market share of XX% in 2014 globally, and is expected to take up XX% of global split AC market volume in 2020. Due to extreme wether conditions, MEA region is expected to show the fastest growth of XX% from 2015 to 2020. The Americas holds the second largest share and is expected to grow at XX% CAGR from 2015 to 2020 and taking up XX% of the global Split AC market volume by the end of the forecast period.

4.2.2 TYPES OF SPLIT AC SYSTEM

There are four basic categories of split AC systems namely; Split, mini-split, multi-split, and central AC.

FIGURE 7

TYPES OF SPLIT AC SYSTEM



Source: BIS Research Analysis

The ductless split AC systems are classified into three different types, namely split, mini-split and multi-split. The ductless split ACs is present in different tonnage (power capacity). The ductless multi split ACs has the highest tonnage, followed by split ACs, and mini-split ACs. The other types of split ACs are central ACs which are ducted systems. All the systems consist of an indoor evaporator-air handler unit and an outdoor compressor-condenser unit.

4.2.3 KEY MARKET TRENDS, DEVELOPMENTS AND PARTICIPANTS

4.2.3.1 Split AC Market Developments

TABLE 4

SPLIT AC MARKET DEVELOPMENTS, BY MARKET PLAYERS

Company	Key Developments
Hitachi Air Conditioning Products Philippines, Inc.	In 2015, Hitachi introduced royal split type AC for commercial and office buildings, hospitals, schools, hotels and condominiums with industry wide highest EER (Energy Efficiency Ratio) of 15.5 for a power of 0.8HP
Kenstar	In 2015, Kenstar collaborated with Amazon for targeting the online split AC market in India
Mitashi	In 2015, Mitashi enters into Indian AC market. The company plans to start with the introduction of split AC units for the northern and western part of the India
Videocon Industries	In 2015, Videocon invested over $XX million on Wi-Fi enabled range of split AC units for the Indian market as well as for exporting to West Asia and SAARC (South Asian Association for Regional Cooperation)nations.
Daikin Middle East and Africa, Panaserv Nigeria	In 2014, Daikin collaborated with Panaserv Nigeria for distributing split AC units with built-in protection technology against power fluctuation and blackouts to the Nigerian light residential market
Unico, Inc. , Argoclima	Unico in collaboration with Italian AC manufacturer, Argoclima entered into distribution of mini-split AC units for the Canadian market. The product combines the advantage of Unico small duct, high velocity central AC system and Argoclima expertise in Technibel split system with outdoor inverter technology
Voltas	In 2014, Voltas introduced latest sixty eight models of "All

Company	Key Developments
	Weather" range of split AC for the Indian market (Chennai region)
Panasonic	In 2013, Panasonic invested $XX million for capturing a twenty percent market share in the Indian split AC market

Source: BIS Research Analysis

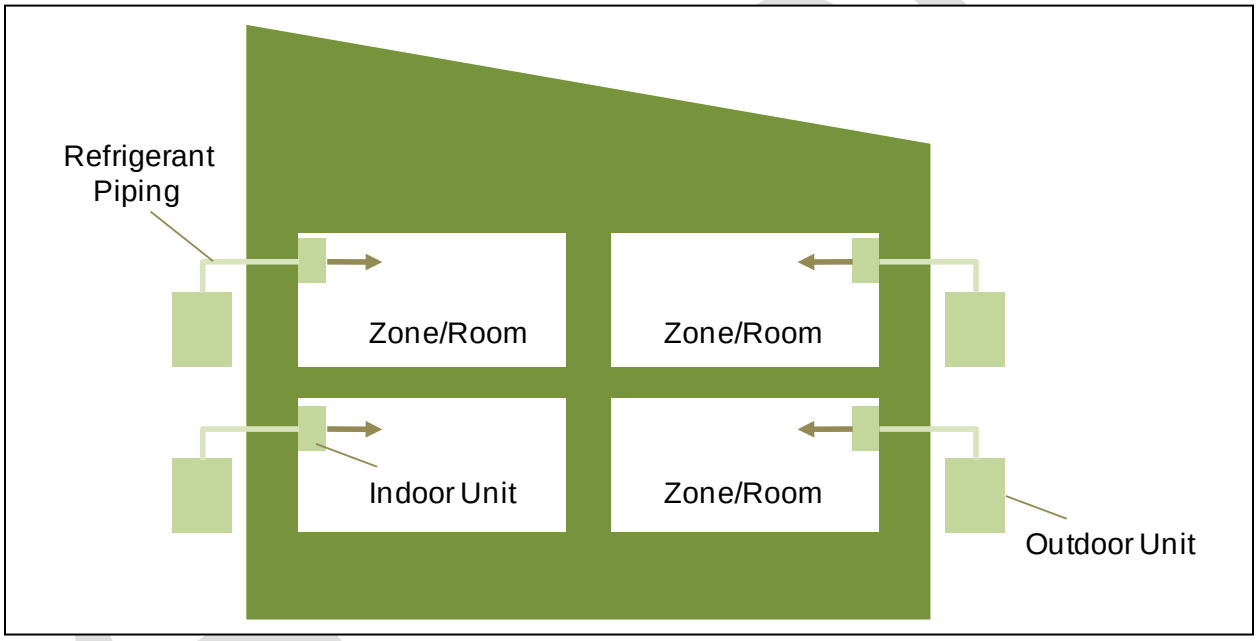
5 GLOBAL AC MARKET, BY DUCT TYPES

5.1 DUCTLESS

Ductless AC system is used for individual room air conditioning. Ductless AC systems involve the use of refrigerant piping to connect the outdoor compressor to the indoor unit or units.

FIGURE 8

DUCTLESS AC SYSTEM FRAMEWORK



Source: Daikin Website, BIS Research Analysis

These piping take up a lot less space and are simple to install. In addition, refrigerant piping, used in ductless AC systems, can frequently reach into areas that ducts might not be able to. Thereby, refrigerant piping make it possible to heat or cool spaces that were unapproachable earlier.

6 GLOBAL AC MARKET, BY APPLICATION

6.1 INTRODUCTION

6.1.1 MARKET STATISTICS

TABLE 5

GLOBAL AC MARKET VOLUME, BY APPLICATION, 2014 – 2020 (MILLION UNITS)

By Application	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
Commercial	XX	XX	XX	XX	XX	XX	XX	XX
Residential	XX	XX	XX	XX	XX	XX	XX	XX
Institutional	XX	XX	XX	XX	XX	XX	XX	XX
Industrial	XX	XX	XX	XX	XX	XX	XX	XX
Others	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: ME—BIS Research

The global AC market by applications is segmented into Commercial, Residential, Institutional, Industrial and other applications. The residential application consumes the maximum amount of ACs and XX million units were shipped in 2014. While growing at XX% CAGR from 2015 to 2020, Residential application is expected to consume XX million unit ACs in 2020. Industrial application is expected to grow at the fastest rate, for the global AC market, at XX% CAGR from 2015 to 2020.

6.2 COMMERCIAL

There are various ducted as well as ductless cooling products that are used for different commercial applications. The ductless AC products that are used in commercial applications include split systems, chillers, and indoor packaged units. The ducted AC products that are used in commercial applications include rooftop units (RTUs) and other cooling solutions such as air handling units (AHUs) and portable air conditioners.

TABLE 6

COMMERCIAL APPLICATION: GLOBAL AC MARKET VOLUME, BY TYPE, 2014 – 2020 (THOUSAND UNITS)

By Types	2014	2015	2016	2017	2018	2019	2020	CAGR % (2015-2020)
Splits	XX	XX	XX	XX	XX	XX	XX	XX
Rooftops	XX	XX	XX	XX	XX	XX	XX	XX
Indoor Packaged	XX	XX	XX	XX	XX	XX	XX	XX
Chillers	XX	XX	XX	XX	XX	XX	XX	XX
Others	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: ME—BIS Research

In commercial applications, XX million Units of split ACs were shipped in 2014 and the split AC market volume is expected to grow at XX% CAGR from 2015 to 2020 and ship XX million units in 2020. The overall AC market is expected to grow at XX% CAGR from 2015 to 2020. Others type which include window and portable ACs, generated the second highest shipment of XX thousand units in 2014. Rooftop units are being adopted at a fast rate and are expected to grow at the fastest CAGR of XX% from 2015 to 2020.

The various commercial applications in which above cooling solutions are used include hotels, restaurants, automobile repair shops, banks, car wash units, convention center, gas station, market houses, skyscraper, shops, shopping malls, supermarkets, warehouses, office buildings, bakery, and bookstore among others.

TABLE 7

COMMERCIAL APPLICATION: GLOBAL AC MARKET VOLUME, BY GEOGRAPHY, 2014 – 2020 (THOUSAND UNITS)

By Regions	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
The Americas	XX	XX	XX	XX	XX	XX	XX	XX
APAC	XX	XX	XX	XX	XX	XX	XX	XX
Europe	XX	XX	XX	XX	XX	XX	XX	XX
M.E.A	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: ME—BIS Research

The total ACs shipped for commercial application in 2014 was XX million units and is expected to grow at XX% CAGR from 2015 to 2020. APAC region had the largest market share of XX% in 2014 globally, and is expected to share XX% of global AC for commercial application market in 2020. Due to the weather conditions, MEA region is expected to show the fastest growth of XX% from 2015 to 2020. The Americas holds the second largest share and is expected to grow at XX%, CAGR from 2015 to 2020 and share XX% of the global AC for commercial application market.

The commercial AC products such as RTUs are extensively used in mature markets of North America and Europe whereas chillers and indoor packaged units are quite popular in the European and Asia-Pacific regions.

6.3 RESIDENTIAL

Varieties of both, ducted as well as ductless cooling products are used for different residential applications. The ductless AC products that are used in residential applications include split systems (including mini-split systems and multi-split systems). The ducted AC products that are used in residential applications include cooling solutions such as portable AC and air side AC.

TABLE 8

RESIDENTIAL APPLICATION: GLOBAL AC MARKET VOLUME, BY TYPE, 2014 – 2020 (MILLION UNITS)

By Types	2014	2015	2016	2017	2018	2019	2020	CAGR % (2015-2020)
Splits	XX	XX	XX	XX	XX	XX	XX	XX
Rooftops	XX	XX	XX	XX	XX	XX	XX	XX
Indoor Packaged	XX	XX	XX	XX	XX	XX	XX	XX
Chillers	XX	XX	XX	XX	XX	XX	XX	XX
Others	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: ME—BIS Research

In residential applications, XX million Units of split ACs were shipped in 2014 and the split AC market volume is expected to grow at XX% CAGR from 2015 to 2020 and ship XX million units in 2020. The overall AC market is expected to grow at XX% CAGR from 2015 to 2020. Others type which include window and portable ACs, generated the second highest shipment of XX million units in 2014. Rooftop units are being adopted at a fast rate and are expected to grow at the fastest CAGR of XX% from 2015 to 2020.

7 GLOBAL AC MARKET, BY GEOGRAPHY

7.1 INTRODUCTION

7.1.1 MARKET STATISTICS

TABLE 9

OTHER APPLICATIONS: GLOBAL AC MARKET VOLUME, BY GEOGRAPHY, 2014 – 2020 (THOUSAND UNITS)

By Regions	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
The Americas	XX	XX	XX	XX	XX	XX	XX	XX
APAC	XX	XX	XX	XX	XX	XX	XX	XX
Europe	XX	XX	XX	XX	XX	XX	XX	XX
M.E.A	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: ME—BIS Research

Countries in Asia pacific region occupy more than half of the AC market volume, globally. Irrespective of the fact that The Americas holds the second largest market share of ~XX% in 2014, it is expected that this region will grow with the highest CAGR of XX% from 2015 to 2020. Extreme hot conditions in the MEA are expected to drive the AC shipments in this region with an approximate shipment of XX million units in 2014. It is expected that while growing at XX% CAGR, MEA region is going to consume XX million units ACs in 2020.

7.2 THE AMERICAS

The conventional American residential (old homes) and commercial markets (restaurants, offices) have continued to remain the major beneficiaries of ducted products. However, the market is seeing a shift towards adopting latest technologies and cooling solutions that are more energy efficient and convenient to install such as split AC units or VRF (Variable refrigeration flow) systems. Different regulatory and energy standards globally and especially in America is another major reason that manufacturers are adopting ductless AC solutions over ducted solutions which are prone to leakages and are less energy efficient. The following section will explain in detail about the recent regulations, market trends, developments and leading industry players across the American AC market.

7.2.1 MARKET STATISTICS

TABLE 10

THE AMERICAS: AC MARKET VOLUME, BY TYPE, 2014 – 2020 (MILLION UNITS)

By Types	2014	2015	2016	2017	2018	2019	2020	CAGR % (2015-2020)
Splits	XX	XX	XX	XX	XX	XX	XX	XX
Rooftops	XX	XX	XX	XX	XX	XX	XX	XX
Indoor Packaged	XX	XX	XX	XX	XX	XX	XX	XX
Chillers	XX	XX	XX	XX	XX	XX	XX	XX
Others	XX	XX	XX	XX	XX	XX	XX	XX
Total	XX	XX	XX	XX	XX	XX	XX	XX

Source: ME—BIS Research

In the Americas region, XX million Units of split ACs were shipped in 2014 and the split AC market volume is expected to grow at XX% CAGR from 2015 to 2020 and ship XX million units in 2020. The overall AC market, in The Americas region, is expected to grow at XX% CAGR from 2015 to 2020. Others type which include window and portable ACs, were the second largest shipped ACs withf XX million units shipped in 2014. Indoor Packaged units are being adopted at a fast rate and are expected to grow at the fastest CAGR of XX% from 2015 to 2020.

8 KEY MARKET PLAYERS PROFILE

8.1 VOLTAS LIMITED

8.1.1 SUMMARY

Particular	Specific (as of 2014)
Website	voltas.com
Contact Details (Telephone, FAX and Location)	Voltas Limited Voltas House 'A' Block Dr. Babasaheb Ambedkar Road Chinchpokli Mumbai 400 033 Telephone : 022-66656 666 Fax : 022-66656 311
Year of Incorporation/Establishment	1954
Ownership Type	Public
Company Type (manufacturer, distributor, retailer, integrator, technology development, service provider, etc.)	Manufacturer
Number of Employees	More than 10,000
Subsidiaries	Universal Comfort Products Ltd. Rohini Industrial Electricals Ltd. Auto Aircon Ltd. Saudi Ensas Company for Engineering services WLL Weather maker Ltd. Voltas Netherlands B.V. Voltas Oman LLC Lalbuksh Voltas Engineering Services and Trading LLC

Particular	Specific (as of 2014)
Competitors	Daikin industries Honeywell International Hitachi Ltd. Lennox International Egat Group

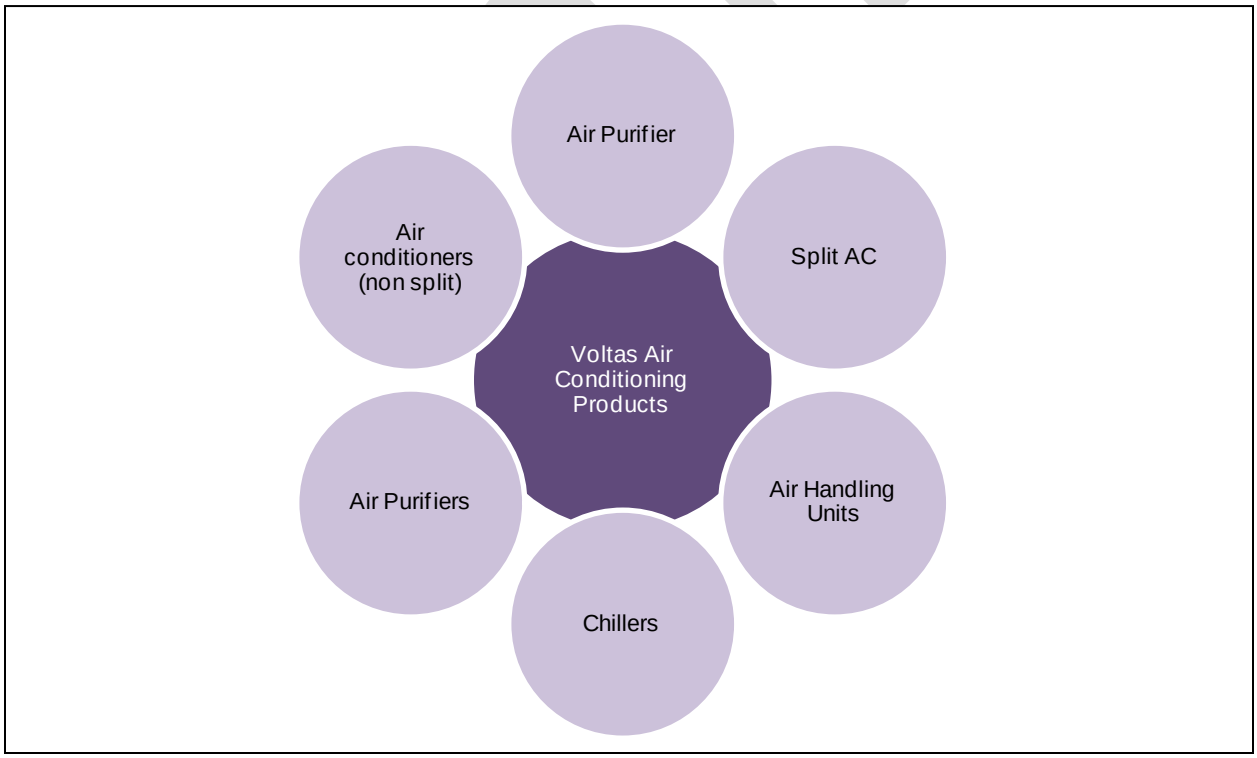
Source: Voltas Ltd. website, BIS Research

8.1.2 PRODUCT PORTFOLIO

Voltas is the leading company in the air conditioning industry in India. The various products that Voltas offers in the air conditioning market are mentioned in the following figure.

FIGURE 9

VOLTAS LIMITED AIR CONDITIONING PRODUCT PORTFOLIO



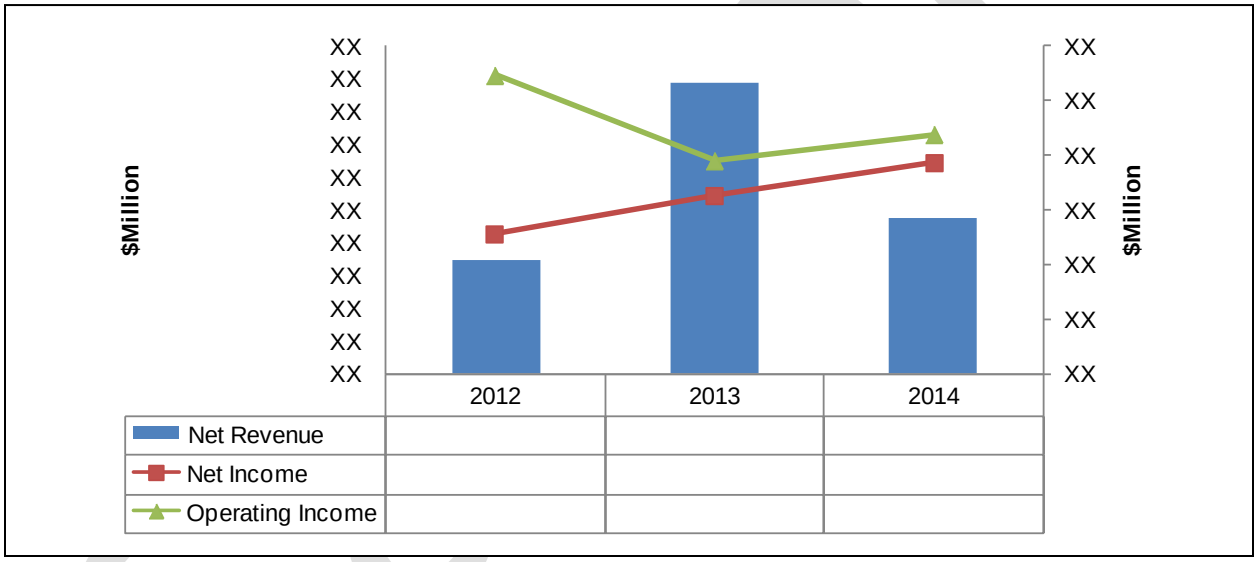
Source: Voltas Ltd. website, BIS Research

The company offers engineering solutions over a wide array of industries such as heating, ventilation and air conditioning, refrigeration, electro-mechanical projects textile machinery, machine tools, mining and construction equipment, materials handling, water management, building management systems, indoor air quality and chemicals.

8.1.3 FINANCIALS

FIGURE 10

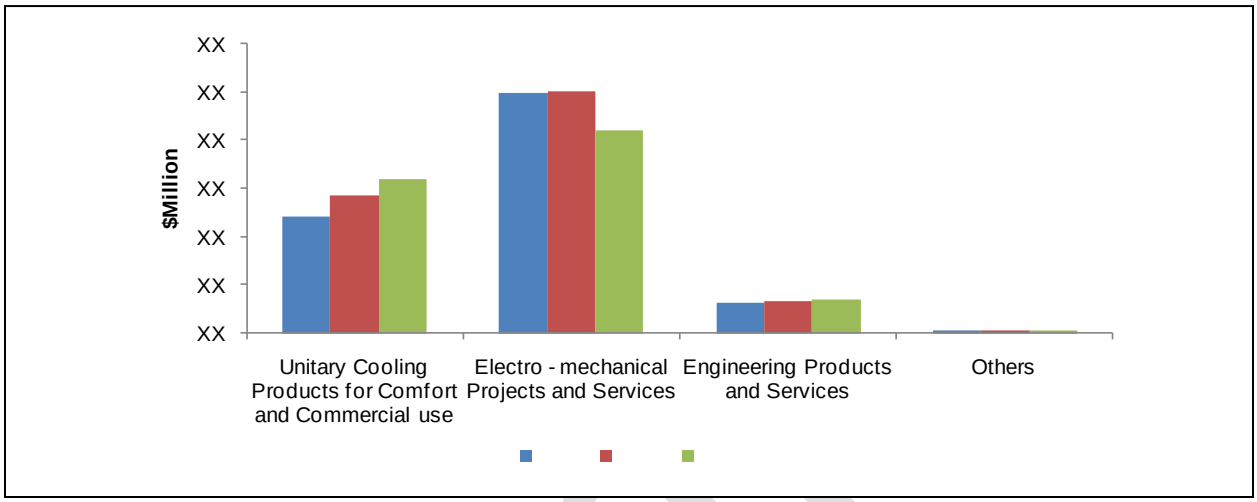
VOLTAS LIMITED: OVERALL FINANCIALS, 2012-2014, ($MILLION)



Source: Voltas Annual Report, BIS Research

FIGURE 11

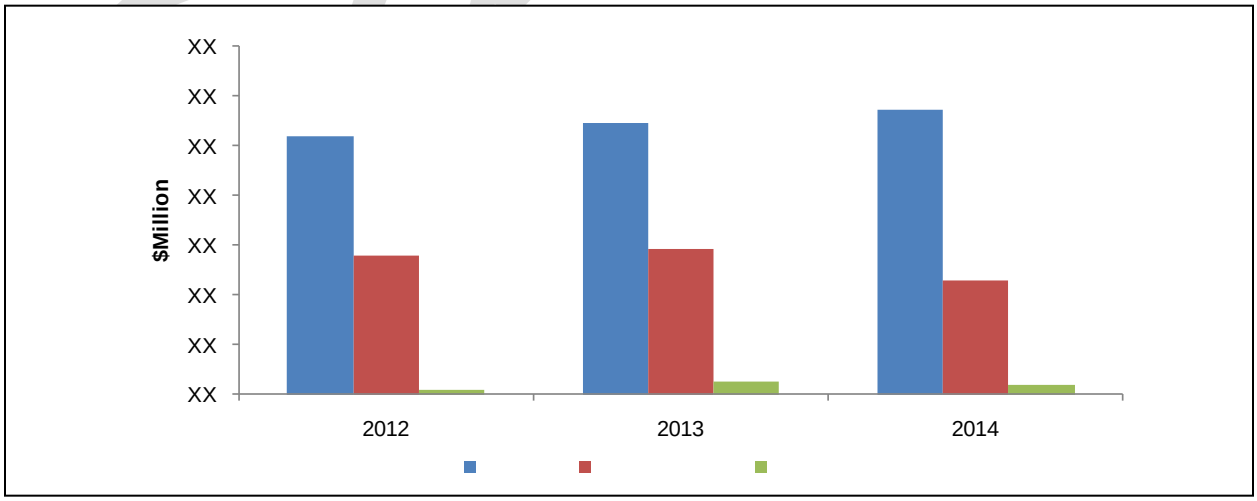
VOLTAS LIMITED: FINANCIALS, BY BUSINESS SEGMENT, 2012-2014, ($MILLION)



Source: Voltas Annual Report, BIS Research

FIGURE 12

VOLTAS LIMITED: FINANCIALS, BY GEOGRAPHY, 2012-2014, ($MILLION)



Source: Voltas Ltd. Annual Report, BIS Research

8.1.4 KEY DEVELOPMENTS

Date	Strategy	Description
February 2014	Event	Voltas Limited established a clear lead in air conditioners sold through multi-brand outlets and toppled companies such as LG and Samsung in consumer electronics
January 2014	Product Launch	Voltas Limited introduced new and commanding range of all-weather split air conditioners that comprise 68 new models of split ACs
December 2013	Event	Voltas Limited won prominent National Energy Conservation Award for its promotion and sales of energy efficient appliances in the Air Conditioning category
September 2013	Event	Voltas Limited won International Gold Award at the Asia Awards of World Advertising Research Centre for its All-weather ACs
December 2012	Event	Voltas Limited Unitary Products Business Group (UPBG) won gold at the EFFIE award 2012 for the concept of "All Weather AC" and the Numero Uno position held by the company throughout the year

Source: Voltas Ltd. Website, BIS Research

8.1.5 ANALYST INSIGHT

Voltas Air conditioning has over the years created a strong brand image for itself which allows it to be one of the prominent leaders in air conditioning industry. The major strength of the company remains in its ability to plan and accomplish its electro mechanical projects which include air conditioning and refrigeration. The company has thriven in Indian markets whereas also expanded itself in the Middle East under immense competition.

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