

The Total HVAC Solution

A Specifier's Guide

- Spiralite[®], innovative patented energy saving duct
- LG Electronics, a world leading HVAC products brand

1

About Khansaheb Industries

Mission and Vision
History
Success Stories
Expertise: Manufacturing, Distribution

2

Spiralite®

Introduction
Applications
Specifications
Benefits
Prestigious Projects References
Certifications

3

LG Electronics

Introduction
Applications
Specifications
Benefits
Certifications

4

Contact Us

UAE Head Office
UK Head Office



About Khansaheb Industries

Mission and Vision

Produce high-quality work that meets or exceeds the expectations of the team.

History

Established in the United Arab Emirates (UAE) in 1935, Khansaheb delivers a diverse portfolio of construction and facilities management services and solutions to governments, major local, regional and international blue-chip clients. Widely admired as a pioneer in the construction and real estate industry, Khansaheb has helped to play a key role in the growth and development of the UAE by consistently delivering sustainable world-class solutions for all types of building and infrastructure projects.

From the initial brief, right through to design, procurement, delivery and after-care of many special and iconic projects in both the UAE and beyond, Khansaheb has harnessed a strong reputation for the utmost professionalism, integrity and quality underpinned by reliable delivery and ultimate customer satisfaction in every instance.

Khansaheb has become a trusted partner to the Dubai Government as well as many large-scale private developments that have relied on the company to deliver numerous key projects across Dubai and the wider Emirates. These include the award-winning Bab Al Shams Desert Resort & Spa, the Dubai International Convention Centre at the Dubai World Trade Centre complex, the hugely popular Mall of the Emirates, Abu Dhabi SeaWorld, Wafi City, University of Birmingham and The Beach JBR.

Khansaheb Industries is a subsidiary of the Khansaheb Group. Khansaheb Industries focus on innovative high quality and sustainable products that provide energy savings and Operational Expenditure (OPEX) – Capital Expenditure (CAPEX) savings. The Company owns Spiralite® and patents for insulated non-metallic Heating, Ventilation and Air Conditioning (HVAC) ductwork across the world.

In January 2023, Khansaheb Industries signed a distribution agreement with LG Gulf Electronics, part of LG Electronics Global, a world-leading consumer electronics brand to promote and sell LG HVAC products to the UAE market, providing greater product diversity to UAE consumers and businesses.

Success Stories

A Rich Heritage

Successfully in business for more than 89 years, the Khansaheb Family are recognised as leaders and innovators in both the UAE and the Gulf, having founded the first local contracting business in the UAE way back in 1935. Ever since, Khansaheb has harnessed its strong reputation through utmost professionalism, integrity and quality supported by reliable delivery and has become the go-to provider for clients who seek fast-track, high-quality construction.

Khansaheb Industries follows this tradition by introducing groundbreaking innovations in the UAE. Spiralite® is widely regarded as being the best-performing ductwork available in the global market and offers optimal airflow and thermal efficiency, with unrivalled whole-of-life cost savings over the lifetime of a building.



The Importance of Sustainability

Sustainability is the key attribute underpinning all the products and activities of Khansaheb Industries and comes from our recognition that lowering the carbon footprint of the planet is the responsibility of every individual and organization. We take this obligation very seriously and put it at the forefront of any business opportunity. This ensures that all buildings are future-proofed and can be enjoyed by future generations without compromising the environment in which we live and on which we depend.

Khansaheb Industries is justifiably able to claim that Spiralite® is the most sustainable and energy-efficient AC ductwork, that has been widely recognised for its green credentials, including recognition from the Emirates Green Building Council and the Green Emirates, selection for the Masdar

The Future Build portal, membership of the Energy Efficiency Partnership, certification as a Low Carbon Business and Trustmark Certification from the Abu Dhabi Quality and Conformity Council.

As our highest priority, all of Khansaheb Investment's real estate developments are designed and built to be fully sustainable, energy-efficient and future-proof, an important part of our legacy. Our latest sustainable development, the Mirdif 35 lifestyle centre has been rated a Leadership in Energy and Environmental Design (LEED) Gold standard while our LEED Platinum (the very highest achievable standard) worker's accommodation, is currently the sole LEED Platinum building in the whole of the UAE and houses 3,600 people.

Expertise: Manufacturing, Distribution

Spiralite® is an innovative and unique circular and flat oval non-metallic insulated air duct that has numerous advantages over traditional GSS (Metal) ducts. Its lightweight, anti-bacterial, optimal airflow and thermal performance offers numerous benefits in weight, space, time, cost and energy consumption. These benefits provide unrivalled whole-of-life cost advantages and superior Indoor Air Quality (IAQ). Its embodied carbon is 73 percent less than metallic insulated systems and its lightweight construction reduces the structural requirements of supports and reduces the health and safety risks on site.

Khansaheb Industries acquired the Global Intellectual Property Rights of Spiralite® non-metallic ductwork. In addition to several prestigious projects in the UAE, Spiralite® has been installed in the international markets, in the UK, Ireland, Spain and Singapore to name a few.

LG Electronics' Air Solution Business Unit is a global leader in HVAC and energy solutions with a comprehensive portfolio of proven expertise and performance. Launching Korea's first residential air conditioner in 1968, LG has paved the way for total HVAC solutions over the last five decades through the strategic utilisation of advanced technologies. With a well-established production base and industry-leading capacity, the company provides effective HVAC solutions for both the commercial and residential sectors. Its wide range of cutting-edge systems for heating, ventilation and air conditioning truly represents LG's initiative in offering the most optimised solutions for a variety of uses.

Pursuant to its mission of "Innovation for a Better Life," the company offers solutions boasting high energy efficiency and reliability based on its state-of-the-art know-how and technologies to ensure the most optimal environment for users.

In January 2023, Khansaheb Industries signed a distribution agreement with LG Gulf Electronics, part of LG Electronics Global, a world-leading consumer electronics brand. The agreement will see Khansaheb Industries promote and sell LG HVAC products to the UAE market, providing greater product diversity to UAE consumers and businesses.

This will see Khansaheb Industries promote and sell LG's wide diversity of HVAC products. Those include units with variable refringent flow, direct expansion, air handling units, and chillers. Khansaheb offers a wide diversity

of progressive HVAC solutions, which include Spiralite®, the world's first, patented, circular and flat oval insulated AC air duct that is energy efficient and lightweight, while also being robust, with optimal airflow and thermal performance.

Commenting on the new partnership, Abdulrahman A. Khansaheb, Khansaheb Industries Director, said: "This distribution agreement is a clear demonstration of the offering that Khansaheb has in the regional market. We deliver the latest technology in the HVAC space to businesses and consumers, ensuring that the units they have not only fulfil their cooling requirements but further deliver highly efficient solutions that are sustainable over the long term.

"Khansaheb continues to operate at the cutting-edge of the HVAC industry with our product, Spiralite®. Uniquely circular, Spiralite® offers key advantages over traditional metal ducts: it is lighter, offers better thermal performance, reduces areas for bacteria growth, and delivers sustainability benefits. LG's suite of advanced products will sit well alongside Khansaheb's own Spiralite® offering."

The partnership between Khansaheb Industries and LG will deliver highly efficient and sustainable cooling solutions that provide customers with the highest indoor air quality and optimal AC performance at the lowest operating cost. Khansaheb Industries and LG Electronics also both focus on ensuring reliable on-time delivery and continuous optimisation of their products and services.

The LG's distribution partnership provides customers with market-leading HVAC solutions and will deliver the best value to LG clients in the UAE. The agreement marks a step towards Khansaheb's Industries business objective of strengthening its HVAC portfolio of solutions while also offering complete air conditioning solutions and expanding its presence across the Middle East.

Khansaheb Industries will service a wide customer base of MEP contractors, owners, developers, and operators as well as consultants undertaking refurbishment and retrofitting works. The HVAC solutions have a wide range of applications in the residential and commercial segment including residential and commercial buildings on the mainland or offshore, as well as schools, universities, commercial and retail, hospitality, and healthcare segments as well as large infrastructure facilities such as industrial plants, airports, and hydro farms.



spiralite®

By Khansaheb Industries

Meet Spiralite®, innovative and patented energy-savings duct for both outdoor and indoor designs

Spiralite® by Khansaheb Industries is an innovative, pre-insulated, robust phenolic ductwork offering a 3-in-1 product with unrivalled advantages for the contractor, architect and the building owner as they build or refurbish.

The majority of ductwork products on the market are made from galvanised sheet metal that require to be insulated after installation, making it a lengthier and more challenging task to complete the project quickly and efficiently. Spiralite® generates up to 62 percent in energy savings and it is already insulated with very good R-values. It also has unique and patented internal bacteriostatic laminate that does not allow bacteriostatic mold, fungal, or microbe growth. Its enhanced anti-microbial laminate is specifically 99.9 percent effective in reducing the microbial load on conditioned air.

Spiralite® guarantees optimal IAQ while generating energy savings and simplifying installation.

It is also customisable and it can be used for both outdoor and indoor across buildings and villas.



2

Spiralite®

Why is Spiralite® a unique value re-engineering solution?

Overview

Manufactured by Khansaheb Industries, Spiralite® is the world's first energy-efficient ductwork - a patented technological breakthrough in the heating ventilation industry. It is an innovative and unique circular and flat oval non-metallic insulated air duct that has numerous environmental and practical advantages over traditional GSS (Metal) ducts. Spiralite® is widely regarded as being the best-performing ductwork available in the global market and offers optimal airflow and thermal efficiency, with unrivalled whole-of-life cost savings over the lifetime of a building.

Spiralite® pre-insulated non-metal ductwork offers a number of Value Engineering (VE) options that should all be cost and time effective while delivering a robust, long-lasting and both thermally and energy-efficient product. Spiralite® pre-insulated ductwork provides a cost-effective Value Engineering option to Mechanical and Electrical contractors, as a high-quality, robust alternative to the more traditional Galvanised Steel Sheet duct plus lagging, cladding, etc.

Arising from greater airflow and thermal efficiencies, the following VE Options are available through design optimisation:

1. Either reduce the size of the ductwork and save material costs - CAPEX savings
2. Reduce the fan capacity/power of the AHU and save:
 - Plant costs - CAPEX savings
 - Operating costs - OPEX savings

In both cases there will also be further ongoing OPEX cost savings - less frequent and quicker cleaning; quicker and easier R&M.



The use of Spiralite® significantly simplifies and reduces site activities:

- ▶ Only one fit for both the ductwork and the insulation (and the weatherproofing for external ductwork) and therefore saves installation time and simplifies site logistics.
- ▶ Results in substantial Health and Safety benefits (no sharp edges, no heavy cutting or lifting equipment required, easier and quicker to install, no toxicity or hazardous materials of any sort, etc.).
- ▶ Easier and quicker to transport to the site and to get to the installation area.
- ▶ Allows most changes and alterations to be made on-site

Other benefits to M&E contractors include:

- ▶ De-skills the site and allowing most fabrication to be done off-site, significantly lowering site risk.
- ▶ Far less time is spent on the site by the mechanical installers.
- ▶ Very minimal waste on-site and any waste can be fully recycled.
- ▶ Reduction in carbon footprint of the development and results in lower energy use in the subsequent operation of the HVAC system.

As a result, the following VE options could be considered:

- ▶ Less ductwork where there are complex systems.
- ▶ Smaller ductwork diameters in narrow confines.
- ▶ Reduced capacity, weight, and sizes of air handling equipment.
- ▶ Less expensive weatherproofed external ductwork.
- ▶ Less expensive protected ductwork in plant rooms, risers, etc.
- ▶ Easier configurations in areas that have unusual shapes or restricted access.
- ▶ Reduced noise in acoustically sensitive areas.
- ▶ Use of aesthetically and airflow efficiency enhanced twin bends, etc. instead of tee pieces, etc.
- ▶ Use of time and cost-efficient wire hangers where suitable.
- ▶ More effective FCU plenums and discharge ducting incorporating built-in Volume Control Dampers.
- ▶ Use in moist or chemically hostile areas as an alternative to very expensive stainless steel or zinc/epoxy coated ductwork.
- ▶ Aesthetically enhanced finishes in open-to-view environments

History

Since 1935 the Khansaheb Group has a strong heritage of pioneering innovation and development in the UAE and GCC. Under the group, Khansaheb Industries was established with a mission to introduce the latest innovative energy efficient products and technologies into the local and regional markets. It focuses on innovative high quality and sustainable products that provide energy savings and OPEX-CAPEX savings.

In 2016 - Khansaheb Industries acquired the Global Intellectual Property Rights of Spiralite® non-metallic ductwork. Today, the Company owns Spiralite® and patents for insulated nonmetallic HVAC ductwork across the globe. In addition to several prestigious projects in the UAE, Spiralite® has been installed in the international markets, in the U.K., Ireland, Spain and Singapore to name a few.

What makes Spiralite® the most sustainable duct in the world?

Spiralite® ductwork saves energy, cuts cost and reduces environmental impact. The high performance, fully compliant, insulated ductwork systems benefit everyone involved in specifying and delivering energy-efficient construction projects around the world.

Applications

Retrofitting

The places where we work have changed and the way people work has changed. New office and commercial buildings are built around interaction and flexibility, creating spaces where businesses can perform, breathe and thrive as they compete for the best talent.



Commercial

The places where we work have changed and the way people work has changed. New office and commercial buildings are built around interaction and flexibility, creating spaces where businesses can perform, breathe and thrive as they compete for the best talent. The pressure is on as more exacting Corporate Social Responsibility (CSR) requirements, increased energy costs (expected to increase 80 percent in the next five years) and specific legislation requiring increased sustainability comes in.

High-End Residential

If living space is going to be successful, we know that air quality, temperature, light, and humidity need to be under control, whether the home is in the English countryside or on the beach in Dubai. Spiralite® ductwork saves space and improves air quality and humidity. As the ductwork is pre-insulated, additional room for insulation lagging is not necessary and usable space can be maximised throughout any building.

With Spiralite®, a well-designed ventilation system will help remove cooking smells, allergens, and other irritants, such as tobacco smoke, and make it a considerably more pleasant, healthy, and comfortable place to live.

Education

Spiralite® ductwork saves energy, cuts cost and reduces environmental impact, so it's no surprise that those who are planning to deliver new education facilities are also considering this proven approach to creating a more sustainable campus.

Schools and universities are made up of diverse structures with different requirements, whether they be classrooms, dining halls, swimming pools, science laboratories or vocational workshops. Educational spaces are also frequently flexible spaces, allowing users to share facilities and utilise space efficiently. All these facilities need to be cost-effective to build, run and maintain, helping to provide an enjoyable environment which will continue to attract and retain students and staff.

Spiralite® ductwork has Acoustics properties which assist in having lower noise levels which is a prime requirement in Education facilities and Schools.



Healthcare

Spiralite® ductwork is often specified for sterile environments such as laboratories, and also for environment that has a flow of conditioned air but is particularly well suited to sterile environments such as hospitals and other medical facilities that have a more onerous requirement for optimal air quality - clean, with the correct volumes, temperature and humidity. The cryogenic laminate also contains a mould inhibiting agent that further maintains the sterility of the surface. Spiralite® can also be fabricated with an anti-microbial agent bonded into the cryogenic laminate; this has been tested to be 99.99 percent successful in killing both E.coli and MRSA bacteria coming into contact with it.



Leisure

Spiralite® ductwork can help improve both the functionality and the sustainability of sports and leisure facilities, by transforming the way they are planned, designed, built, and maintained.

Ventilation and air conditioning equipment in these circumstances use lots of energy and need to operate 24 hours a day. Maintaining the required air temperature within pool areas uses a combination of ventilation and air conditioning systems.

Under these circumstances, air tightness and pressure must be maintained to keep the ventilation system energy consumption to a minimum. Spiralite® delivers optimal thermal efficiency as the rigid phenolic insulation panels used in its manufacture have a very low thermal conductivity because of the closed cell construction.



Hospitality

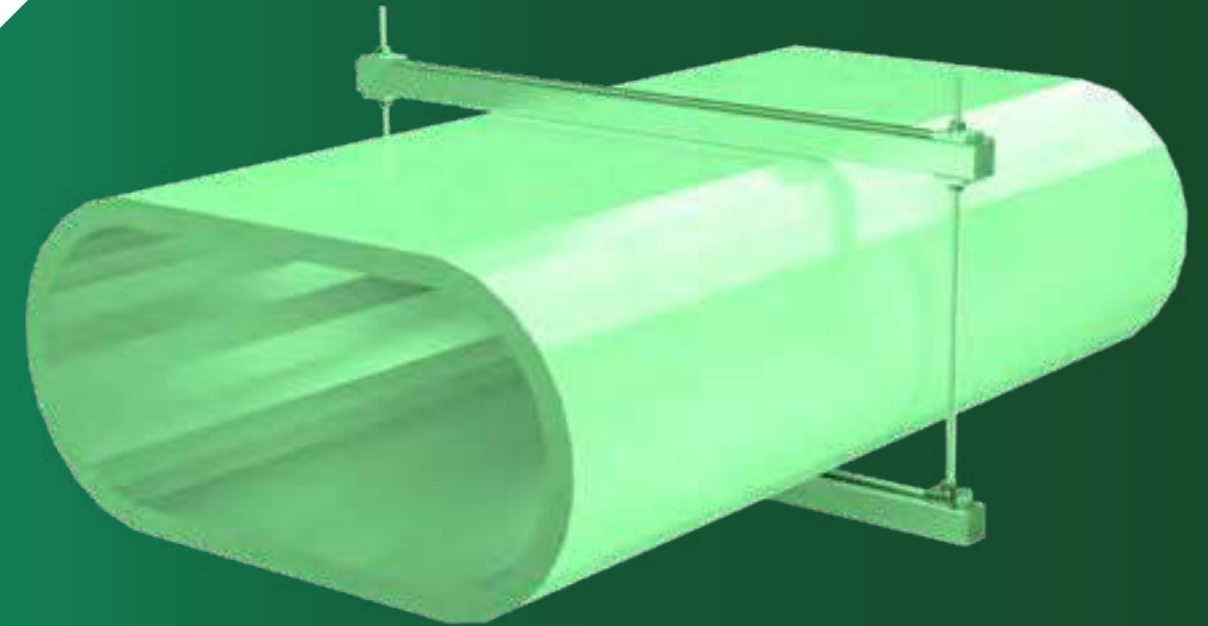
An efficient and effective heating, ventilation and air conditioning (HVAC) system is one of the most important elements of a successful hotel or entertainment property. The HVAC system will be a large energy user for these facilities, operating 24 hours a day with extensive variations in usage, so efficiency is paramount.

Our highly innovative and sustainable ductwork delivers up to 48 percent savings in energy, space and time to commercial HVAC projects, which is good news for those developing and running hotels and entertainment facilities with Spiralite® Ductwork there are lower cleaning costs, lower maintenance costs and quicker and easier repairs. Spiralite® saves energy, cuts cost and reduces environmental impact.

Specifications

USP & Features

- ▶ Offsite fabrication improves quality and reduces waste.
- ▶ Quicker and easier delivery to site and manual handling.
- ▶ Optimal fire properties for standard insulation material.
- ▶ Optimal thermal properties.
- ▶ Enhanced acoustic performance.
- ▶ Quick and easy variations and repairs.
- ▶ Quick and easy defect rectifications.
- ▶ Less accumulation and adherence of dirt; easier to clean and less regular cleaning required.
- ▶ Optimal airflow performance from rounded shape, airtightness, pressure resistance, lower static friction and pressure drops.
- ▶ Internal connections and built-in vapour barriers allow no thermal bridging and condensation.
- ▶ Phenolic insulation is >90 percent closed cell and non-porous, so negligible degradation from moisture.
- ▶ Corrosion resistance Class upto C5 suitable for chlorine and sodium chloride vapor environment such as swimming pools and maritime environments.
- ▶ Significant health and safety advantages - no sharp edges, inert materials, very less VOCs, no hot cutting, no heavy lifting, easy working at height, etc.



Product Line

Spiralite® ductwork fabricated using rigid phenolic insulation board instead of insulated galvanised steel ductwork. The insulation panel is cut in such a way as to allow it to be formed into a complete circular or flat oval duct and sealed with heavy-duty reinforced foil tape. The internal surface is lined using an aluminium foil and PET composite laminate sealed onto itself to give a strong, airtight and pressure-resistant duct system.

Range of sizes

100mm to 2,400 mm is standard in circular, and we have been asked to make flat oval ductwork up to 2,400mm in width; there is no reason why we could not make something bigger. The Spiralite® fabrication process can be scaled up to make any commercial duct size required.

Spiralite® ductwork offers a higher level of finish in its standard form than traditional duct wraps for on-view applications. In addition, Spiralite® can be laminated externally with coloured or textured finishes as desired.

Spiralite® has a very simple, robust, durable

and airtight connecting system between sections of the same size and using reducers/tapers where the dimensions change - internal connectors, tiger clips and tape. Furthermore, the internal collar does not allow a thermal transfer, has no protrusions, and has a built-in vapour seal to ensure the internal thermal integrity is maintained. Connection to bends (90° and 45° standard), shoes, branches, tees, etc are made in a similar way. Connections to metal ductwork of all shapes are by way of protruding spigots over which Spiralite® is fixed and taped. Linkages between metal and Spiralite® are manufactured by KIS and

are standard. All fittings available in metal ductwork can be made in Spiralite® so branches, for example, are cut in and fixed to Spiralite® in a manner developed by KIS and are manufactured in the factory.

Connecting Spiralite® to standard duct ancillaries e.g., fire dampers, VCDs, attenuators, heating & cooling batteries, etc., is also a simple process of connecting the ductwork to the circular spigots coming off a

square ancillary or a simple push connection for circular and applying tape (and mastic where no rubber safe seal). These can also be mechanically fixed using an aluminium plate or flange and tech screws, bolts or rivets. Any change in shape from a plant outlet to ductwork or ductwork to ductwork (metal or pre-insulated) can be accommodated using a standard transformation piece with or without a taper.

Specification & Characteristics

- ▶ 25-40% more energy efficient
- ▶ Rounded shape = optimal airflow efficiency
- ▶ Pressure resistant up to at least 7,667 Pa
- ▶ Completely airtight - Class C at 2,500 Pa
- ▶ Smooth internal surface = lower friction losses
- ▶ Good insulation properties = optimal thermal efficiency
- ▶ No thermal bridge = minimal condensation

Benefits

Indoor Air Quality (IAQ)

Spiralite® has a unique and patented internal bacteriostatic laminate that does not allow bacteriostatic mould, fungal, or microbe growth. Its enhanced anti-microbial laminate is specifically 99.9 percent effective in reducing the microbial load on conditioned air. Spiralite® ductwork saves energy, helps in operation with reduced costs, and reduces environmental impact. Spiralite® has been designed to deliver greener and cleaner air to indoor residents. It provides users with improved air quality because of the improved quality of the conditioned air through greater thermal efficiency and reduced humidity (as detailed above), as well as the correct quantity of air arriving at the designated destination through fewer leakages and lower pressure drops.

Energy savings

Spiralite® ensures meaningful energy savings (measured at up to 62%) on the subsequent operation of the HVAC system. This is due, in main, to:

- ▶ Its excellent thermal performance characteristics - the rigid phenolic insulation panels used in its manufacture have a very low thermal conductivity, (0.018 - 0.026 W/m-k) and are of a closed cell construction which means that they are highly resistant to moisture absorption and heat losses/gains are minimised, and the fact that the ducting is insulated over its entire length with inbuilt vapor seals
- ▶ The circular shape and low roughness factor optimises airflow efficiencies and reduces pressure drops
- ▶ Maximum airtightness results in minimal air leakage rates
- ▶ The internal connections allow no thermal bridge for temperature loss and are also airtight

UL Listing

Listed as Class 1 to Standard for Safety UL181

Fire Performance

Spiralite® is fabricated using UL181 Fire safety compliant panel for GCC market and for European market panel compliant to Euro Class fire rating of B-s1, d0. Spiralite® ductwork is not currently suitable for fire-rated applications

Space

As Spiralite® ductwork requires no subsequent insulation, it can be installed up against the structure of a building, thereby saving valuable space in the ceiling void. If Spiralite® is designed into a project at an early stage, the reduced frictional pressure drops and reduced leakage enable the HVAC engineer to design a system with smaller ductwork which will save space and, of course, cost.

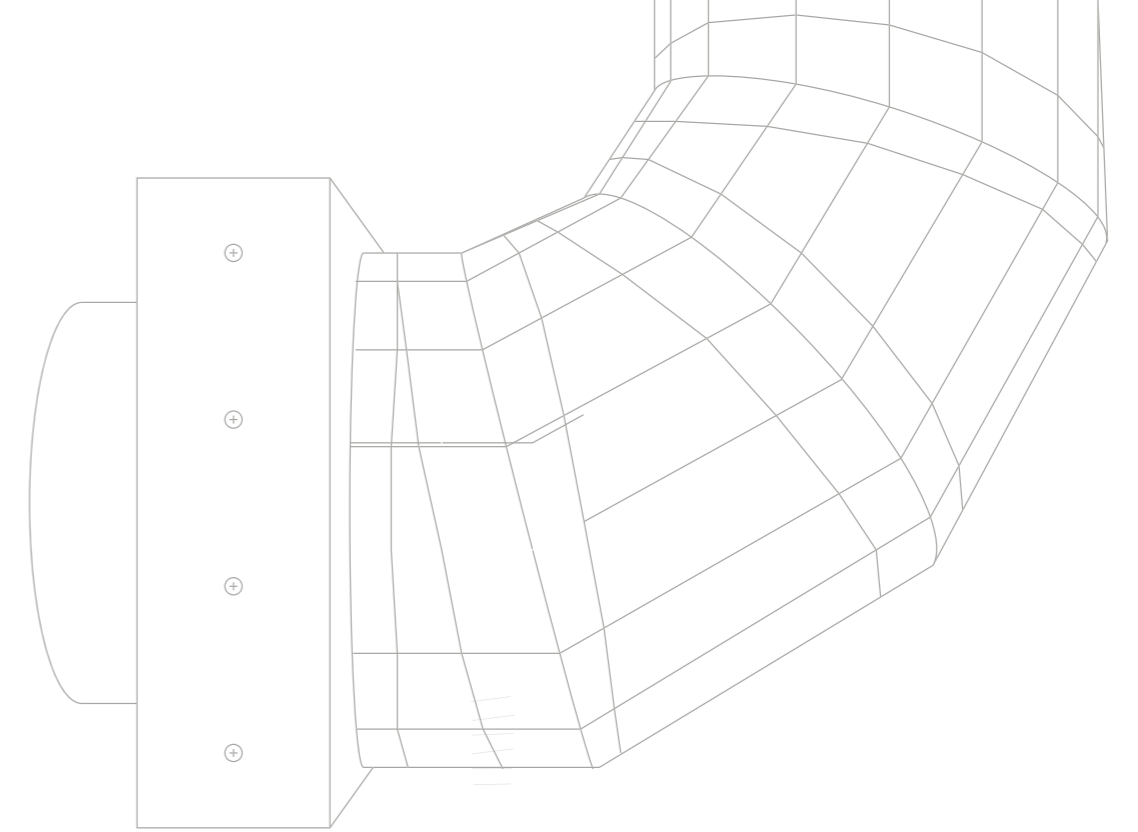
Weight

Spiralite® offers up to 85% lighter than GSS ducting and insulation with lower overall loads. While we still insist that Spiralite® ductwork is supported and installed in accordance with DW144, the reduction in weight helps speed up installation time and reduce the health and safety issues on site. In addition, in certain buildings, the reduction in weight can eliminate the need for secondary steelwork and save time and cost on the structural side of the project.

Installation Speed

Given the light weight of Spiralite®, on-site logistics and manual handling are greatly simplified. Furthermore, due to the ease of adapting Spiralite® on-site, installation is quick, flexible and cost-effective, which is further enhanced by the use of the Gripple wire hanging systems, where appropriate.

Where there is room to assemble Spiralite® on-site, it can also be delivered to the site and to the installation area in a flat-packed format and this further increases speed and efficiency.



Installed Cost

The installed cost of Spiralite® ductwork is comparable to the cost of installing traditional steel ductwork and then applying duct wrap insulation. However, in certain instances, as described above (plant rooms, external ductwork, swimming pools) Spiralite® is considerably cheaper due to the elimination of additional on-site installation processes. Furthermore, the earlier that Spiralite® is considered, the more money it can save by saving void space (to increase ceiling heights), influencing structural design (due to its light weight) or reducing AHU plant size (due to its efficiency). There are other cost savings through, inter alia:

- ▶ Quicker and cheaper delivery
- ▶ Lower incidence of variations, as referred to above
- ▶ Less defects and quicker/cheaper defect rectification
- ▶ Very less wastage on site

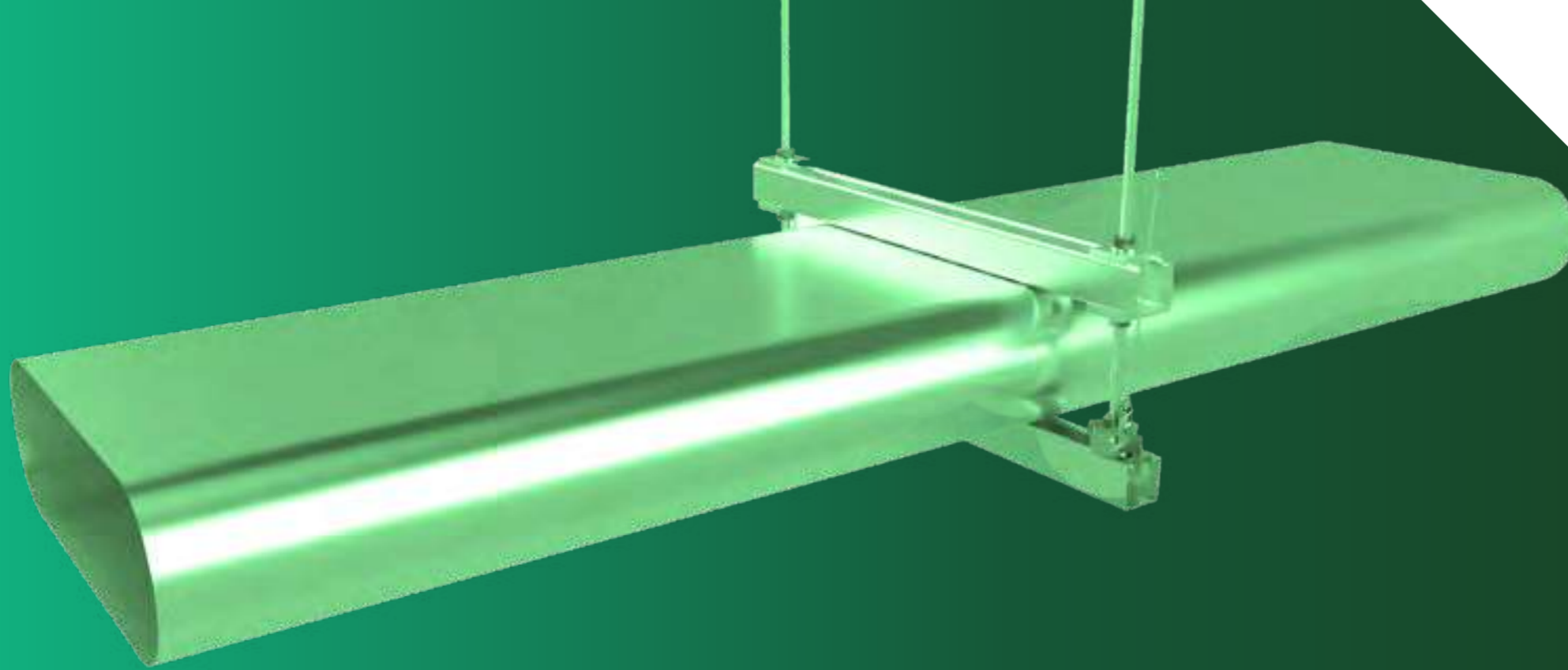
Friction Resistance, Air-leakage, Energy Usage, Running Costs Modification and Repairs

The inner lining of Spiralite® ductwork has an exceptionally smooth finish with a much lower coefficient of friction than metal. In addition, Spiralite® ductwork is substantially airtight at normal operating pressures (it is above Class C at 2500Pa) and therefore suffers from minimal leakage when compared to Class A/B wound spiral metal ductwork. When comparing Spiralite® flat oval to rectangular metal ductwork, the rounded shape of Spiralite® reduces friction and allows air to pass with less internal turbulence. The combination of all these factors means that Spiralite® ductwork is always more efficient in use than the equivalent length of traditional steel ductwork.

As such, if a system has been designed around metal ductwork, replacing it with Spiralite® will not only deliver the required volumes of air, it will do so with less fan power. Therefore, if Spiralite® can be designed into a project, a smaller AHU can be used.

Maintenance & Cleaning

The use of Spiralite® allows meaningful reductions in both cleaning and maintenance activities and costs.



Durability & Lifespan

Spiralite® ductwork is fabricated from phenolic panels that are designed to last for the lifetime of a building and have been proven to do so over several decades. The manufacturers have verified that their phenolic board will perform as intended within the Spiralite® ductwork system. As such, the lifespan of Spiralite® is at least equal to that of traditional sheet metal ductwork. To back this quality standard KIS offer an unprecedented and unrivalled 10-year warranty.

Whole Life Cost

The use of Spiralite® allows meaningful whole-of-life cost savings, and these can be categorised as follows:

- ▶ **Capital cost savings** - due to reduction in AHU capacity arising from enhanced airflow and thermal properties (to benefit from this, Spiralite® will have to be included in the design phase).
- ▶ **Installed cost savings** - due to pre-insulated ductwork, the unique ductwork shape (circular and flat oval) and reduction in material requirements, reduction in ductwork sizes due to design changes - change of shape and reduction in pressure.
- ▶ **Delivery and site cost savings** - due to quicker and easier delivery; virtually zero waste; quick and easy defect rectification; Health and Safety savings; simpler logistics and project management - only one fit, quicker, and easier installation, etc. and manual handling savings related to craning, lifting, transporting, etc.
- ▶ **Ongoing savings during the operation of the HVAC system** - due to lower energy costs (up to 62 percent saved); lower cleaning costs; lower maintenance costs; easy, quick and flexible changes/ adaptations; quicker and easier repair

Embodied Impact & Responsible Sourcing

Spiralite® holds two key credits relevant to insulation in BREEAM section:

- ▶ Spiralite® saves upto 72 percent of embodied carbon when compared to metal ducts while considering A1 to A4 stages.

Management Systems' Standards

ISO 9001:2015

Sustainability & Responsibility

The maximum energy and environmental benefits can be gained by specifically designing Spiralite® into buildings at an early stage, saving significant materials, costs, space, weight and energy, to ultimately deliver a design solution that can be certified to perform optimally both now and well into the future.

LEED®

LEED® is an internationally recognized certification system for the design, construction, and operation of buildings. Spiralite® insulated ductwork can help a project obtain credits by satisfying the LEED® specifications in the following categories:

- ▶ **IEQ - Indoor Environmental Quality**
- ▶ **Integrative Process** - early adoption of Spiralite® in the design process can assist in earning this credit
- ▶ **EA - Energy and Atmosphere**
- ▶ **MR - Materials and Resources:**
 - **MRc3: Materials Reuse** - Use salvaged, refurbished or reused materials such that the sum of these materials constitutes at least 5 percent, based on cost, of the total value of materials on the project.
 - **MRc4: Recycled Content** - Use materials with recycled content.
 - **MRc5: Regional Materials** - Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site.

Technical Advisory Service

Technical Services, will be provided for HVAC projects keeping the focus on Spiralite® duct work, sizing, ESP, layout optimisation, etc.

Prestigious Projects References



Project

SEAWORLD ABU DHABI

Yas Island, Abu Dhabi

Scope of Work: awarded to Spiralite®

Size of ducts: from 150mm to more than 2500mm

Critical Area: Mechanical Plant Room

Please note that all the ducts were required to be anti-corrosive C4/C5 Level



Project

MALL OF THE EMIRATES

Dubai

Scope of Work: awarded to Spiralite®

Size of ducts: from up to 1100x750mm

Critical Areas: MEP plant rooms



Project

WAFI GOURMET TERRACE

Dubai

Scope of Work: awarded to Spiralite®

Size of ducts: up to 1800mm

Critical Area: Mechanical Plant Room & Outdoor application

UAE

- ▶ Al Tayer Real Estate Offices, UAE
- ▶ Edelman Offices, UAE
- ▶ Habib Bank Fitout, UAE
- ▶ Modulus Offices, Dubai Design District (D3), UAE
- ▶ Pilates Studio, UAE
- ▶ Lincoln Show Room, UAE
- ▶ Studio Lumen Offices, UAE
- ▶ INC Office Extension, UAE
- ▶ Mirdif 35 Offices, UAE
- ▶ Katerra Corporate, UAE
- ▶ We Works - Mubadala, Abu Dhabi, UAE
- ▶ Spacewell Office, UAE

KSA

- ▶ Jeddah-Data Center
- ▶ National Security Centre
- ▶ Saad Al Awain Villa

GCC

- ▶ Expo 2020 Thematic Districts, UAE
- ▶ G+2 Private Villa, Al Khawaneej, UAE
- ▶ G+4 Commercial & Residential Tower, Meydan, UAE
- ▶ G+4 Labor Accommodation, Jebel Ali, UAE
- ▶ G+4 Staff Accommodation, DIP, UAE
- ▶ G+9 Serenia Residents, Palm Jumeirah, UAE
- ▶ Masdar Eco Villa, UAE
- ▶ 2B+G+4 Commercial & Office Building @ Wadi Al Safa, UAE
- ▶ G+9 Al Jaddaf Residence, UAE
- ▶ Amana Chairman's Villa, UAE
- ▶ Amer Khansaheb Villa, UAE
- ▶ The Villas and Community Centre - ESAG Charity Foundation, UAE
- ▶ YAS Village, UAE
- ▶ Serenia Residences, UAE
- ▶ Google Innovation Centre, UAE

Europe

- ▶ HMP Grampian, UK
- ▶ Eastleigh & Wessex House, UK
- ▶ Brent Civic Centre, UK
- ▶ Telephone House, UK
- ▶ Bentinck Street, UK
- ▶ 99 Clifton Street, UK
- ▶ Church Hill Barn, Colchester, UK
- ▶ Interior and exterior of School for Special Needs, Valencia, Spain

Other international markets

- ▶ HMP Grampian, UK
- ▶ Eastleigh & Wessex House, UK
- ▶ Brent Civic Centre, UK
- ▶ Telephone House, UK
- ▶ Bentinck Street, UK
- ▶ 99 Clifton Street, UK
- ▶ Church Hill Barn, Colchester, UK
- ▶ Mall at Milenia, Florida

Certifications

- ▶ ADQCC Certificate
- ▶ EGBC Certificate
- ▶ MOID Certificate
- ▶ Masdar Future Build Approval
- ▶ LEED Certificate
- ▶ ISO Certificate

Quality Management System



Design Perspective

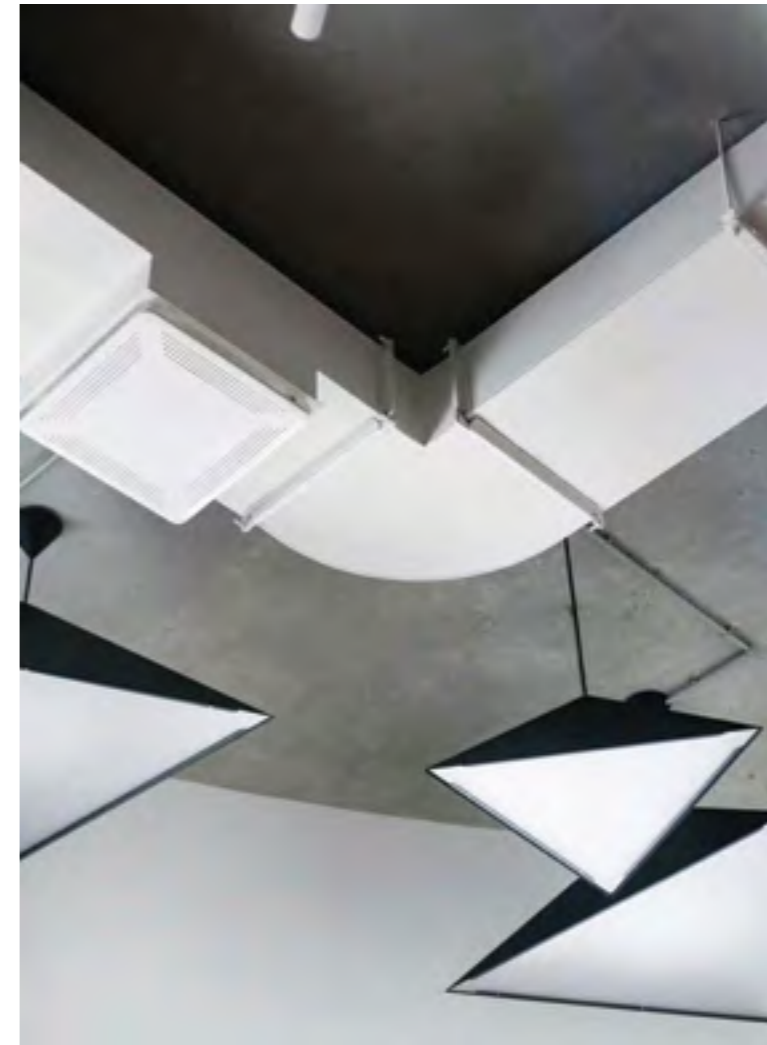
When your clients call you for a brand refresh, the Spiralite® Innovation Team enables you to transform residential, commercial and retail spaces in line with their new positioning - something ownable that exceeds the guest of today's expectations.

Thanks to Spiralite® endless customisation options, architects can turn spaces such as a hotel lobby into an area that is welcoming and personable by meeting the different sizes and locales of an entire portfolio.

As hotel lobbies have evolved into all-day places, Spiralite® can be used to add an unusual touch of design and create a space that is not only reflective of a guest's uses for the anew third space, but also a concept that reflected a brand's story, personality and values.

As properties are conversions and at different stages of their refurbishment cycle, Spiralite® offers unrivalled flexibility advantages so it can be rolled out in all new hotels, retails and or offices as well as residential spaces such as holiday homes and services residences, and upon refurbishment of existing ones.

Residential



Escape the
Ordinary

● ● ● ● ● ● ● ● ● ● ENDLESS colour customisation options



Develop
Instagramable
third spaces

Offices / Commercial



Office
Snapshots!

Create
Different
workspaces



If you are going
to expose the
duct make it
RED!



3

LG Profile



Single Package Solution

Tropical

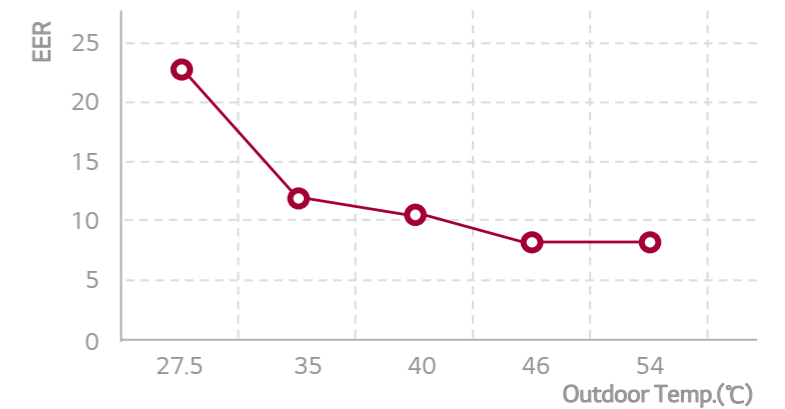
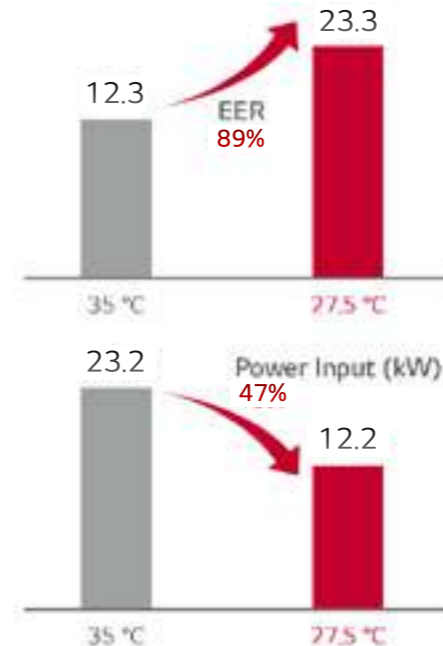


WHY LG INVERTER

SUPERIOR EFFICIENCY

Annual Energy Savings

Target low pressure will be adjusted according to cooling load. LG provides energy saving by preventing On / Off operation with inverter technology



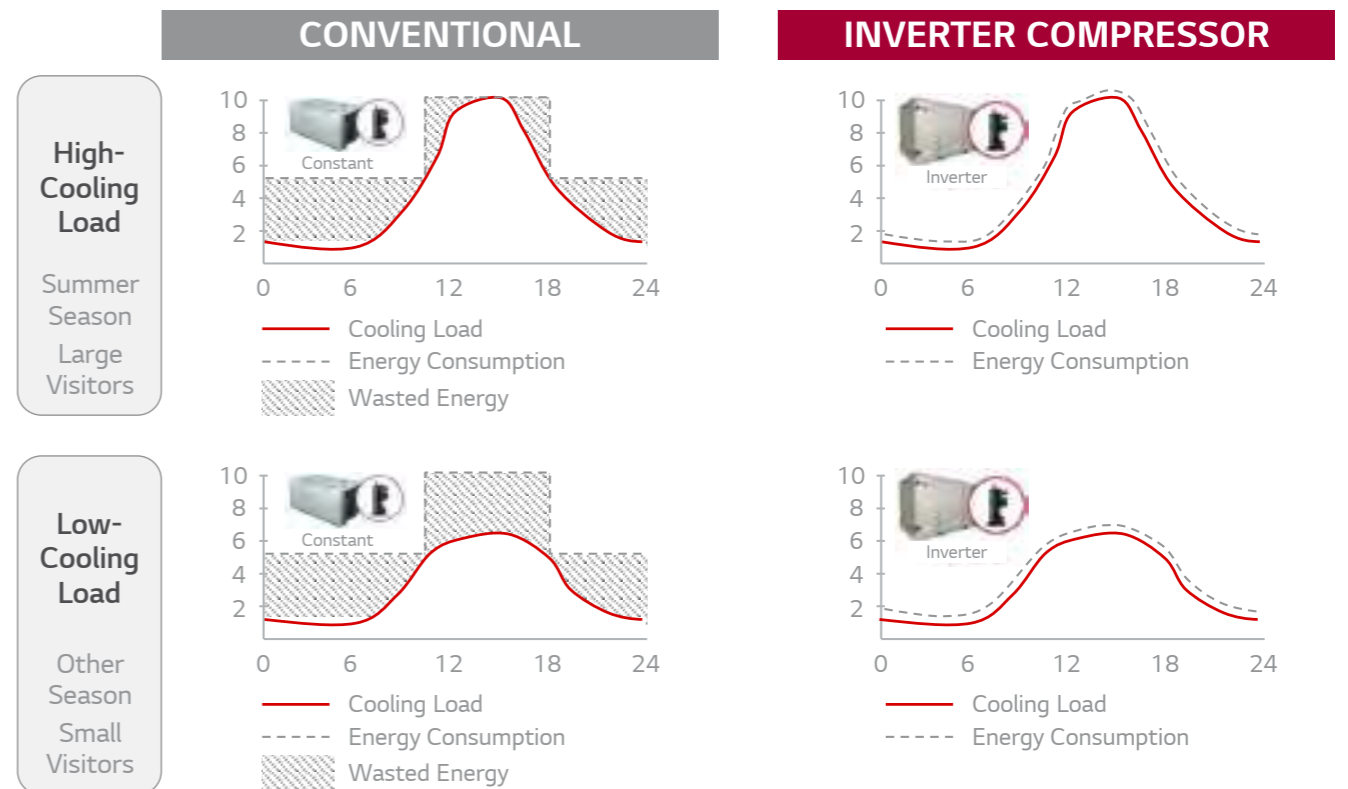
ODU Temp.(°C)	27.5	35	40	46	54
EER*	23.3	12.3	11.2	8.6	8.6
Power Input(kW)	12.2	23.2	25.5	31.7	21.2

※ Model : AK-W320LH00

*EER : Energy Efficiency Ratio(Btu/Wh)

Electricity Cost Saving

The inverter compressor can remove wasted energy by responding to time-specific loads, situation-specific loads, and seasonal load fluctuations



CONVENIENCE

DIRECT DRIVE PACKAGE

Heat Pump Only

Easy Installation

By applying a high static pressure motor, it has wide E.S.P coverage and easy to set the air volume setting RPM by simple touch on remote Control to change airflow rate

EASY E.S.P. CONTROL



Easy Air Volume Adjustment

External Static Pressure

0.0 inAq (Largest 10HP BLDC Motor) Max 2.0 inAq

Easy Maintenance

Beltless direct drive system both side of indoor and outdoor is easy to maintain and cost effective

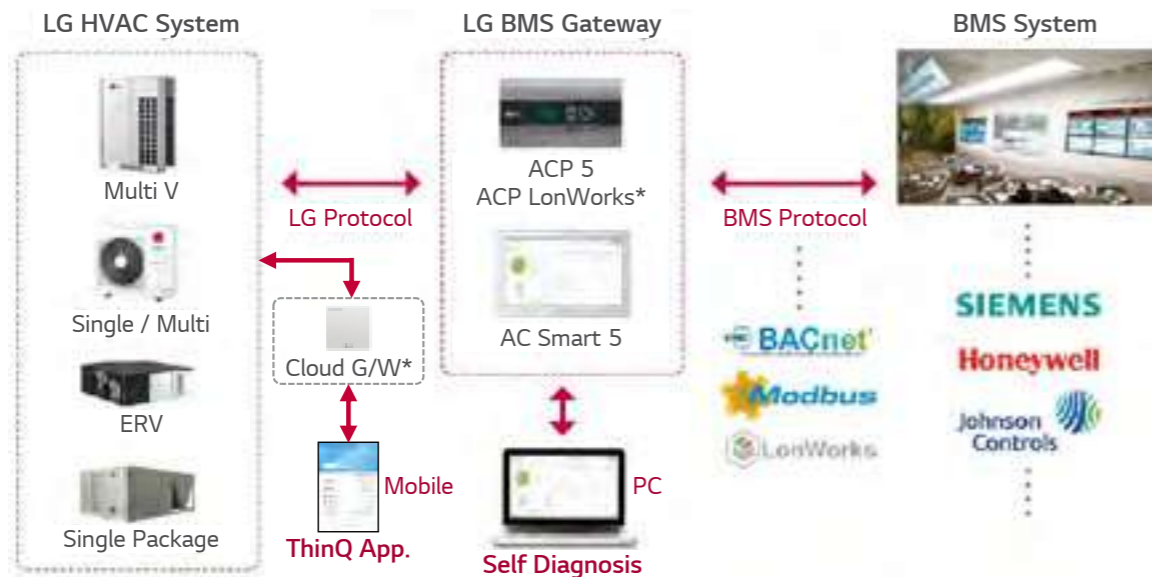
DIRECT DRIVE MOTOR



- ✓ Variable Speed Plug Fan
- ✓ Does not Require Additional VFD
- ✓ No Need to Adjust Pulley and Belt
- ✓ No Need to Grease
- ✓ Low Cost of Repair with Fewer Parts

3rd PARTY BMS SYSTEM COMPATIBILITY

LG Inverter Single Package can be connected with gateway products for different protocols such as Modbus, BACnet and LonWorks. And gateway product offers self diagnosis interface



*ACP 5 (BACnet IP/Modbus TCP) : PACP5A000 / ACP LonWorks (Modbus) Interface : PLNWK000
Cloud Gateway : PWFMD200

SINGLE PACKAGE **NEW**





LINE-UP(Inverter)

Colling Only Indoor/Outdoor : BLDC Motor*

(W x H x D, mm)

Type	Phase	Power Supply	Capacity Index (RT)		
			3	4	5
C/O Black Fin (Condenser)	1Ø	220-240V 50/60Hz	 (1,280x1,065x1,110)		

Cooling & Heating Indoor/Outdoor : BLDC Motor*

Type	Phase	Power Supply	Capacity Index (RT)					
			7.5	10	12.5	15	20	25
H/P Black Fin (Condenser)	3Ø	380-415V 50/60Hz	 (1,130x1,242x2,250)	 (2,230x1,242x2,400)	 (2,230x1,242x2,400)	 (2,230x1,242x3,520)		

*BLDC : Brushless Direct Current Motor

NEW

CONVENIENCE

- Direct drive fan motor (BLDC)
- Easy set-up method (by ESP function)

NEW

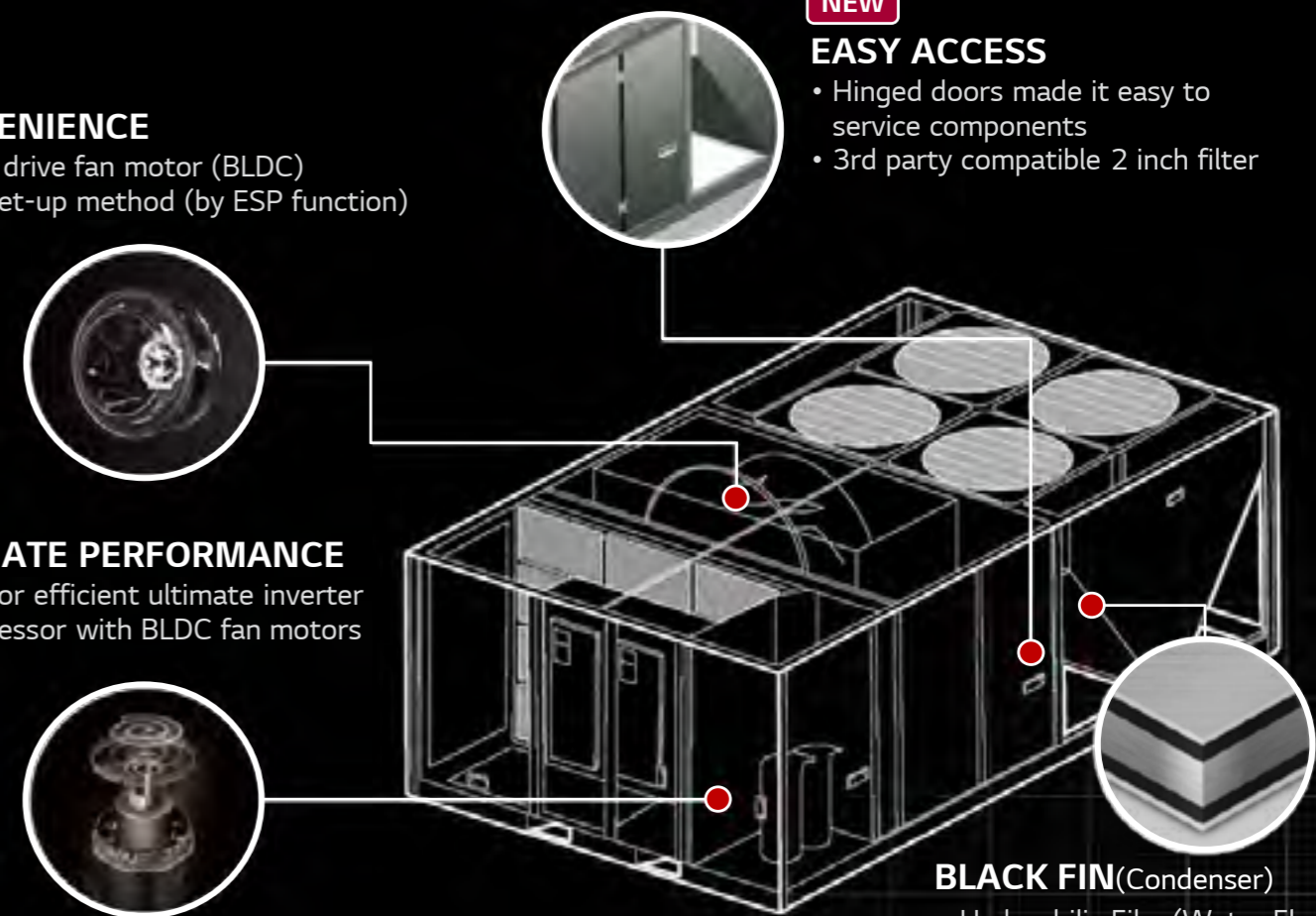
EASY ACCESS

- Hinged doors made it easy to service components
- 3rd party compatible 2 inch filter

NEW

ULTIMATE PERFORMANCE

- Superior efficient ultimate inverter compressor with BLDC fan motors



BLACK FIN(Condenser)

- Hydrophilic Film (Water Flow)
- Corrosion Resistant Layer

SINGLE PACKAGE **NEW**

LINE-UP (Non-Inverter)





Cooling Only

(W x H x D, mm)

Small Capacity




Direct Drive

Belt Drive

Type	Phase	Power Supply	Capacity Index (RT)					
			4	5	6	7.5	10	
C/O	1Ø	220-240V 50/60Hz	 (1,790x1,049x1,024)	 (1,790x1,160x1,024)	 (2,028 x1,160x1,024)	 (2,265x1,383x1,505)		

Med-size Capacity

Belt Drive

Type	Phase	Power Supply	Capacity Index (RT)					
			12.5	15	18	20	25	
C/O	3Ø	380-415V 50Hz	 (2,092x1,520x2,030)	 (2,548x1,755x2,150)	 (3,312x2,100x2,150)			

Large Capacity

Belt Drive

Type	Phase	Power Supply	Capacity Index (RT)		
			30	35	40
C/O	3Ø	380-415V 50Hz	 (3,945x2,150x2,400)		



Distribute by :

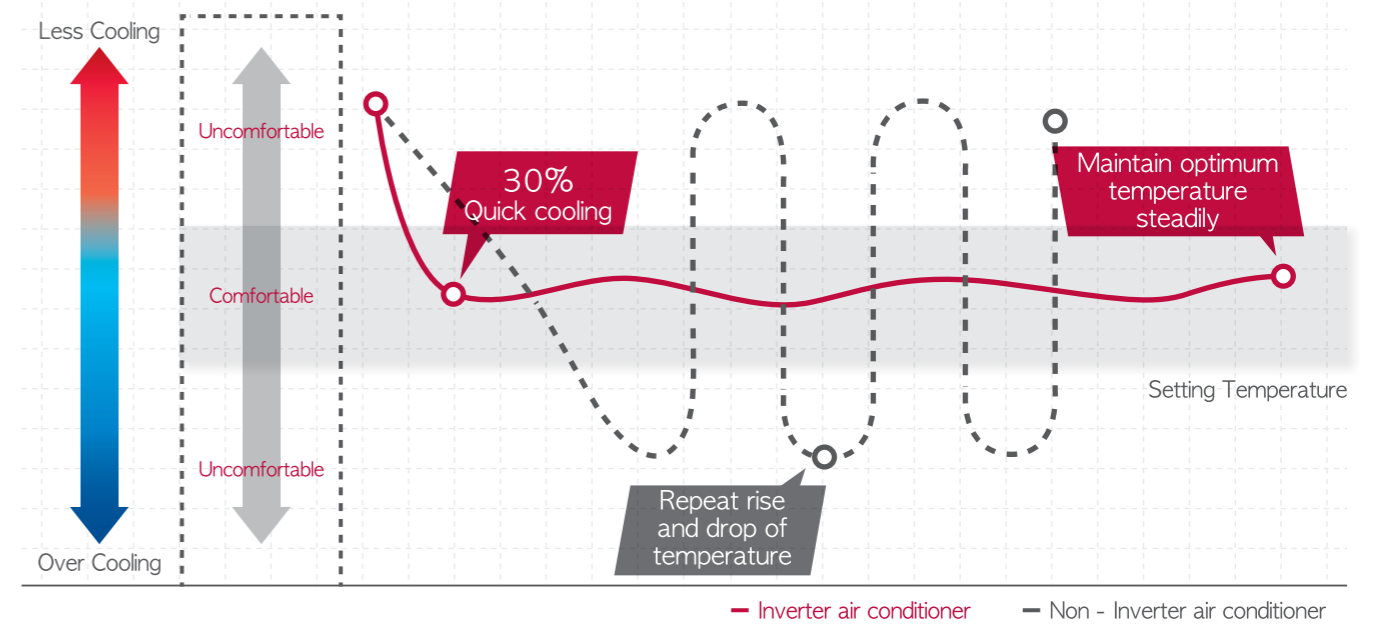
خانصاحب
XHANSAHEB
Industries | للصناعات

LG SMART INVERTER COMMERCIAL AIR CONDITIONERS



WHY LG R410A INVERTER AIR CONDITIONERS?

The Advantages of Inverter Control

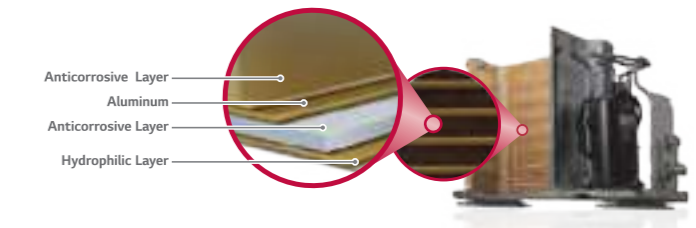


WIDE OPERATING RANGE



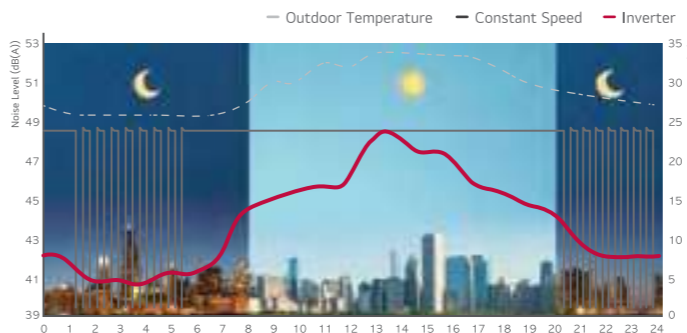
CORROSION RESISTANT HEAT EXCHANGER

The gold-colored special coating on the fin of the heat exchanger prevents corrosion, extending the life of the unit.



LOW NOISE OPERATION

Inverter makes lower noise than constant speed due to adjustable frequency according to the load.



* Noise level in residential environment : 60dB(A) : Normal conversation, 50dB(A) : office, 40dB(A) : Livingroom
* This result can be different depending on actual environment.
* The value of noise level is based on "A*UW18G**T2"

POWER COOLING WITH LONG PIPING

It has capacity of 10% higher than constant model at 50m pipe length.



* The data is based on the PDB of LG global model.
* Test condition (Temperature) : 27 / 35 °C (Indoor / Outdoor)

QUICK COOLING

LG Smart Inverter senses not only temperature but also pressure, making precise and quick cooling possible.

SMART SENSORS



Temperature Sensor

+



Pressure Sensor

Sensing and ready for Operation

Quick and reliable operation



ENERGY SAVING

Inverter compressor maximizes energy efficiency, by adjusting energy supply as required.




25% Energy Saving

COMFORT COOLING WITH HUMIDITY SENSOR


'Comfort Cooling' is a function that changes evaporation temperature according to temperature & humidity.

Conventional model




Temperature sensor

LG Single Split




Temperature sensor + Humidity sensor

Comfortable and power saving control based on indoor humidity**



Wired Remote Controller Standard III (Accessory)



Max. 18% Energy Saving*

* Test condition :

- Indoor Temp. 27 °C (DB) / 26.4°C (WB)
- Outdoor Temp. 35 °C (DB) / 24°C (WB)
- Applied model : AT-*18GPLT1

** To apply humidity sensor, new remote controller, PREMTB100 or PREMTBB10 is needed

CEILING CONCEALED DUCT

Hidden in the ceiling, this product is suitable for applications that require floor level or individual level air conditioning for buildings where there are many rooms or halls, such as restaurants, concert halls and hotels.

E-Tuning *E.S.P. External Static Pressure

The air volume and sound level is kept constant as designed regardless of changes in E.S.P. (External Static Pressure)



MODEL		AB-Q18GM1T1	AB-Q24GM1T1	AB-Q30GM1T1	AB-Q36GM3T1	AB-Q48GM3T1	AB-Q54GM3T1	AB-Q60LM3T1
Nominal Capacity (TR)	Min.~Rated~Max.	0.6-1.5-1.7	0.8-2.0-2.3	1.0-2.3-2.8	1.3-2.8-3.2	1.5-3.8-4.4	1.8-4.5-4.7	4.8
Power Input (KW)	Rated	1.55	2.06	2.41	2.93	3.96	4.65	5
Indoor Dimensions (mm)	WxHxD	900x270x700	900x270x700	900x270x700	1250x360x700	1250x360x700	1250x360x700	1250x360x700
Outdoor Dimensions (mm)	WxHxD	770x545x288	870x650x330	950x834x330	950x834x330	950x1380x330	950x1380x330	950x1380x330

MODEL		AB-Q18GM1T6	AB-Q24GM1T6	AB-Q30GM3T6	AB-Q36GM3T6	AB-Q48GM3T6	AB-Q54GM3T6
Nominal Capacity (TR)	Min.~Rated~Max.	0.6-1.5-1.7	0.8-2.0-2.3	1.0-2.3-2.8	1.3-2.8-3.2	1.5-3.8-4.5	1.8-4.5-4.8
Power Input (KW)	Rated	1.55	2.05	2.38	2.91	3.9	5.15
Indoor Dimensions (mm)	WxHxD	900x270x700	900x270x700	1250x360x700	1250x360x700	1250x360x700	1250x360x700
Outdoor Dimensions (mm)	WxHxD	770x545x288	870x650x330	870x650x330	950x834x330	950x1380x330	950x1380x330

CEILING SUSPENDED UNIT

IF Winning Design

With its stunning V-shaped design and black vane, LG's new ceiling-suspended air conditioner exudes modern elegance appropriate for any space.



Black Vane



V-Shaped Design

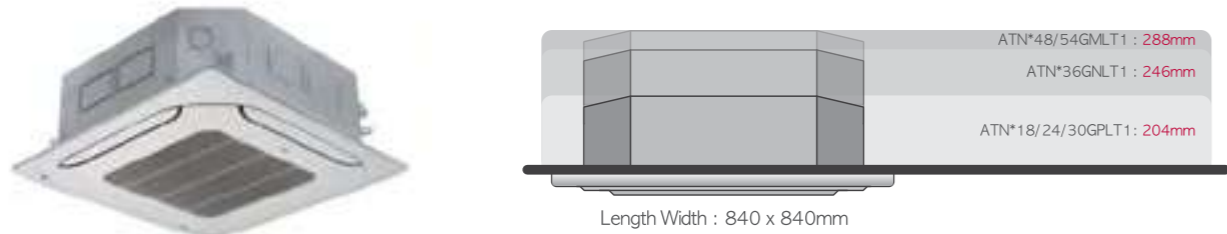
MODEL		AV-Q18GM1T1	AV-Q24GM1T1	AV-Q30GM1T1	AV-Q36GM2T1	AV-Q48GM2T1	AV-Q54GM2T1
Nominal Capacity (TR)	Min.~Rated~Max.	0.6-1.5-1.7	0.8-2.0-2.3	1.0-2.3-2.9	1.3-2.7-3.2	1.5-3.8-4.4	1.8-4.5-4.8
Power Input (KW)	Rated	1.55	2.06	2.41	2.79	3.96	5.39
Indoor Dimensions (mm)	WxHxD	1,200 x 235 x 690	1,200 x 235 x 690	1,200 x 235 x 690	1,600 x 235 x 690	1,600 x 235 x 690	1,600 x 235 x 690
Outdoor Dimensions (mm)	WxHxD	770x545x288	870x650x330	950x834x330	950x834x330	950x1380x330	950x1380x330



CEILING CASSETTE

COMPACT SIZE

The indoor unit with slim and compact dimensions has reduced the restriction which enables successful installation in various spaces.

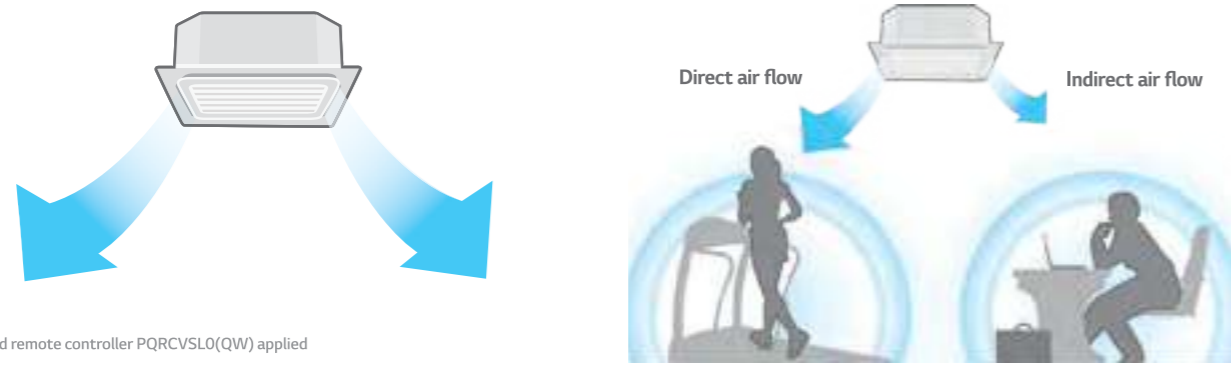


INDEPENDENT VANE OPERATION

The independent vane operation feature uses separate motors, making it possible to control all four vanes independently.

ALL VANE OPERATION

INDEPENDENT VANE CONTROL



* Wired remote controller PQRCSL0(QW) applied

MODEL	AT-Q18GPLT1	AT-Q24GPLT1	AT-Q30GPLT1	AT-Q36GNLT1	AT-Q48GMLT1	AT-Q54GMLT1
Nominal Capacity (TR)	Min.~Rated~Max. 0.6-1.5-1.7	0.8-2.0-2.3	1.0-2.3-2.7	1.3-2.8-3.2	1.5-3.8-4.4	1.8-4.5-4.8
Power Input (KW)	Rated 1.55	2.06	2.41	2.93	3.96	5.39
Indoor Dimensions (mm)	WxHxD 840x204x840	840x204x840	840x204x840	840x246x840	840x288x840	840x288x840
Outdoor Dimensions (mm)	WxHxD 770x545x288	870x650x330	950x834x330	950x834x330	950x1380x330	950x1380x330

FLOOR STANDING

The new LG floor standing air conditioner is efficient for using in large areas due to its powerful cooling and heating operation. The powerful air speed and volume means the air flow can reach up to 20m away from the air conditioner.



MODEL	AP-Q50LT3E0	
Nominal Capacity (TR)	Min.~Rated~Max.	4.0
Power Input (KW)	Rated	3.88
Indoor Dimensions WxHxD(mm)	WxHxD	590 x 1,840 x 440
Outdoor Dimensions WxHxD(mm)	WxHxD	950 x 1,380 x 330

*This model is applicable for specific region, please check with sales representative.

CONTROL SOLUTION

Smart ThinQ

Control your air conditioners via using the smart internet devices as Android or iOS based smartphones.



Simple operation for various functions

- On / Off
- Vane Control
- Mode Selection
- Reservation
- Current temperature
- Energy Monitoring
- Set temperature
- Filter Management

* Search "LG Smart ThinQ" on Google market or Appstore then download the app.
 * Wi-Fi modem (PWFMD200) is required by option.

CONTROLLER LINE-UP

Smart management for a variety of usages.

CENTRAL CONTROLLER



AC Smart V

- Max.128unit
- 10.2"touch
- Yearly schedule
- Individual controller Lock
- Operation log
- Floormapview



AC Ez touch

- Max.64unit
- 5"touch
- Yearly schedule
- Individual Controller Lock
- Operation log

INDIVIDUAL CONTROLLER



Standard II



Standard III
(4.3"color)



Premium
(5"touchcolor)



Wireless

BMS PROTOCOL GATEWAY



BACnet / Modbus



LonWorks

DRY CONTACT SOLUTION



- 1 or 2 contact input
- With 3rd Party Thermostat
- With Automation system

UVnano™ Filter Box

LG UVnano Filter Box can effectively create a safe indoor environment by trapping and removing various harmful substances such as Ultrafine dust, bacteria and viruses in the form of droplets.

Air Purification Operation



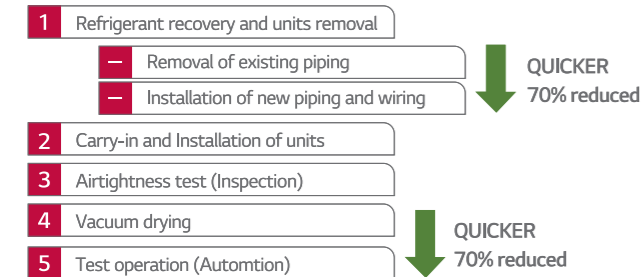
1) Based on TÜV Rheinland test conducted according to LG test method in compliance with ISO 20743, removing 99.99 of percent of Staphylococcus aureus, Staphylococcus epidermidis, and Klebsiella pneumoniae after being exposed to UV LED lights for 4 hours (Tested Models : PBM13M3UA0, PBM13M2UA0, PBM13M1UA0)
 2) Based on KCL (Korea Conformity Laboratories) test conducted in compliance with ISO 16890

UVnano Filter Box Kit (Included ePM1 Filter)		ePM1 Filter		
PBM13M3UA0 / PBM13M2UA0 / PBM13M1UA0		FBM13M3UA0 / FBM13M2UA0 / FBM13M1UA0		
PLATFORM	UNIT	M3 PLATFORM	M2 PLATFORM	M1 PLATFORM
MODEL NAME		PBM13M3UA0	PBM13M2UA0	PBM13M1UA0
Duct UVnano Filter Box	-			
Filter Box	Net Size (W x H x D)	mm 1,250 x 360 x 280	mm 1,250 x 270 x 280	mm 900 x 270 x 280
	Shipping Size (W x H x D)	mm 1,396 x 418 x 358	mm 1,396 x 418 x 358	mm 1,044 x 328 x 358
	Net Weight	kg 12.7	kg 11.6	kg 9.1

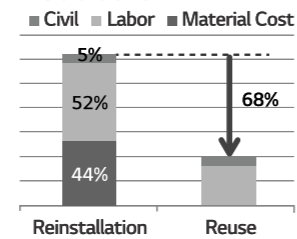
Retrofit Solution for Residence Sites

Retrofit Kit reduces investment costs for air conditioner replacement by reusing non-insulated piping. Existing materials are determined whether they are reused or not through a specialist's on-site inspection.

Installation Process



Reduce CAPEX**



*It may vary depending on the field situation and details are required to be discussed with an expert.
 **Capital Expenditure

Model Name	Retrofit Kit	Liq / Gas Pipe Diameter [mm]	Connectable Pipe Diameter [mm]	Piping Length (Max) [m]	Refrigerant Type	Additional Charging Volume [g/m]
AB-Q18GM1T1 AB-Q18GM1T6	PBRK25T0	6.35 / 12.7	Liq : 6.35 / 9.52 Gas : 12.7 / 15.88	30	R410A	Liq (6.45 mm) : 20 Liq (9.52 mm) : 40
AB-Q24GM1T1 AB-Q30GM1T1 AB-Q36GM3T1 AB-Q24GM1T6 AB-Q30GM3T6 AB-Q36GM3T6		9.52 / 15.88				
AB-Q48GM3T1 AB-Q54GM3T1 AB-Q60LM3T1 AB-Q48GM3T6 AB-Q54GM3T6	PBRK04T0	9.52 / 19.05	Liq : 9.52 / 12.7 Gas : 15.88 / 19.05			Liq (9.52 mm) : 40 Liq (12.7 mm) : 80

Reference Sites

	UAE Sharjah Sustainable City Ph 1, 2, 3		UAE Abu Dhabi Al Forsan Village		UAE Abu Dhabi BANI YAS
	UAE Dubai Port De Lamer Ph 1, 2, 3		UAE Dubai Emirates Crew Residential		QATAR NBK Square 1 & 2
	OMAN Muscat Al Mouj - Zuneirah Villas Phase 1		BAHRAIN Spiral Orchids Residences		PAKISTAN Karachi EMAAR Crescent Bay

MULTI V™

For TROPICAL REGION

2 0 2 4

LG HVAC SOLUTION



Hyatt Place Hotel



Dubai - UAE

Hospitality
MULTI V III 19 Units (660TR)
CCD 154 Units, AHU 72 Units
Wired R/C, ACP

Emirates Crew Accommodation



Dubai - UAE

Residential
Multi V III 318 Units (6,000TR)
CCD 3,095 Units, AHU 10 Units
Wired R/C

WASL Vita



Dubai - UAE

Commercial
Multi V IV 150 Units (1,100TR)
CCD 520 Units, AHU 4 Units
Wired R/C

The Polo Residence & Townhouse



Dubai - UAE

Residential
Multi V S 105 Units (1,100TR)
Multi V IV 185 Units (4,000TR)
CCD 2,850 Units, AHU 29 Units
Wired R/C

Etihad Water Front



Abu Dhabi - UAE

Commercial
Multi V IV 46 Units (900TR)
CCD 550 Units, AHU 8 Units
Wired R/C, PDI

504 Villas Al Wajbah



Al Wajbah - Qatar

Residential
Multi V S 1,013 Units (6,800TR)
Multi V IV 23 Units (700TR)
CCD 4,585 Units, AHU 4 Units
Wired R/C

Book Oasis



Sharjah - UAE

Office
Multi V IV 650 Units (2,700TR)
CCD 2,100 Units, AHU 4 Units
Wired R/C, AC Smart IV

Khawarizmi International College



Al Ain - UAE

Education
Multi V IV 29 Units (1,230TR)
CCD 770 Units, AHU 2 Units
Wired R/C

LG AIR SOLUTION

AS A TOTAL HVAC & ENERGY SOLUTION PROVIDER

INFRASTRUCTURE IN MIDDLE EAST & AFRICA



* LG Air Solution production sites

The LG Electronics Air Solution Business Unit is a provider of total HVAC and energy solution. The company offers a broad portfolio of air conditioner products that are compatible with any building anywhere, including residences, skyscrapers, factories, conference and concert halls. As a true total HVAC and energy solution provider, LG also supplies even the largest buildings and industrial facilities with central air conditioning systems such as chillers and efficient control solutions. The history of the business unit goes back to 1968, when LG (then called GoldStar) rolled out Korea's first residential air conditioner. As the company first began making chillers for large commercial buildings in 1970, the commercial air conditioning business has grown exponentially, especially within the last

20 years. In 2008, LG sold its 100 millionth air conditioning unit, becoming the first company in the industry to reach that significant milestone. The success of LG air conditioners has allowed the company to become one of the major players in the highly competitive HVAC industry. By enhancing the industry's B2B infrastructure and finding further solutions for the HVAC sector, LG has risen to become a total HVAC solutions specialist. The company has steadily increased its sales and market share by introducing energy efficient and reliable HVAC solutions and actively pursuing new opportunities wherever they arise. This sustained, excellent performance is built on a solid foundation of global R&D and advanced manufacturing capabilities.



- MEA B2B Regional Head Office
- Production Site : 2
- Sales Office : 18
- Academy : 18



MULTI V™

BRAND HISTORY

From the moment when LG introduced Korea's first residential air conditioner in 1968, the company has continuously enhanced its technological innovation and credibility. As a result of sustained improvement, LG launched its first VRF system; Multi V in 2006 and achieved significant results. With world's top class compressor and innovative technology competency applied on every part, cycle and controlling solutions, it has evolved to be one of the world's most efficient and reliable VRFs.

Following the first and second generations with Inverter technology and non-ozone depleting refrigerant, MULTI V III has advanced its efficiency with diverse cutting-edge technologies such as HiPOR™ that directly returns oil to compressor and Vapor Injection that allows double compression by adding mid-pressure refrigerant. The innovative technologies of 4th generation secured MULTI V brand the product leadership based on efficient system like Smart Load Control that controls operational load according to external temperature and other technologies that are optimized to manage refrigerant and heat exchange for all cooling, heating and part load operations. Moreover, wide range of MULTI V line up has been developed to satisfy extremely hot climate of desert areas in the Middle East and Africa region. MULTI V can perform stable operation even at high temperature and its overall reliability and performance have been improved specialized for dusty environments like Auto Dust Removal.

In 2017, finally, the time has arrived for the ultimate VRF system, MULTI V 5. This generation has fully improved its technological potential with ever powerful and reliable yet economical LG's Ultimate Inverter Compressor, Ocean Black Fin with the most effective corrosion resistance performance and biomimetics technology-applied, enlarged fans. At the same time, the Dual Sensing Control offers users the most pleasant environment while minimizing the unnecessary energy loss with system that senses both the temperature and humidity to efficiently manage cooling, heating and part load operations.

With MULTI V 5 that has been solely designed for the ultimate efficiency, performance, flexibility, comfort and control, we are highly confident to bring the ultimate pleasant air experience.



MULTI V™ 5

- Dual Sensing Control
- Ultimate Inverter Compressor
- Large Capacity Outdoor Unit with Biomimetics Technology Fan
- Ocean Black Fin
- Auto Dust Removal

2006 MULTI V™

- Ø7.0 Corrugate
- Fuzzy Algorithm
- AC Inverter
- R410A

2008 MULTI V™ III

- Ø7.0 Wide louver
- Fuzzy Algorithm
- LGDC Inverter

2011 MULTI V™ III

- High Pressure Oil Return
- Vapor Injection

2014 MULTI V™ IV

- Active Refrigerant Control
- Smart Load Control
- Auto Dust Removal

DUAL SENSING CONTROL

The cooling load is mainly based on the amount of both sensible heat load and latent heat load. Most importantly, the cooling load is keen to, and thus, greatly affected by external humidity, rather than the outdoor temperature. For such reason, Dual Sensing Control of MULTI V 5 senses both temperature and humidity and applies sensed data for load control in order to obtain in-depth understanding of sensible heat load and latent heat load. This helps preventing excessive cooling load supply and eventually offers the most pleasant and comfortable cooling environment the users want with reduction in energy consumption.

Previous VRF : Single Sensing



DID YOU KNOW THAT VRF UNTIL NOW HAS ONLY SENSED SINGLE INFORMATION?



MULTI V™ 5 : Dual Sensing



Smart Load Control (SLC)

This comprehensive understanding of environmental conditions allows optimized energy efficiency and maximized indoor comfort level.

* LG internal test result

Seasonal Efficiency

Up to 34%
(vs. standard mode at MULTI V IV 10HP)

Comfort Cooling

This maintains operation at mild cooling mode around set temperature without stopping in between operations for maximized user comfort.

Improved Indoor Comfort

OCEAN BLACK FIN HEAT EXCHANGER

LG's exclusive "Ocean Black Fin" heat exchanger is specially designed for durable and long-lasting performance even in corrosive environments. The black coating is applied for protection from various corrosive external conditions and the hydrophilic film keeps water from accumulating on the heat exchanger's fin, minimizing moisture buildup. This improvement in durability prolongs the product's lifespan and lowers both the operational and maintenance costs.

Ocean Black Fin

CERTIFICATE OF VALIDATION

Certificate Number / Report Reference: 47867353204 / 47867353204-15-1
 Issue Date: 2015-03-25
 Expiration Date: 2018-03-24
 Issued to: LG Electronics Inc.
 76 Seongsandong, Changwon-Si, Gyeongsang, 641-713, Korea

Claim Validated: Aluminum Fin & Copper Tube Heat Exchanger employed on the Outdoor Unit of Air-Conditioners. Simulating the corrosive load for 27 years of exposure in a more severe traffic environment with salt contamination (Test Method B).

Tests: Test method B of ISO21207 : Salt contaminated condition + severe industrial or traffic environment

Standards / Regulations: ISO 21207, 6.2 & Annex A
 LG(69)E-148

This certificate and the claim validation expire on the expiration date listed above. UL validated the claim based upon criteria defined by the client. Client's use of the validated claim on or in connection with the product is not subject to UL's review. Client's representation that the claim is true and accurate. UL neither selected the samples nor determined whether the samples were representative of production units. The test results apply only to the actual samples tested. UL is not responsible for the scope of the tests performed or for the accuracy of test data generated by third parties. Please see test report for full details including test standards.

This certificate in no way conveys or implies Listing, Classification or Recognition or other certification by UL, and does not authorize the use of UL Listing, Classification or Recognition Marks on or in connection with the product. The validated claim relates solely to product performance and in no way conveys or implies evaluation of the safety of the product described above.

Chunhee Kim
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 28th Fl. Gangnam Finance Center, 777
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* Test Method B of ISO21207, 6.2 & Annex A
 (Test condition : Salt contaminated condition + severe industrial/traffic environment (NO_x/SO₂))

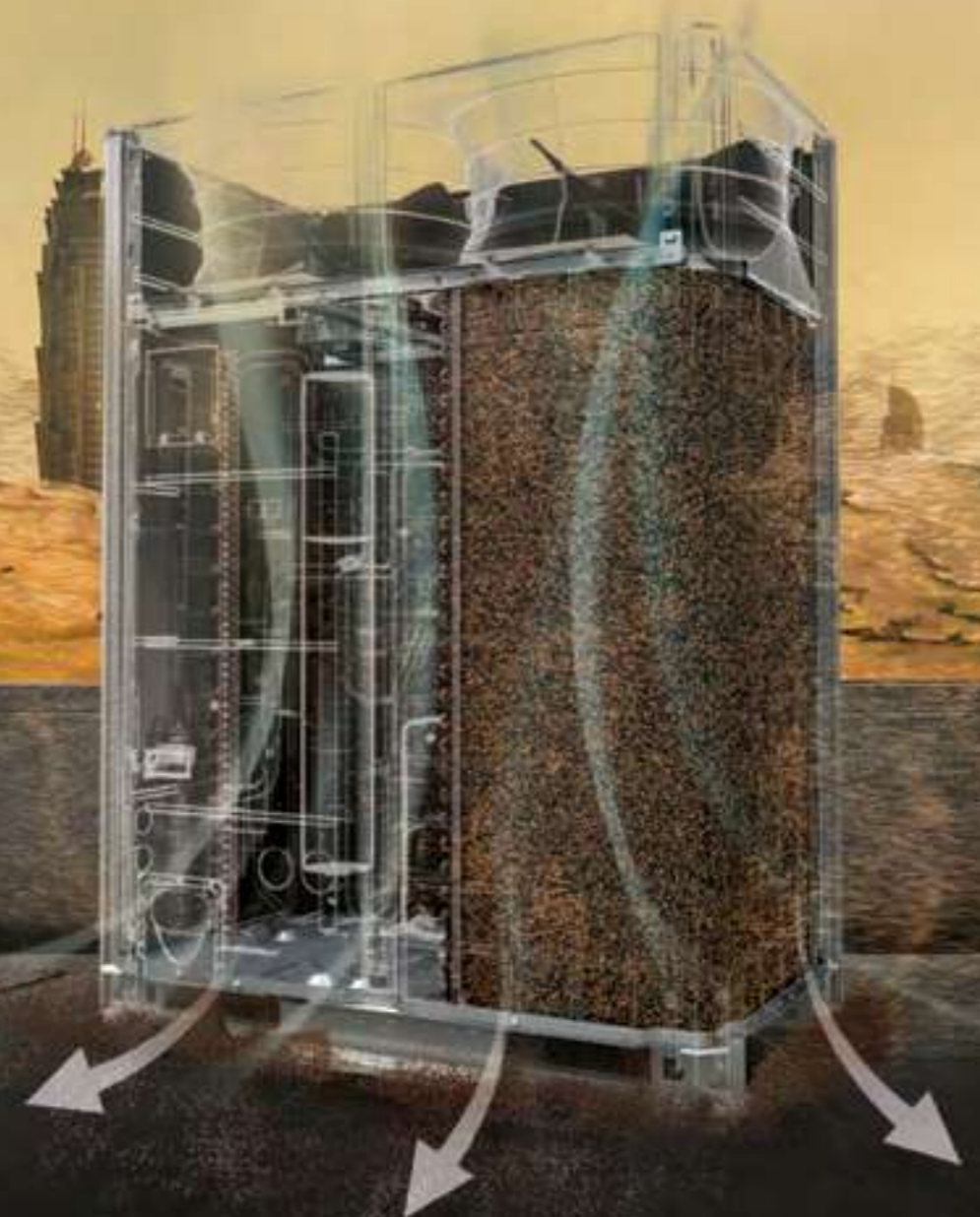
* Based on 1,500 hours



AUTO DUST REMOVAL

Auto Dust Removal

This feature in Multi V 5 removes dust on outdoor unit heat exchanger. The outdoor unit fan(s) rotate reversely to blow off the dust. Once the accumulated dust on the heat exchanger is removed, the fan(s) rotates normally and unit goes back to normal operation.



4

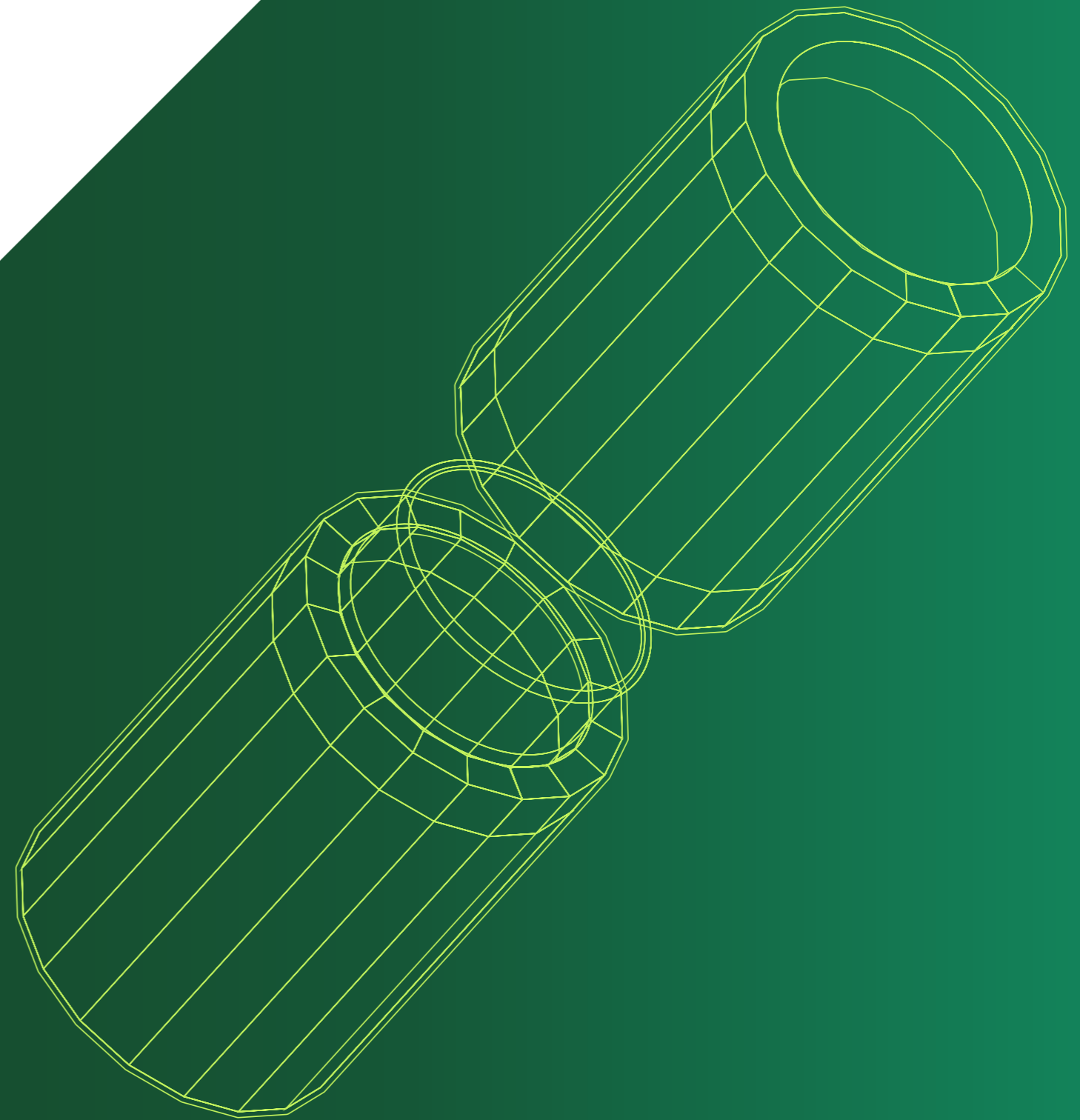
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