



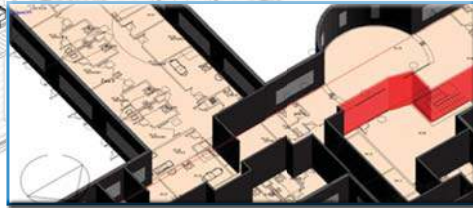
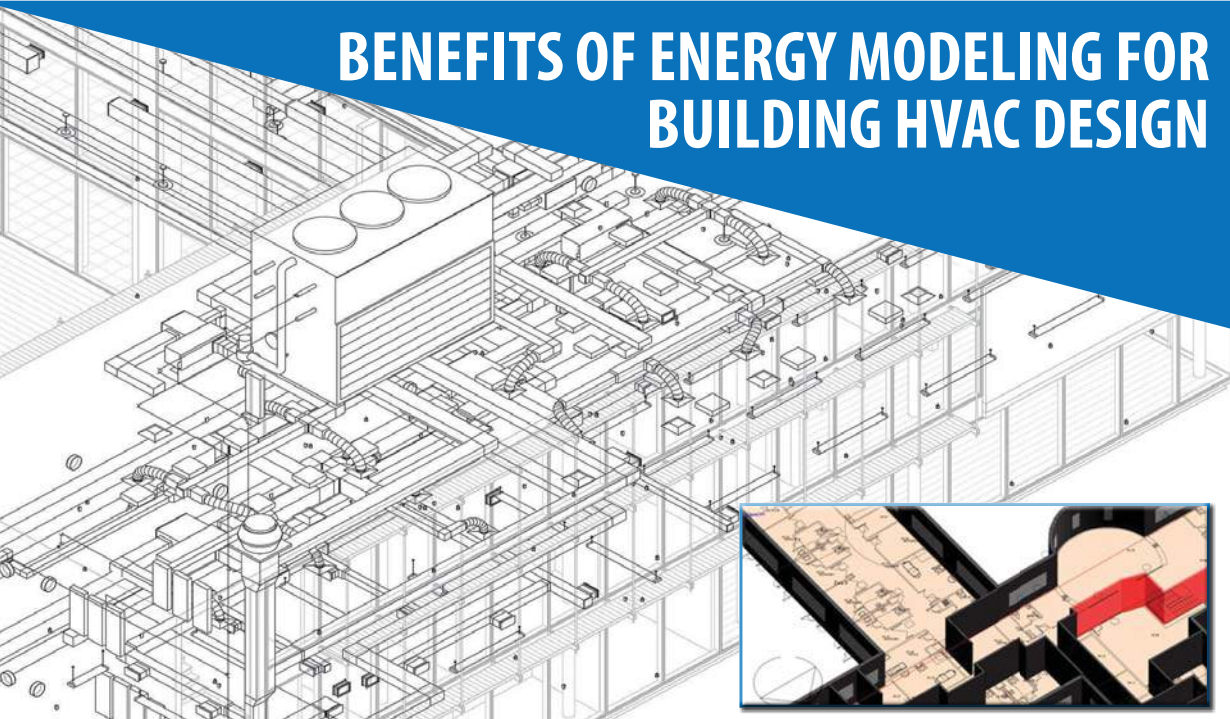
# ISKID

# MAGAZINE

HVAC&R JOURNAL OF TURKEY

ISKID AIR CONDITIONING & REFRIGERATION MANUFACTURERS' ASSOCIATION | PER SIX MONTHS - 2022 - VOLUME 23 | [f /iskidTR](#) [t /iskidTR](#) [i /iskidtr](#) [in /iskidtr](#) [v /iskidorgtr](#)

## BENEFITS OF ENERGY MODELING FOR BUILDING HVAC DESIGN

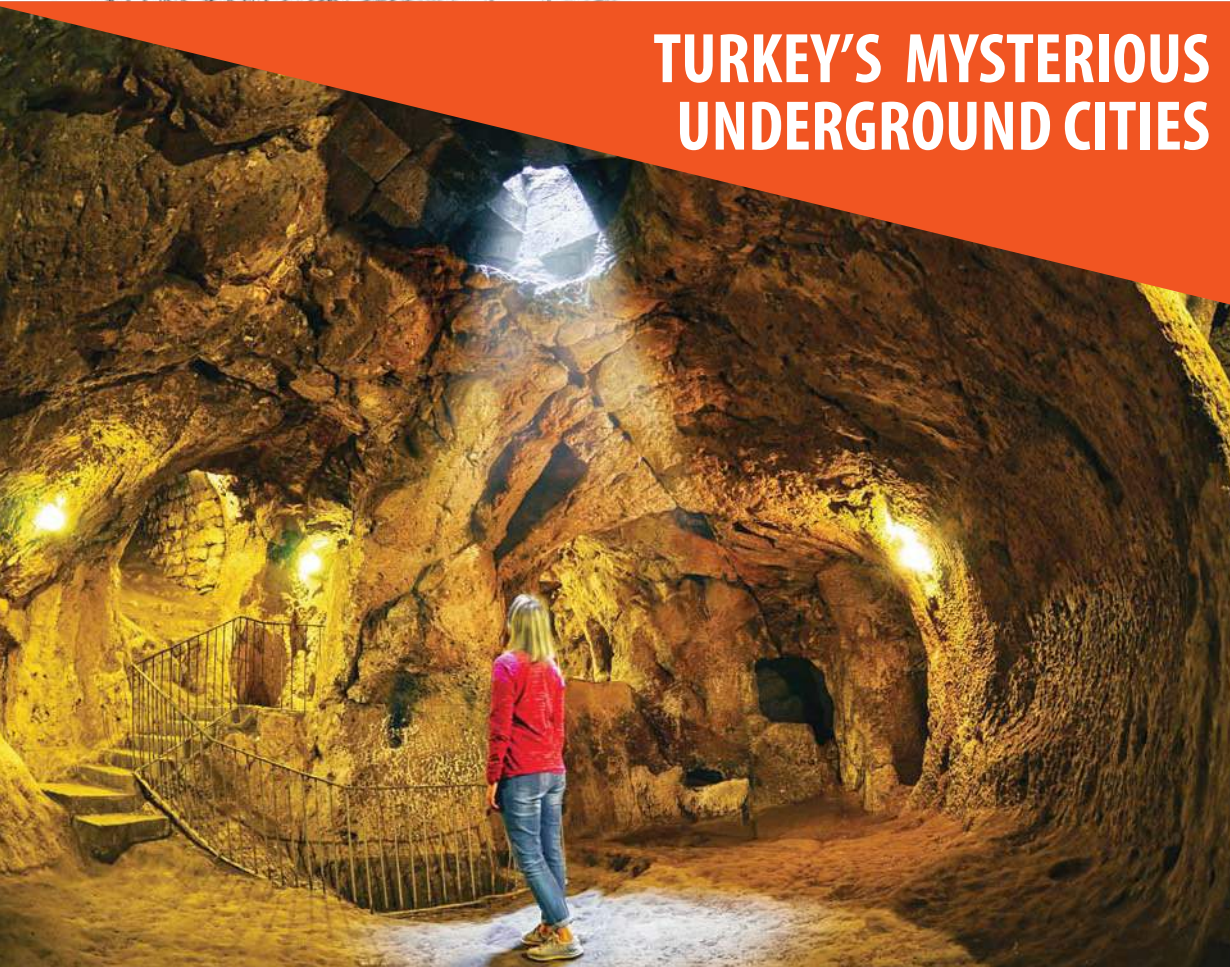


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ISKID opened a booth at the ISK SODEX 2021 and Climatizacion Madrid fair and had an efficient fair period

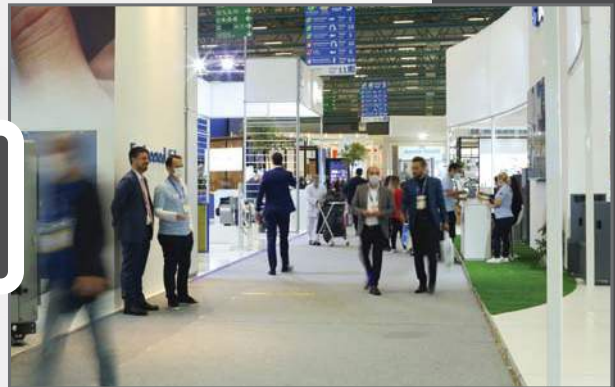
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**AYK SERDAR DİDONYAN**  
**ISKID Board Chairperson**

## Turkish HVAC&R Industry is taking firm steps forward

Another year has ended, and a new one full of fresh hopes and challenges has begun. First, on behalf of the ISKID Executive Board, I would like to say a happy new year to all of you and wish you a successful and happy new year!

We can easily say that climate change and the continuing effects of the pandemic made their mark in 2021. Climate change has been affecting the world more than ever, and it has caused deaths and significant financial loss in many countries. Even the floods in Germany, a country with solid infrastructure, killed 180 people and prevented over 200.000 people from accessing basic needs such as shelter, clean water and electricity for a while. Four hundred eighty-six people lost their lives due to the heatwave in Canada, a country in the northern hemisphere known to be very cold. Turkey also lost many people to floods caused by heavy rainfall, the draught significantly harmed the agriculture industry, and we fought forest fires all around Turkey this summer. All scientists warn that extreme weather events related to climate change will be seen more frequently in the upcoming years. The Carbon Border Adjustment will be implemented as part of the EU Green Deal. Regulations are critical steps to be taken in combatting climate change. It will be the most discussed issue in 2022 and after. Within this framework, Turkey must take new steps to turn to clean energy investments in the air conditioning industry and other industries, support R&D projects consistent with the carbon-neutral objective, and switch to carbon-free production processes in the new year. If this process is managed well by everyone, the steps for an environment-friendly industry will have been taken in Turkey and worldwide.

As ISKID, we continued our operations non-stop in 2021 for the Turkish HVAC&R Industry to be affected by the Covid-19 pandemic as little as possible. As the positive effects of the vaccines and treatments started to be seen, we could see what was in front of us better. The pandemic showed us that new designs in air-conditioning systems, systems producing 100% clean air, and new products against potential virus threats will gradually increase. The Turkish Air Conditioning, Cooling, and Climatization Industry, which we represent 90% of as ISKID, quickly adapted to the new demands shaped by the pandemic and created new products meeting the energy efficiency standards. Thanks to our capability to promptly offer environment-friendly products complying with the EU regulations to the market, our country has become a manufacturing centre for air conditioning.

Exports of the Turkish HVAC&R Industry in January-November 2021 reached 5.6 billion USD, which was 4.2 billion USD in the same period last year. The industry's export has surpassed 6.2 billion USD by the end of the year. The exportation share of the air-conditioning industry has reached 2.8% since the beginning of 2021. The industry's flexible and high-quality production capability and our geographic proximity to primary markets such as the EU stand out as some of the critical advantages of our country. The R&D centres, which are increasing in number thanks to the new investments, minimize the industry's demand for imports. Our government investment incentives and open market economy that have become one with the world offer foreign investors inviting opportunities and slowly turn Turkey into a centre for air-conditioning investments. We believe unless Turkey faces unpredictable circumstances, our industry's export and growth speed will persist through 2022. As the Turkish HVAC&R Industry, we aim to get a share of 1.5% from the world air-conditioning market within three years.

Our association continues its works related to the significance of interior air quality. Just like how we've audited our buildings within the framework of specific technical regulations, determined whether they would be safe in case of emergencies like an earthquake or fire, and taken the necessary measures; a "ventilation" system standard for interior air quality should be created for municipalities to investigate workplaces and license them on whether they're pandemic-ready or not. As ISKID, in 2022, we will focus more on works that will create a difference in this issue which is of great importance for public health. We will also continue to work with specific institutions and organizations to make it more systematic for municipalities to periodically audit the "ventilation" systems of cafes, restaurants, shops, and small and middle-sized office buildings for licensing.

The Eurovent Summit will be organized in Antalya on October 25-28, 2022. ISKID will show incredible support in this significant event of the HVAC&R industry as the organization partner. European industry representatives will get together in Antalya for a whole three days for the opportunity to get information on new technologies, trends, and the global challenges the market faces. We believe it will be a very efficient and successful organization for our industry. We invite all our colleagues to follow this event closely.

The world economy remains standing despite all the economic fluctuations. It will again overcome challenges and continue producing, growing, and sharing in unity and cooperation.



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# AIR CONDITIONING AND REFRIGERATION MANUFACTURER'S ASSOCIATION İSKİD



The air conditioning and refrigeration industry, which has emerged in the 1950s in Turkey, developed very quickly. İSKİD was established in 1992 with the contributions of prominent companies in the sector, to conduct work towards achieving sustainable and regulated HVAC&R Industry development in compliance with the world.

Over 100 member companies are gathering under İSKİD's roof to conduct activities for the development of the industry and to produce with high-quality standards.

## **The objective of İSKİD:**

To ensure cooperation between the members that are manufacturers and/or importers of climatization, refrigeration and air conditioning devices in Turkey and work on finding solutions for their problems,

To protect the rights of air conditioning consumers and companies on a national and international level;

To conduct activities that will ensure companies to protect the environment while providing solutions for the country's HVAC&R needs and contribute to the country economy by supporting energy efficient product solutions.

## **Mission:**

To realize strategic plans for the development of the Air Conditioning Industry and the actions that will carry out these strategies in cooperation with the sector and the other stakeholders.

## **Vision:**

To raise the Air Conditioning Industry to a reputable and leading position both in our country and abroad through its work increasing public life quality, to be sensitive to the environment, innovative, reliable and competitive.

## **Goals:**

- To develop the sector's research-development infrastructure and university-industry cooperation,
- To encourage the training of a qualified workforce for the sector,
- To encourage the use of renewable energy resources, high-end products, innovative technologies and applications,
- To increase activity in the national and international media,
- To track and update regulations and standards, create specifications when needed, perform market monitoring more effective and prevent unfair competition to maintain a more trustworthy sector image,
- To promote and support industry-Government relations,
- To introduce high-quality Turkish product image to the international market and increase our reputation,
- To increase cooperation with international organizations.





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# ISKID opened a booth at the ISK SODEX 2021 and Climatizacion Madrid fair and had an efficient fair period

## ISK SODEX 2021



ISKID welcomed its visitors at the ISK SODEX fair held in TÜYAP - İstanbul on September 29 - October 2, 2021. ISKID shared a booth with the Eurovent Association where they

informed the visitors about the Turkish Air-Conditioning and Ventilation Industry and the association's activities by giving them them brochures and magazines.

The traditional İSKİD Global Industry Reception was held on the first day of the fair, September 29, at 18.00, at the TÜYAP Palas Hotel Ballroom. It became one of the fair's most crowded organizations where the industry participants got together. ISKID member firm representatives, industry organization and association representatives, foreign and local visitors, and the press attended the Reception.

The bilateral discussions between ISKID and EUROVENT were held on Wednesday, September 29. Among the attendees were Raul Corredera HAENER, EUROVENT's new Chairperson; Andrea GASPAROVA, Eurovent Public Relations Manager; Stijn RENNEBOOG, Strategic Relations Manager; Ayk Serdar DİDONYAN, ISKID Chairperson; International Promotion Commission Members Cem SAVCI, Herman HAÇADURYAN, and Tunç KORUN; Taner YÖNET, ISKID 13. Term Chairperson; Ozan ATASOY, Eurovent Board Member and ISKID 14. Term Chairperson; Melek Ünal TAVUKÇUOĞLU, ISKID Association President; and ISKID Professionals Gülşah KATKAT and Kaan KÖSEMEHMET. Everyone wished





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Raul Corredera HAENER success on his new position. It was emphasized that the partnership between the two associations would grow stronger.

Chosen as the new member of the Eurovent Executive Board, Ozan ATASOY also stated that the two associations would be working harder in the upcoming period. ATASOY is responsible for representing Turkey at Eurovent and Europe as the Eurovent Services Company (ESC), Eurovent Certita Certification (ECC), CoPILOT, and PRODBIM Board Member. The details of the Eurovent Summit Antalya organization held on October 25-28, 2022, were also discussed. The associations exchanged ideas for the process to run smoothly as the organization held in Antalya will positively affect the Turkish Air Conditioning Industry.

After the meeting, Ayk Serdar DİDONYAN, İSKİD Chairperson, presented Raul Corredera HAENER with a porcelain plate engraved with Istanbul's historical buildings.

### CLIMATIZACION MADRID 2021

ISKID opened a booth at the International Heating, Ventilation, Air Conditioning, and Cooling Fair C&R 2021 held at the IFEMA Fair Center in Madrid, Spain, on November 16-19, 2021. At the booth no 10G11 on the 10. Hall, İSKİD introduced the visitors to the İSKİD Magazine, which is about the latest news and developments in the Turkish Air Conditioning Industry and new projects and products of the company members. İSKİD then gave out the magazine around the fair and the HVAC&R Industry Guide that includes Turkish Air Conditioning Industry statistics.



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# ISKID organized a webinar on VRF Systems and Their Contribution to Green Buildings



## Webinar Presentations

**Ergin Tokuz**, SDDK Member / General Definition and Types of VRF Systems and Regulations

**Caner Doğan**, SDDK Member / Efficiency and Sustainability in VRF Systems

**Yalim Atalay**, SDDK Member / Fresh Air Solutions in VRF Systems

**Salih Baydan**, Siemens OEM Sales Manager / Importance of Automation in VRF Systems

**Dr. Andaç Yakut**, SDDK Member / Current Developments in VRF Systems and Their Contributions to Green Buildings

You can watch the webinar on the İSKİD YouTube page.

ISKID Split and VRV/F Air Conditioning Systems Committee (SDDK) held a webinar on VRF Systems and Their Contribution to Green Buildings with the support of Alarko-Carrier, Arçelik, Daikin, TLC, Johnson Controls, İklimsa,

Form, Üntes VRF, and Vestel. The webinar moderated by Aslıhan Çengel, Split and VRV/F Air Conditioning Systems Committee (SDDK) Member welcomed many industry representatives on Monday, December 13.

## ISKID Industry Talks welcomed Mustafa BAYGAN, İSKİD Founding President



The first İSKİD Industry Talks series moderated by Tunç Korun, İSKİD 6. Term Chairperson welcomed Mustafa BAYGAN, İSKİD Founding President, on Wednesday, November 3 at 14.00. On the "İSKİD Industry Talks" program held over Zoom, Mustafa BAYGAN, İSKİD

Founding President, and Tunç Korun took the viewers on a nostalgia-filled journey to the history of İSKİD and the Turkish Air Conditioning Industry.

You can watch the program on the İSKİD YouTube page.

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# ISKID aired a series of programs called "Do Something For The World" (Dünya İçin Bir Şey Yap) on BloombergHT

The "Do Something For The World" program, sponsored by İSKİD, aired on BloombergHT. İSKİD members Arçelik, Bomaksan, Boreas, Daikin, Eneko, Form, Mikropor, Systemair, and Trane firm representatives shared current and essential information on what Air Conditioning is, its Importance and Interior Air Quality, Interior Air Quality at Schools, Air Conditioning and Heating, Heat Pump, The Importance of Air Conditioning In Work Place Licensing, why Energy



Efficiency is Important, New Technologies and Trends in The Air Conditioning Industry, Digitalization, Decarbonisation and Its Effects on Climate Change. The "Do Something For The World" program hosted by Can Topakoğlu, İSKİD Board Vice-Chairperson is released every Saturday and currently has eight episodes.

You can watch the program on the İSKİD YouTube page.





# Pioneer in Export for 10 Years!

We continue to lead the development of the Turkish HVAC Industry, which has come a long way in ten years and is still growing.

With our innovative approach and production technology that makes a difference, we are more involved in global market and increasing our export share day by day. We have been continuing our success in the export of ventilation products for 10 years, and we aim to continue this performance for decades.

# The Turkish Air-Conditioning Industry's quality production and affordable labour costs attract investors

Ayk Serdar Didonyan, ISKID Chairperson, said, "The Turkish Air-Conditioning Industry attracts many foreign investors with its high capacity, quality production volume, and budget-friendly labour cost. The efforts of air-conditioning manufacturers to develop new products and the increasing number of R&D centres with new investments reduce the industry's import demand."

## Turkey's strategic geographical position and flexible production capability offer significant advantages to investors

Having a dynamic and young population, unique geographic position providing access to a market of 1.2 billion people only via a 3-hour flight distance, high-quality production, wide product range, open market integrated with the world, and investment incentives offered by the government allow Turkey to deliver attractive opportunities to foreign investors. Turkish engineers achieved significant developments during the pandemic, gaining manufacturing capabilities compared to regional dynamics. Based on country's dynamics, they managed to conduct custom production in particular markets. In some specific markets, they can now organize SKD (Semi-Knocked Down) and/or CKD (Completely Knocked Down) productions within the country. Such a flexible production capability affects our country's exportability and competitive structure in a very positive way.



Highlighting that the primary air-conditioning markets are EU countries such as Germany, the UK, Italy, France, and Romania, Ayk Serdar Didonyan, ISKID Chairperson, stated, "Turkey is trying to raise its industry-specific share in the world trade to 1.5%. Parallel to this growth target, the Air-Conditioning Industry and its sub-industries of Air-Conditioning, Ventilation, and Refrigeration with increasing capacity utilization rate are waiting for their new investors. We believe 'It's a right time to Invest in the Air-Conditioning Industry'."



## 3. ISKID URGE Project successfully continues

It's been 1.5 years since the 3. URGE project was launched in March 2020. The project's training and consultancy services continue according to the activity plan. The "Total Quality Management in Production and Lean Manufacturing" consulting service started in April 2021 is planned to be finalized in February 2022. Seven companies in the activity continued their operations in coordination with the service provider. Upon completing the determination of demands and needs of 14 firms eager for the BIM consultation process, the consultation works were started in November 2021. "Export Marketing Methodologies in B2B Goods and Services Export" training will be organized at the end of January 2022.



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# 2021: A Year in Review

At the beginning of 2021, The Turkish HVAC&R Industry increased its export target of 5 billion dollars, which it set as a target for the end of the year, by 1.2 billion dollars, and closed the year with an export volume of 6 billion 196 million dollars.

The sector's export grew by 32.9 percent compared to the previous year. While our country's export-import coverage ratio was 86.2% in 2020, this figure increased to 96.1% in 2021.

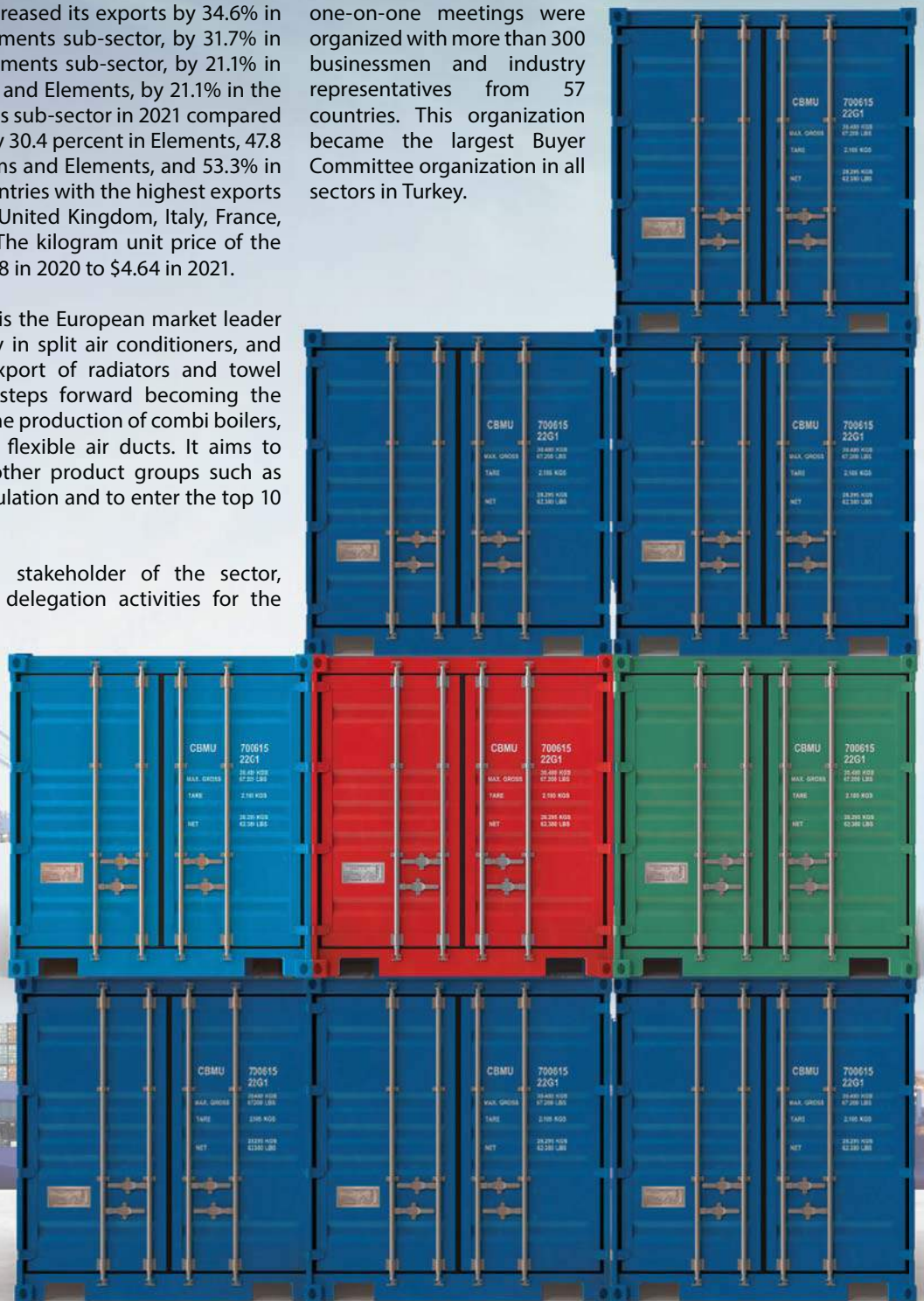
Increasing its exports in all sub-product groups, The Turkish HVAC&R Industry increased its exports by 34.6% in the Heating System and Elements sub-sector, by 31.7% in The Cooling System and Elements sub-sector, by 21.1% in the Air Conditioning System and Elements, by 21.1% in the Heating System and Elements sub-sector in 2021 compared to 2020. Exports increased by 30.4 percent in Elements, 47.8 percent in Ventilation Systems and Elements, and 53.3% in Insulation Materials. The countries with the highest exports in 2021 were Germany, the United Kingdom, Italy, France, and Romania, respectively. The kilogram unit price of the industry increased from \$4.28 in 2020 to \$4.64 in 2021.

The Turkish HVAC&R Sector is the European market leader with its production capacity in split air conditioners, and the world leader in the export of radiators and towel warmers. It is taking firm steps forward becoming the world's production base in the production of combi boilers, ventilation equipment, and flexible air ducts. It aims to achieve similar success in other product groups such as cooling, installation, and insulation and to enter the top 10 in the world ranking.

ISIB, an important foreign stakeholder of the sector, continued its digital trade delegation activities for the

sector in 2021 without slowing down. Digital trade delegations were organized to Kazakhstan, Qatar, Ukraine, and Colombia in 2020, and Uzbekistan, the United Kingdom, Canada, Brazil, Vietnam, Argentina, Paraguay, Uruguay, and Nigeria in 2021.

ISIB also undertook the B2B meeting part of the 15th International ISK SODEX Fair, which was held between September 29 and October 2, 2021. With this organization, one-on-one meetings were organized with more than 300 businessmen and industry representatives from 57 countries. This organization became the largest Buyer Committee organization in all sectors in Turkey.



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# Organisers announce new date of 2022 EUROVENTSUMMIT

## Next edition of Europe's HVACR flagship event to take place 25-28 October 2022

During the ongoing ISK-SODEX exhibition, Eurovent and ISKID (The Turkish Air Conditioning and Refrigeration Manufacturers' Association) have announced the confirmed date of the upcoming 2022 EUROVENTSUMMIT. The event is scheduled to take place from 25 to 28 October 2022 in Antalya, Turkey.



Raul Corredera Haener, President of Eurovent, remarked: We are glad to be able to finally publicly announce the new date of the Summit. We believe that, with the subsiding COVID-19 outbreak and growing vaccination rates, our industry will be able to meet at the European HVACR flagship event under regular conditions.”

Ayk Serdar Didonyan, Chairman of the Board of ISKID, added: “This event is important for the Turkish HVACR industry.

On behalf of ISKID and all its members, I look forward to Building Bridges with Summit participants from Europe and all around the world in Antalya next year.”

For the latest updates, stay tuned via [www.eurovent-summit.eu](http://www.eurovent-summit.eu) and our LinkedIn page, following the hashtag #BuildingBridges. The Summit organisation Team remains at your disposal for inquiries via [andrea.gasparova@eurovent.eu](mailto:andrea.gasparova@eurovent.eu).



# EUROVENT SUMMIT ANTALYA

25-28 OCT 2022

# Building Bridges



## SAVE THE DATE

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Contact Ms Andrea Gasparova via  
[andrea.gasparova@eurovent.eu](mailto:andrea.gasparova@eurovent.eu)

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# HVAC&R Industry Achieved an additional 500 million US Dollars Export Potential Thanks to ISK-SODEX 2021

ISK-SODEX, the leading HVAC&R industry meeting point of the Eurasia Region, was held this year with the participation of 812 companies from Europe, Asia, and Africa. Healthy indoor climate solutions, which gained importance all over the world with the COVID-19 pandemic, left their mark on the exhibition visited by foreign visitors who were 27% higher than 2019.



ISK-SODEX, the leading HVAC&R Exhibition of the Eurasia region, brought together the sector players between 29 September - 2 October 2021. At ISK SODEX 2021, organized with the theme of healthy air conditioning solutions in the air conditioning industry; 812 exhibitors from 27 countries and 86,217 industry professional visitors from 95 countries, including Turkey, came together within the fair and signed important collaborations.

At the ISK-SODEX 2021, organized by Hannover Messe Sodeks Fuarçılık in cooperation with ISKAV, DOSİDER, İSKİD, İZODER, TTMD and supported by POMSAD, SOSİAD, ESSİAD, MTMD, and KBSB, manufacturers in Turkey met with 300 professional buyers- a 46 % increase from 2019's attendance- and 53 countries -44 countries in 2019- within the scope of B2B Meetings organized by Turkish HVAC&R Exporters' Association (İSİB). Thanks to effective business opportunities created by ISK-SODEX, Turkish HVAC&R sector has achieved an additional 500 million US dollars export potential for the next two years.

## 27 % increase in international visitor numbers compared to 2019

ISK-SODEX 2021 is the only event in the HVAC&R industry that is organized on the largest exhibition space and with the highest attendance in the world during pandemic. A 27 % increase in international visitor numbers compared to the previous edition. In addition, an increase of 14 % was achieved in online visitor registration this year compared to 2019.

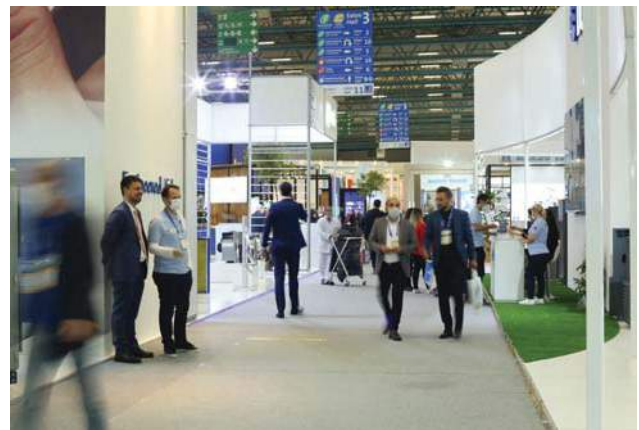


## Sector Leaders Gathered in Istanbul with ISK-SODEX!

812 companies exhibited on an area of over 36,000 square meters, in the ISK-SODEX Exhibition organized by Hannover Messe Sodeks Fuarçılık. The exhibition, which was efficient and effective in terms of establishing international cooperation; exhibitors from Russia, Germany, Italy, Ukraine, Iran, Uzbekistan, France, Japan, and Morocco showcased their latest technology and innovations during 4 days of the exhibition.

## ISK-SODEX 2021 Forum Area Sessions Attracted Great Interest

The Forum Area sessions that took place within the scope of the exhibition this year witnessed fruitful presentations. Speakers from 34 exhibitor companies and sectoral associations shared information about their latest products and technologies, new regulations, technological developments, and innovative solutions in the air conditioning industry in 29 sessions during the 4-day event.





**30**  
YEARS

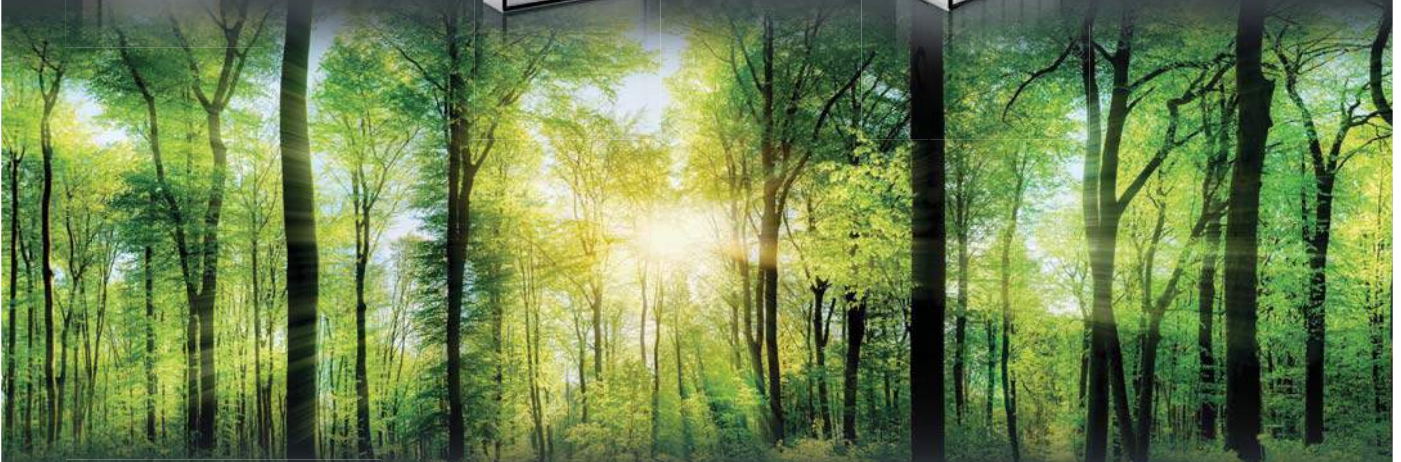
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# 42nd MCE Mostra Convegno Expocomfort More than 1,400 companies to start with even more energy



MCE - Mostra Convegno Expocomfort, the most prestigious showcase and worldwide business platform for companies in the HVAC+R sector, renewable energies and energy efficiency, will be back from June 28 to July 1, 2022 at Fiera Milano, proving itself to be an unmissable appointment for building relationships and strategic alliances. This is borne out by the partial figures that already see 90% of exhibition spaces occupied, with over 1,400 companies registered so far, with 43% from abroad.

A wide participation of professional visitors from the Mediterranean area is expected also thanks to the success of the activities developed with the Turkish Ministry of Industry and Technology, within the initiative that sees Turkey as "MCE 2022 Partner Country".

MCE is preparing all the technical and human resources to support and protect the health of exhibitors and visitors in all moments of stay in the exhibition center. EU Digital Covid certificate and body temperature control to all pedestrian and vehicular access gates, the obvious obligation to use masks, disinfectant gel dispensers and intense cleaning and sanitizing activity of all the environments of the exhibition center will be provided.



Moreover, MCE 2022 will be boosted by a performing digital platform providing visitors with a seamless event experience that enhances their engagement towards in-person and virtual participation. Actually, the physical show extends on the digital platform, enriched by new functionalities: the complete exhibitors and products directory, searchable by visitors main interests, the possibility to get in touch with companies, plan the visit at the fair, schedule meetings, attend conferences and webinars, either live or on demand. With a single registration procedure, the opportunity to get the entrance ticket to the fairgrounds as well as the chance to maximize the participation with a complete, innovative and seamless experience.





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# The new collaboration of Unimetal and Bomaksan



As a 100% domestic manufacturer that develops air pollution-reducing products, Bomaksan has made a new collaboration with Unimetal.

Unimetal has chosen Bomaksan for the filter systems of the dust and smoke caused by melting furnaces.



Designing innovative products for the dust, gas, and smoke concerns of industrial facilities for 35 years and operating in the air conditioning industry, Bomaksan continues to grow. Offering technological and eco-friendly filtration systems to industrial enterprises operating in various sectors, Bomaksan has recently collaborated with Unimetal from the metal industry.

## **An eco-friendly system with human health awareness**

Within the scope of the collaboration, a far-reaching filter system, including PLFT (Pleated Bag House Filter), spark arrester, fan panel, drain rotating device, and unique suction equipment, has been built in Unimetal's melting furnaces. This system ensures the suction and filtration of dust and smoke caused by Unimetal's melting furnaces. Bomaksan's filtration system designed with human health awareness and eco-friendliness with cutting-edge technologies reduces the impact of the dust on the environment and human health during the process while filtering the dust based on occupational safety and health (OSH). The system has a flow rate of 150.000 m<sup>3</sup>/h and a fan installation power of 355 KW.

Focusing on human health and high quality while developing its products, Bomaksan supports Unimetal, a pioneer with its OSH and environmental policies, with dust collection systems. Joining their forces for the first time with this project, the collaboration of these two companies is projected to last in the days ahead.



# We Provide the Best Air Conditioning Solutions Based on the Demands



As Boreas Technology, we closely follow all the technological developments in the world and take firm steps towards the future in the light of science and technology. Since 2014 in our production area in Istanbul Hadimkoy we have been producing compact and modular type of air handling units, central air conditioning units and equipment specially designed for data centers. Our Air Handling Unit has TB1 / T2 certificate which is the highest Eurovent standard.

We provide end-to-end air conditioning system solutions for critical facilities such as hospitals, hotels, industrial buildings, and data centers. Thanks to our innovative approach that harmonized with modern technological understanding, we have expanded our R&D and innovation investments. With these investments, we increase the efficiency in our business, which also enables us to reach the right solutions for our customers.

With our projected sustainable growth strategy, Boreas Technology, which was acquired by Açık Holding in 2017, offers system solutions for VRF system air conditioners and central air conditioning units with its organizations established in 21 countries.



**İzzet Tanyol**  
Deputy General Manager, Boreas Technology

## **We Offer Solutions for Critical Data Center Projects!**

With our DC Master Adia Mechanic Cooler and DC Pro Precision Controlled DX Air Conditioner products, which we specially design and manufacture for data center projects, we provide precise and cost-effective solutions including automation software for the air conditioning necessities of the data center facilities.

In 2021, ensuring more than 50% of the turnover from our export sales, we prove our challenging power at the global arena. In 2023, we are planning to open a new production area so that we increase both the product range and our production capacity at the same time. With our quality approach that sets the industry standards, we will continue to produce efficient and innovative products manufactured with our advanced technology.

Thanks to our profound engineering experience and R&D know-how, the unique and specially designed solutions we develop, will make a significant difference to the global market.

# Daikin Turkey is growing aggressively in export markets



As the innovative brand of the air conditioning industry, Daikin sets standards all over the world with its high-tech products. In addition, Daikin Turkey draws attention with its export activities. Daikin Turkey is the R&D, production and logistics base of Eastern Europe, Turkic Republics, the Middle East and North Africa as well as Turkey and is achieving significant success by undertaking the responsibility of Georgia, Northern Iraq, Mongolia and TRNC markets as well as CIS countries (Azerbaijan, Uzbekistan, Turkmenistan, Kazakhstan, Kyrgyzstan, Armenia and Tajikistan). Daikin Turkey provides services in these regions for individual and engineering products.

Daikin Turkey aims to grow by 39 percent by increasing its turnover from 18 million Euros in 2021 to 25 million Euros in 2025 in the Engineering product segment.

Daikin Turkey continues its investments in the heating sector and continues to attract attention with its aggressive growth trend in the CIS countries, which are its main export markets. As a result of its development efforts, Daikin Turkey shows 20 percent growth in Euro basis in 2021 and is rapidly approaching its target of 75 percent growth rate between 2020-2025. Daikin Turkey is the company that exports the most domestically produced combi boilers from Turkey to Russia. While Airfel Combi Boiler has been the leader of the heating market in Uzbekistan for 5 years, it has become the market leader of the Georgian heating market in 2021 with the same product group. While the company still maintains its second place in the Ukrainian market in Combi boiler product groups with Airfel and other brand sales, it is also

the leader of the split air conditioner market in the TRNC with its Airfel Split Air Conditioner product. Daikin Turkey still exports to more than 30 countries.

Investors in CIS countries and Turkic Republics prefer high-tech, high-efficiency and quality devices. Daikin aims to be the market leader especially in upper segment and project products and aims to increase brand awareness with products that will appeal to the lower-middle segment, called the 'volume-zone'.

Daikin Turkey makes a difference not only by selling products, but also by producing complete solutions. At least 2 distributors and 1 service center in all countries of Daikin Turkey serve its customers from the project stage to the first product launch.





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# DOGU HVAC took its place in Elazig Elysium Shopping Center with Rooftop Packaged Air Conditioner Units



Elysium Shopping Center, one of the oldest and most valuable locations of Elazig, at Çaydaçira junction, hosts one of the largest shopping centers in the region with a closed area of 70,000 m<sup>2</sup> and more than 450 apartments. The shopping center serves the people of Elazig and the surrounding area with its 15 thousand m<sup>2</sup> social area and 160 stores.

DOGU HVAC, produces Rooftop Units in 3 different series, in the 30-180 kW cooling and heating capacity range, with R32 refrigerant gas, in compliance with ErP 2021 regulations.

11 Rooftop Units in the 60-180 kW capacity range bring the atmosphere of the Elysium Shopping Center to the desired conditions, providing a total of 1550 kW heating and cooling capacity.

## FOUR ECRH – ROOFTOP UNIT

Rooftop units, which can heat and cool through the direct expansion refrigerant system and meet the fresh air need of the space in a single unit, are designed to be placed outside and bring the room air to the desired conditions with air ducts.

It works with high efficiency and minimum energy consumption with its rotor heat recovery system, thermodynamic heat recovery system, fully automatic control system and economizer dampers. In cases where outdoor weather conditions are suitable, it can also condition the room air with its "free-cooling" feature in order to reduce energy consumption.

Rooftop Unit is produced in 8 different models, 3 different series and air flow range of 4.400-35.200 m<sup>3</sup>/h, offering the opportunity to work from 100% return air to 100% fresh air. The cooling system can operate as



asymmetrical, double-circuited according to the desired capacity. In the Rooftop Unit with asymmetric double circuit, energy efficiency is brought to the fore with its 3-stage capacity control. Eco-friendly R32 gas, high efficiency and quiet working hermetic scroll compressors, expansion valves at each coil inlet, check valves, drier and sight glasses are used in the refrigeration cycle. The blowing air to pass over the indoor coil is provided by statically and dynamically balanced, high-efficiency, radial, single-suction, EC plug fans. The air passed over the outdoor coil is provided by high-efficiency axial fans which is suitable for outdoor conditions and has direct coupled electric motors. It can also be used with ISO Coarse (G4) filters and optional ePM1 (F7) filters on the fresh air and return air side.

The ENERGY series Rooftop Units which compliance with the ERP2021 regulations, the heat lost between the fresh air and the return air can be recovered thanks to the rotor heat/energy recovery exchanger, which is

accordance with ERP 2018 and

has thermal efficiency of at least 73%. In addition, electric, water and natural gas heater options are available according to your needs. Thanks to the fully integrated automation system used in the Four ECRH series rooftop units,

it can work in full compliance with different building automation protocols (Modbus, BacNet, LonWorks, etc.).





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# Water Cooled Water Chiller with Scroll Compressor



ERBAY Water Chillers are designed to outdoor installation and provide chilled water leaving temperatures which are given on capacity tables in our factory carrying out EN ISO 9001:2015 Quality Management System. The Units are supplied to ready for installation. All connections, oil and refrigerant charge and required tests are made in our factory. Units are in conformity with health and safety requirements of European Union directives and relevant harmonized standards.

According to capacity hermetic scroll compressors are used between 1 and 6 pieces and compressors are used as single, tandem or trio on each independent refrigerant circuit. Tandem and trio compressors are mounted on solid frame rail so vibration effect is prevented. Equal oil distribution is provided on compressors by using oil equalizing system.

Condensers are manufactured in Shell & Tube form and special high efficient copper tubes are fixed to grooved steel tube sheet holes with tube expander method. Condensers are in conformity with EN 14276-1 and EN 13445 standards.

Direct expansion evaporator is manufactured in Shell & Tube form and special high efficient copper tubes are fixed to grooved steel tube sheet holes with tube expander method. It's allowed to maintenance and clean up because of the removable tube bundle. Evaporators are in conformity with EN 14276-1 and EN 13445 standards and designed for chilling water and glycol brines. External surface of evaporators and suction lines are insulated with insulation material with suitable thickness.

The panel is designed to IP54. To operate the Unit automatically and securely, the panel is composed of two different section. The first section is power section and the other one is control section. The panel is equipped with enough number of contactors, thermic, fuses and on-off switch. The panel and wiring are in conformity with EN 60204-1 standard.

Microprocessor control system is used on the Unit. By means of this; entering and leaving water temperatures, refrigerant pressures on the suction and discharge lines,

occurred superheat temperature of evaporator, operating times of compressors, all faults occurred on the system and all alarm history can be seen on the digital screen and also capacity control can be made easily. the operating times of each compressor is balanced so optimum efficient operation of the Unit is provided.

To operate the Unit automatically and securely; electronic expansion valve drier-filter, sight glass, relief valve, flow - switch, high - low pressure switch and shut - off valves are included.



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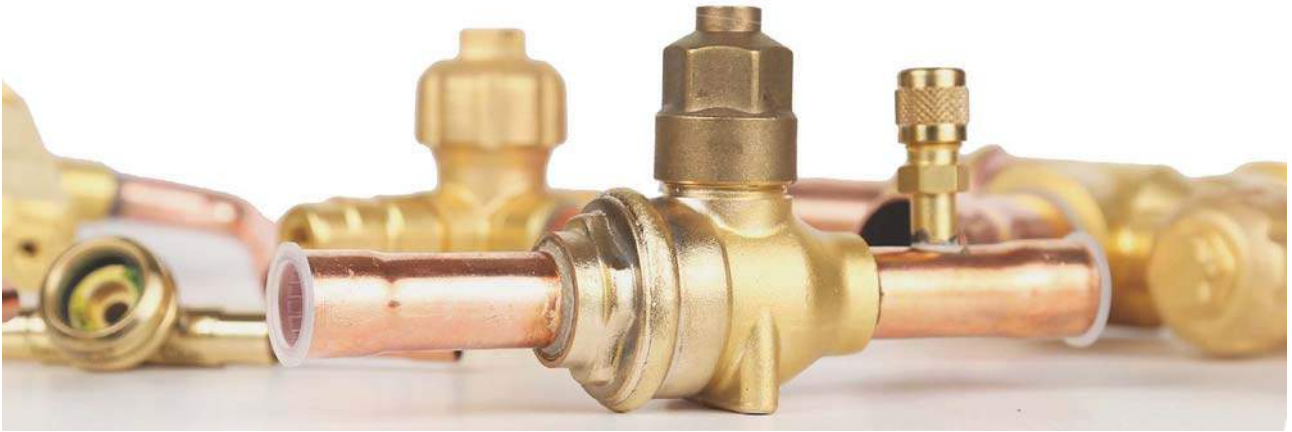
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## Smallart I/O Modules



# Ercan Teknik & E.C.A Solutions for Cooling System Valves with Maximum Durability and Adaptation



**ERCAN TEKNİK and E.C.A's refrigerant valves, draw all attention towards themselves in the cooling market with their high performance and durability features.**

Although E.C.A. is the biggest valve manufacturer in Turkey, for more than 50 years they have focused on water, steam, sanitary and gas valve production. With the collaboration of E.C.A. and ERCAN TEKNİK engineers, the new refrigeration valve range has been introduced to the market almost 10 years ago. With "continuous improvement" motto, E.C.A. became the preferred brand passing its European competitors in Turkey. Currently Turkish HVAC-R market uses 85% of E.C.A. with its esteemed brand and high quality. E.C.A. product range covers all CFC, HFC, HCFC, HFO and Natural Refrigerants excluding the Ammonia (NH<sub>3</sub>). Nowadays the E.C.A. CO<sub>2</sub> product range becomes very popular in Europe due to the F-Gas Regulation and its wide range of products. E.C.A. Refrigeration Product Range: Bi-flow Ball Valves, 2-3 Way Motorized Ball Valves, Safety Valves, Sight Glasses with Moisture Indicator, Changeover Valves, Y-Filters, Service Valves, Check Valves, Solenoid Valves.

## **SMART SYSTEMS WITH ENERGY EFFICIENCY THANKS TO 40 YEARS OF KNOWLEDGE AND EXPERIENCE FROM ERCAN TEKNİK!**

As it is well known, 40 years of existence in a sector brings with a strong experience and solutions. With this experience and skills, Ercan Teknik team; offers high-level systems to their customers. For Ercan Teknik, it is also important to reduce costs in systems with eco-friendly methods. Therefore, Ercan Teknik solutions consist of eco-friendly equipment focused on minimizing consumption while maximizing energy efficiency in applications.

## **Ercan Teknik Solutions**

### **RIPEN-IT:**

Thermoregulation, Humidification, CO<sub>2</sub> Level Control, Air & Gas Homogenization, C<sub>2</sub>H<sub>4</sub> Level Control, Periodically Generation of Food Quality & HACCP Reports, Live monitoring of the Ripening Process, Complete Control of the Refrigeration Cycle.

### **POT-8-0:**

Precision Thermoregulation, Humidification, CO<sub>2</sub> Level Control, Air & Gas Homogenization, Free Cooling via Outdoor Air, Periodically Generation of Food Quality & HACCP Reports, Alarm Management & Notification via email or SMS, Potato Core Temperature Monitoring up to 3 different probes, Daily Potato Core Temperature Reduction Algorithm.

### **FRESH as EVER:**

Thermoregulation, Humidification, CO<sub>2</sub> Level Control, C<sub>2</sub>H<sub>4</sub> Level Control (optional), Complete Control of the Refrigeration Cycle (Split Units), Inverter Compressor Management, Digital Scroll Compressor Management, Condensation Management, Management of up to 3 Evaporators in a single Room.

### **DRYCOOLER**

DRY Cooler application; manages pump stations, adiabatic coolers and heat exchangers with advanced ventilation regulation. The flexibility of this application allows it to work in combination with many other applications. Application can work either stand alone or integrated to a chiller unit as a free cooling source.



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# All Stars to FKS Air Handling Units



FORM has released new Eurovent certified FKS air handling units (AHUs) to provide customers with the best possible solution for all types of project requirements.

FKS air handling unit, which has a world-class competitive performance, is attracting great attention from domestic and international markets.

It stands out especially with T2 (TT Class) in Thermal Transmittance class and TB1 (TBF Class) in Thermal Bridging class values which represent very low energy loss.

FORM FKS Air Handling Unit, which can be produced in 60 different modules with a flow rate between 1,000 m<sup>3</sup>/h and 100,000 m<sup>3</sup>/h, has a special steel casing structure and 60 mm double skinned panels with thermal barrier PVC profile.

FKS air handling units meet the required level of indoor air quality while maintaining the humidity and the temperature under control. With modular, flexible and environment friendly solutions, it provides ideal comfort for commercial and residential buildings while providing high energy savings.





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**GEMAK**  
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# Frigoblock launches new product series with R455a Refrigerant



As transition from traditional refrigerants to low-GWP refrigerant system solutions is going through more severe restrictions due to F-Gas regulations, alternative mixed refrigerants which has no or low impact to the environment has been introduced to the market to be able to meet these standards. One of the most promising alternative refrigerants is R-455a which has GWP<150, wide range application temperature and higher COP levels with respect to traditional and alternative refrigerants. Seeing such improvement in the refrigerant manufacturing technology, FRIGOBLOCK has decided to adapt its product portfolio and introduce its brand-new technology using R-455a refrigerant.

**Using R-455a Refrigeration Systems can be advantageous as it has;**

- Higher efficiency in medium and low-temperature applications with respect to R-404a,
- Higher capacity per circuit vs. R-290 and lower safety risk,
- 46% lower capital cost and 36% operational cost vs. R-744 condensing unit (MT),



- More simple, safe and easy to maintenance vs R744 and R-290 systems,
- Smaller systems which conclude in reduction of power consumption,
- Much more versatile as it can cover low, medium-temperature and AC/chiller applications,
- Wide range of application area as it can be suitable for; cold rooms, convenience rooms, small/medium sized markets and large supermarkets,
- GWP<150 making it applicable through all restrictions covered by F-gas regulations





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www.frigoblock.com.tr

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### Industrial Refrigeration Systems



### Split Refrigeration Systems



### Central Refrigeration Systems



### CO<sub>2</sub> Transcritical Booster



### Blast Freezing Units



### Chiller Units



# “Beyond Your Imagination with High Tech Manufacturing Facility and Eurovent Certified Products →FRITERM”



After a long run on the way of gaining Eurovent certifications for the DX unit air coolers, Friterm pleased to announced that It gained its certificate for the unit air coolers as well as Dry coolers – Air Cooled Condensers – Hot/Cold Water coils. Friterm became one of the 9 producers in “Certify All” concept in Eurovent.

Since 1979, Turkish heat exchanger manufacturer FRITERM became the first company in Turkey who achieved all the Eurovent certificates and offers capacity confirmed products to its customers to ensure in the shortest return on their investments.

### **Friterm is now too CONFIDENT on its own DX air coolers capacity.**

- In 2000, Friterm gains Eurovent certificate for hot&cold water coils in Europe and it is the first company who gains the certificate in Europe
- In August 2018, Dry Cooler has been certified by Eurovent
- In February 2020, Air Cooled Condensers has been certified by Eurovent
- Lastly but not least, In December 2021 Friterm has completed Eurovent certification program for its Freon based DX unit air coolers and confirmed by ECC (Eurovent Certita certification) and spreaded its Eurovent certified product group.

Friterm supports performance transparency in its sector for the fair competition. Therefore, Friterm applied Eurovent certification program to ensure its capacity, air flow, engine power, pressure loss and sound level by a third party test organisation.

Friterm is one of the 13 company in Dry cooler and one of the 11 company in Condenser and DX unit air cooler product group who has Eurovent certification in the world.

**“Friterm continues to lead the Turkish market and successfully competes in World branded companies with Eurovent certifications in terms of having the certificates in Dry cooler, Condenser and Dx unit air coolers.”**

Friterm offers HFC fluided Dx unit air coolers in 3 different model series to its customers. As standart type called FES which is according to EN328 and SC2 conditions capacity from 1,25kW – 136kW; Dual discharge FEDD series from 1,25kW – 65kW and Walk in Room FEWR series from 0,6kW – 16,3Kw.

All the selection according to those units can be selected from updated FPS 6 (Friterm Product Selection Software 6) which is developed and improved by Friterm R&D center where all the units’ performance test has been implemented and confirmed in the modern Friterm test lab. Now, Friterm is proud to announce that Friterm’s unit Dx air coolers have been tested and confirmed by ECC agreed test lab and Friterm test lab results also being confirmed under the Eurovent certification program. Now, Friterm will consider more on the environmental issues and implement its CO2 products certifications immediately. Friterm also discuss with Eurovent for the NH3 products certifications.

**“Ensure your investments by Eurovent certified Friterm Products”**



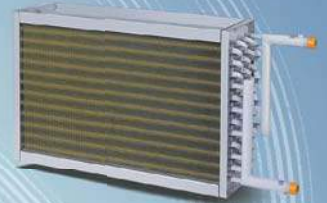
40 YEARS  
from local to global



Dual-Discharge  
Dx Air Coolers



Standart  
Dx Air Coolers



Heating  
Cooling Coils



# Insure your investment with "Certified" Friterm-Products



Walk in Room  
Dx Air Coolers



V Type Dry Cooler



Horizontal Type  
Dry Cooler



Vertical Type  
Air Cooled Condenser



V Type  
Air Cooled Condenser



# Ges Teknik R&D



Ges Teknik was founded by our executive Muzaffer Kazakoglu, whose HVAC practices date back to 1995. Since 2003, we aim to bring intelligence to the HVAC products in the Turkish market.

Ges Teknik export and marketing manager Gokce Aydinli emphasizes that the combination of the HVAC experience and the technological know-how practice empowers Ges Teknik Team to create tailor-made solutions and rapidly meet the HVAC Equipment manufacturers' unique expectations.

She also added that Ges Teknik has designed several types of controllers for different HVAC equipment, including Fan

Coil Unit, Energy Recovery Ventilator, Compact AHU, Trench Heater controllers. BACnet is the standard feature of these products. Many Smartart-branded HVAC controllers are powering the HVAC Equipment of our customers and creating comfort and energy savings. Mrs. Aydinli summarizes the her colleagues' feelings: "This brings priceless satisfaction to the Ges Teknik R&D team."

### Fan Coil Thermostats

The latest releases completed the fan coil thermostat product range and provided a control for different fan and valve combinations. These vary from 3 stage or EC fans, on/off or modulating valves.

In order to meet the demands of the end user and commissioning team, all of our models are identified as fully parametric.

### BMS I/O Modules

The latest addition to our product range is the Smartart I/O modules with 28 I/O and 42 I/O models.

One of the most feasible solutions to collect the scattered data from the field is to use the communicating I/O modules. Smartart branded modules with Bacnet / Modbus are the cost effective solutions to fit the automation needs of our customers.

To find out more information about our Smartart products, visit [www.smartart.com.tr](http://www.smartart.com.tr) website.



# High Performance Air Quality Solutions

**FORM FKS**

**NEW**



**T2 TB1**



The high performance of FKS Air Handling Units (AHU) is a result of over 56 years of **Form's** experience in manufacturing, sales & service for comfort and industrial air conditioning.

FKS Air Handling Units are manufactured in Izmir-Turkey and have been certificated by EUROVENT according to the EN 1886.

- ✓ 1,000 to 100,000 m<sup>3</sup>/h air flow rate in 60 different sizes,
- ✓ Designed to operate extremely efficiently with very low sound pressure levels,
- ✓ T2/TB1 Thermal transmittance and thermal bridging factors,
- ✓ Having specially designed PVC Panel Profile® along with Nylon Corner Elements® for the best thermal performance (Tested according to EN 1886, TB1),
- ✓ Units supplied with MCC-DDC panel.



ventilation



cooling  
heating



filtration



humidification  
dehumidification

# GEMAK offers “Product Selection Programme”



## GEMAK Product Selection Program

Main Page Sections My Project (0) Actions Help Languages Exit

Capacity  Watt

Min/Max Range

Inlet Air Temperature  °C

Evaporation Temp.   °C

SC1 SC2 SC3 SC4

Refrigerant

Altitude  m

Fin Material

Serie Selection

Fin Spacing

Number of Fan

Fan Diameter

Stock

Single Unit Selection

Distance   m / dBA

Max. Length  mm

Max. Width  mm

Max. Height  mm

**Product Select**

### Evaporator Product Selection List

	Model	Capacity Watt	Heat Transfer S	Air Flow m <sup>3</sup> /h	Fan Diamete	Number of F	Total Power Inp	LWA dBA	LPA dBA
1	8 GNE 35.3.6	10 000.00	38.2	7200	350	3	0.41	69	47
2	8 GTT 35.3.2 M	10 000.00	43.3	7500	350	3	0.50	69	47
3	4 GNE 35.3.4	10 520.00	47.9	7050	350	3	0.41	69	47
4	8 GNE 45.2.6	10 650.00	38.6	8400	450	2	0.49	76	54
5	6 GNE 45.2.5	10 750.00	41.6	8600	450	2	0.49	76	54
6	4 GNE 50.1.8	10 800.00	59.6	5100	500	1	0.68	77	55
7	6 GTT 40.2.2 M	10 900.00	48.4	6300	400	2	0.32	88	66
8	6 GNE 50.1.8	9 000.00	41	5300	500	1	0.68	77	55
9	4 GTT 35.2.2 M	9 050.00	55.1	4500	350	2	0.33	67	45
10	4 GNE 50.1.6	9 150.00	44.7	5350	500	1	0.68	77	55

Page: 1 of 2 View 1 - 10 of 15

**Dimensions**

A: 1720 mm    We: kg

B: 510 mm

C: 365 mm

D: 1530 mm

F: 485 mm

G: 429 mm

ØDin: 16 mm

ØDout: 28 mm

Engineered by ROADMAP Product Innovation Engineering

[Follow @productselect](#)

Gemak provides Standart product selection software which is available free on our web site [www.gemakltd.com](http://www.gemakltd.com) with multiple language options like English, German, Russian, Italian and Arabic. Gemak standart product selector software is an application developed to select the most appropriate standart condensers and evaporators by entering the parametres

such as capacity, operating conditions, fin spacing, diemensions etc.

With its motto “Quality First” GEMAK has identified its success with the quality product policy. Our Quality Management System is of a structure in which all employees feel that they are a part of the system and evaluate their work. Aiming to achieve continuous

improvement, our company continues to work with a customer oriented approach. Focusing on customer satisfaction our company has the principle of assuring customers with its products and product quality. Diversity of products, opting to use international standards and advance technologies is the proof of this mindset.

# Guven Sogutma Increases its Production and Expands its Product Range



Our company produces liquid receivers and compressor protective equipment and increases its equipment variety suitable for eco-friendly air conditioning liquids each day. We are happy to inform you about our expanded product range. Now our customers can reach products and wide varieties at the best prices. We have firstly included the German DEKA company, which produces liquid and oil control equipment, and then the engineering experience of American Parker Sporlan in the value-added product sales we initiated with the Italian OLAB brand, which manufactures valves and fitting equipment for cooling systems.

In line with ISO 9001:2015 quality standards and CE 2014/68/EU (PED) pressure vessels directive, we continue our production with high quality and a wide variety of designs suitable for the use of coolants such as HFC-CFC-HCFC-R744-R290-R717 in the range of 30-130 bar operating pressure based on the design needs of the product groups. With our more than 120 professional employees and proficient R&D team we develop products of our standard line and create new product groups. We also proceed delivering to our customers the best service both in domestic and international markets with our 11,000 m<sup>2</sup> production area, professional specialists and high-tech machinery.

Thanks to our nearly 37 years of experience in the Air Conditioning and Refrigeration industry product groups

such as Shell and Tube evaporator and condenser, Filter Drier, and vibration eliminator have been added to the GVN brand. Exporting to more than 65 countries and having sales representatives in 45 countries, Guven Sogutma, powered by its customers, continues to take bigger and firmer steps each day.

## **GVN**

- Liquid Receivers
- Collectors
- Suction Line Accumulators
- Filter Drier Shells
- Mufflers
- Oil Strainers
- Oil Level Regulators
- Oil Reservoirs
- Oil Separators (Conventional, Helical, Coalescent, for Screw Compressors)

## **OLAB (ITALY)**

- Solenoid Valves
- Check Valves
- Ball Valves
- Safety Valves
- Sight Glasses
- Oil Pressure Valves
- Change Over Valves
- Humidity and Liquid Indicators
- Fittings

## **DEKA (GERMANY)**

- Electronic Level Sensors, Electronic Oil Level Regulators

## **PARKER / SPORLAN (USA)**

- Thermostatic Expansion Valves
- Electric Expansion Valves

## **NEW PRODUCT RANGE**

- Shell&Tube Evaporators, Shell&Tube Condensers
- Liquid Line Filter Driers
- Vibration Eliminators



# KARYER Heat Exchangers



KARYER is one of the leading manufacturers & exporters of Heat Exchangers, Evaporators and Condensers capable of realizing both serial and custom projects. Our 44 years of experience enables us to export 77 countries in 6 continents (mainly in Europe) by ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 27001:2013, CE, UL, EUROVENT, PED, EAC certified standards, while 60% of our turnover is obtained from export sales. KARYER won the ISIB Successful Exporters Awards in two separate categories in 2019. KARYER was nominated as the First company that "Exports Most Heat Exchangers" among heat exchanger manufacturers and the third company that "Exports to Most Countries" in Refrigeration and Air-conditioning industry.

The product range of KARYER contains Heating & Cooling Coils, DX- Evaporators, Condenser Coils, Unit Coolers, Blast Freezers, Air Cooled Condensers, Air Coolers, Condensing Units (w/o compressor), Dry Coolers, Oil Coolers and Air to Air Heat Recovery Heat Exchangers.

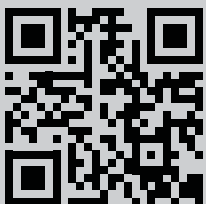
KARYER is mainly specialized in Copper tube / Aluminum finned heat exchangers. Our company also works on design, development and production of heat exchangers compatible with refrigerating and air-conditioning gases such as R 290 Propane, R 600a Isobutane, HC's and CO2 in addition to conventional gases. Additionally, serial production of Aluminum tube and Aluminum finned heat exchangers are also manufactured.





# ERCAN TEKNİK Inc.

Your Solution Provider in Refrigeration



# LUFT is growing in HVAC market with high quality and innovative products



LUFT is the fast-growing AHU/HVAC products manufacturer, based in TURKIYE.

Our head office is in Istanbul, and our factory is in Bandirma-BALIKESIR location.

Our production and R&D departments operate in 25.000 m<sup>2</sup> closed area.

LUFT manufacturing methods include manufacturing processes planned based on the Lean Manufacturing Method. This enables the manufacture of products that fully meet the customer's requirements, that are delivered on time, and that have a maximum price/performance value to be manufactured with a minimum waste objective. Under "LUFT" brand name we also supply FCU, Water/Air cooled chillers, VRF System Air Conditioners, VRF Base DX AHU-Outdoor units and "V-ROOFTOP" registered named VRF base ROOFTOP packaged units. Our Company is also TURKEY main supplier and applicator of Nederland base BLYGOLD Corrosion protection systems which have been used most of our HVAC products against our clients high quality demands.

**Our production lines contains;**

- Comfort, Hygiene, and Industrial type Modular Air Handling Units.
- LUFT "Exclusive Series" AHU ( Shopping malls, hospitals, Industrial and pharmaceutical applications)
- LUFT "Performance Series" AHU (Cost advantage applications)
- Compact Air Handling Units ( Residential applications)
- Industrial Paint Shop Air Handling Units (Especially Automotive sector applications)
- Offshore Special Air Handling Units (Chemical, petroleum platforms etc. applications)
- Rooftop unit (Package Unit) ( All type of Single Packaged Air Conditioners requirements)
- Heat Recovery Units (Air to air residential applications)
- Kitchen Ecology Units ( Industrial Kitchen applications)
- Packaged Pool De-Humidifier Units (Close Swimming pools)
- E cube Cabinet type exhaust fans



# ISO 16890 General Ambient Ventilation Filter Tests



The ISO 16890 standard is the new standard that has replaced the EN779:2012 standard. This standard covers Coarse filters (Class G), Medium filters (Class M) and Fine filters (Class F). MGT Filter performs tests within the framework of ISO 16890 standard, exposing a filter to particles from 0.3  $\mu\text{m}$  to 10  $\mu\text{m}$  in size. This means testing the filters in conditions much more similar to real life and getting a product with the performance you expect.

MGT Filter performs tests on its products according to ISO 16890, EN 779 and ASHRAE test standards. Eurovent, which is independent, also has tests done on the capacity and performance test data of the products it produces in order to ensure "proven/confirmation".

R&D activities are carried out according to the pressure and efficiency performance results of the filter. In line with the customer's request, filter testing service is also offered.

## EN 1822 and ISO 26463 High-efficiency Hepa-Ulpa Filter Tests

Efficient air filters (EPA), high efficiency air filters (HEPA) and ultra-low penetration air filters (ULPA), filters produced for ventilation and air conditioning systems such as clean room applications are tested according to EN 1822 and ISO 29463 standards. MGT Filter tests every product it produces according to these standards and determines the filter performance.

R&D activities are carried out according to the pressure and efficiency performance results of the filter. In line with customer demand, filter testing service is also offered to customers.

## ISO 16890 General Ambient Ventilation Filter and EN 1822 Media Tests

MGT Filter makes detailed comparisons by pre-testing the media produced by raw material manufacturers. The selection of the most suitable quality raw materials is supported by the test results obtained from here. Pre-tests of raw materials before filter production are carried out with this system and controls are carried out.



# RES Enerji Sistemleri A.S. presented their new Industrial Drying Machine in the last quarter of 2021, which is G-Dry



RES Enerji is known with their partnerships with top brands of heating, ventilation and air conditions companies such as Remeha, Panasonic, Reflex, Elicent, Dynair and Grundfos. Also, the company is the producer of Liebe Combi and Restherma Heat-Pumps in Turkey.

The Industrial Drying Machine based on high-technology, high hygiene standards, high efficiency and it is built with 50 years of HVAC market experience. Higher hygiene standards are provided to dry any fruits, vegetables or any other foods. Machine can work with boiler, heat pump and also with the hybrid system. In addition, waste heat or any other heat source can be used for the drying process.

In G-Dry, an advanced economizer is used to maximize the efficiency. The cost of energy decreases with the function of economizer. Also, a weighbridge is used under the drying

cabinet which the user can analyse the instant weight during the process. It will help to define humidity amount in the product during the dehydration. In addition, the schedule and the control process is simply made from a smart-touch-panel located on the cabinet. Remote control is a feature in G-Dry which helps to observe and control the status of the machine as well as remotely maintenance option from RES Enerji Aftersales Department in case of any problem. The drying process happens generally in 5-7 hours depending the product type and the targeted humidity rate.

G-Dry is an innovation for the drying market with its features.

For any information, please visit [www.g-dry.com](http://www.g-dry.com) or [www.resenerji.com](http://www.resenerji.com)



Save Your Energy!

**eneko**<sup>®</sup>



*EHU series fresh air units,  
ERO series rotary wheel heat recovery units,  
EPO series plate heat exchanger units,  
HGN series hygienic units*



- 3000 m<sup>3</sup>/h - 50000 m<sup>3</sup>/h
- Hygroscopic Rotor
- Cross Flow Exchanger
- Low energy consumption and low noise level with AC or EC Plug Fan
- Compact Structure
- Double Skin Casing (50 mm Rockwool)
- High mechanical performance values according to EN 1886, T2, TB2, D1, L1
- Full-Automation
- Electronic Control Panel "Plug&Play"
- BMS, ModBUS, Bacnet, Lonworks
- Heating and Cooling Option
- Unit Feet

**Compact Air Handling Unit**



**Rotary & Counter Flow Plate**

**Rooftop Unit**



**ERF**

**Kitchen Ventilation Unit**



**DES**

**Packaged Type Dehumidifier Unit**



**EDH**

**Integrated Heat Pump Air Handling Unit**



**ERO AC/EPO AC**

**Residential Type Heat Recovery Unit**



**EVENT**

**Ceiling Type High Efficient Heat Recovery Unit**



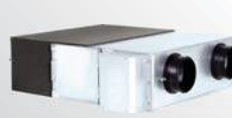
**PROVENT**

**Ceiling Type Heat Recovery Unit**



**EVHR**

**Ceiling Type Energy Recovery Unit**



**EVER**

**Ceiling Type Heat/Energy Recovery Unit with Heat Pump**



**Aluminum & Cellulosic Exchanger Options**

**EVHR AC/EVER AC**



[www.eneko.com.tr](http://www.eneko.com.tr)



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Phone : +90 216 455 29 60 / +90 216 455 29 61 Fax: +90 216 455 29 62

E-mail : [satis@eneko.com.tr](mailto:satis@eneko.com.tr)

**IZMIR - Factory**

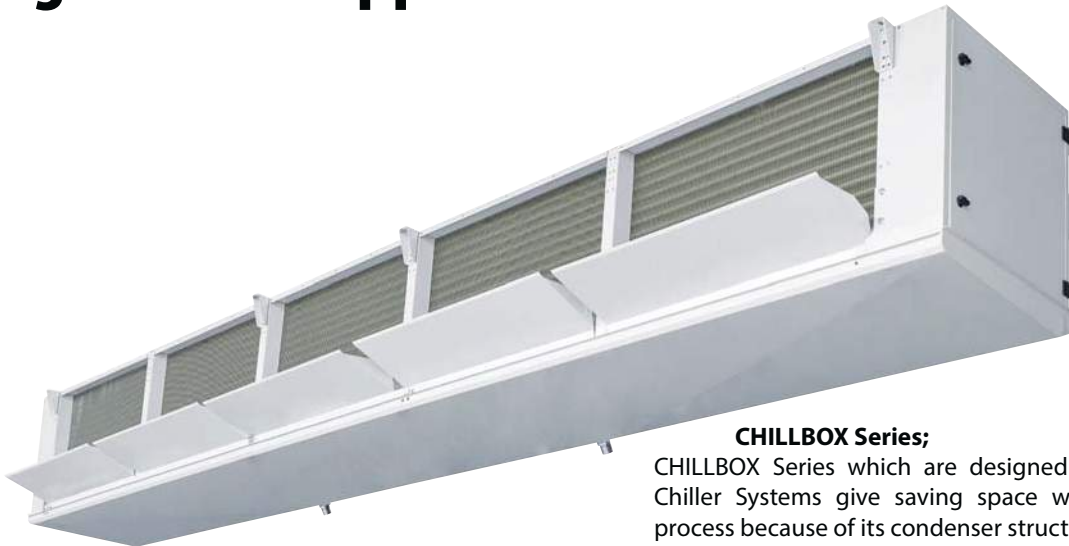
Address: 10000 Sokak No:30 AOSB 35620 Cigli/Izmir - TURKEY

Phone : +90 232 328 20 80

Fax : +90 232 328 20 22

E-mail : [info@eneko.com.tr](mailto:info@eneko.com.tr)

# New Generation Unit Coolers for Agriculture Application



### CHILLBOX Series;

CHILLBOX Series which are designed for small capacity Chiller Systems give saving space while its installation process because of its condenser structure.

The range of the CHILLBOX Condensers are consist of from 2pcs. Ø400/Ø800 to 3pcs. Ø500mm fan diameter and 2,1-2,5mm fin spacing.

The capacities of CHILLBOX series are varying from 24kW to 121kW. The capacities are given in the catalog for dT:15°C.

As a Company Quality Policy, first quality material usage is very important subject also for this new series.

SARBUZ Family is racing with herself about increasing her turnover, export percentage and quality bar by long term customer relations and supports.

SARBUZ HEAT EXCHANGERS Industry and Commerce Inc. was established in 1953 with the purpose to serve HVAC-R industry. Through its gradually increasing experience and knowledge by years, SARBUZ has started manufacturing finned type of heat exchangers in 1974. Sarbuz manufactures evaporators, condensers, heating and cooling coils, steam coils, dry coolers and oem coils for over 40 years for the companies which are active in the HVAC-R, energy and mobile refrigeration industry and also provides finned type heat exchangers for different companies in the country or internationally.

SARBUZ serving you customers by their new design SBA series evaporator and CHILLBOX Type Condenser.

### SBA Agriculture Type Evaporator;

SBA series evaporators that is created for fruit and vegetable cold rooms, makes the room cold perfectly without any speck on the fruits because of its special design.

The range of the SBA Agriculture Type Evaporator is consist of from 2pcs. Ø450 to 6pcs. Ø500mm fan diameter and 8mm fin spacing.

The capacities of SBA series are varying from 6,2kW to 66,4kW for SC2 conditions. The capacities are given in the catalog for different condition as To:+2/Te:-3 in addition to Eurovent SC conditions.

The serie are designed with 1/2" copper pipe, aluminum foil and galvanized steel painted RaI-7035. Electrical defrost as HT (without drip tray heaters) or LT type (with drip tray heaters) as optional. Defrost systems are 100% testing by the residual current circuit breaker tester to ensure that there is no any leakage.



# The World Was Not Flat WE WANTED TO WITNESS IN SITU

Starting from the expression,  
“not the one who lives longer but a traveler  
knows a lot” we explored it by exporting to  
55 countries in 4 continents.  
The world wasn't really flat at all.



# Systemair Turkey continue to increase high technology products in export markets



Systemair is a leading global supplier of high quality ventilation, heating and cooling products and they provide ventilation for projects such as factories, shopping malls, airports, hospitals, industrial facilities and schools. Stating that they base sustainability in every step they take, Systemair Turkey General Manager Ayça Eroğlu emphasized that they will continue production with pioneering technologies in Dilovası, which is the first air handling unit factory in Turkey to have LEED Gold Certificate, which means 'Leadership in Energy and Environmental Design'. Eroğlu shared that they were awarded with the Machine Industry award in the "Sectoral Performance Evaluation" organization arranged for the 14th time by Kocaeli Chamber of Industry in order to reward the successful industrial establishments in the Marmara Region. She emphasized that they will continue to work with the mission of making fresh air available to everyone and they aim to transform Turkey into the strongest production center in the group with new-patented products.

## New and environmental friendly solution for commercial kitchens

Eroğlu said that the Geniox VOClean Ecology Unit, which was launched recently and broke new ground in ventilation in industrial kitchens, is a very important investment for Systemair Turkey. She said; "Our Systemair Turkey team has undertaken all control and production as well as R&D studies from scratch, which brings a new breath to commercial kitchens. Geniox VOClean is an energy efficient ecology unit with low power consumption and high pollutant capture efficiency. The modular construction allows Geniox VOClean to be easily configured for many different kitchen exhaust systems. It is more popular in Asian commercial



kitchens, and it is also preferred in European countries. Our aim is to make a difference in exports as the only country that has implemented such a comprehensive and complex product with domestic production."

## The only company that calculates the carbon footprint of the data center cooling product for a lifetime

Systemair has a strong commitment to eco-design and work with skills, development on issues such as circularity and the existing and future requirements, regarding a product's environmental and climate footprint, from a life cycle perspective.

Ayça Eroğlu stated, "During the design of our new data center cooling unit Geniox Tera, we have looked at materials, production process, logistics and we do CO2 footprint calculation in our software for the units. Also our state of the art laboratory for testing the cooling units is designed with a strong focus on sustainability and is equipped with a heat-reclaim system, allowing us to utilize the heat generated by the units tested."

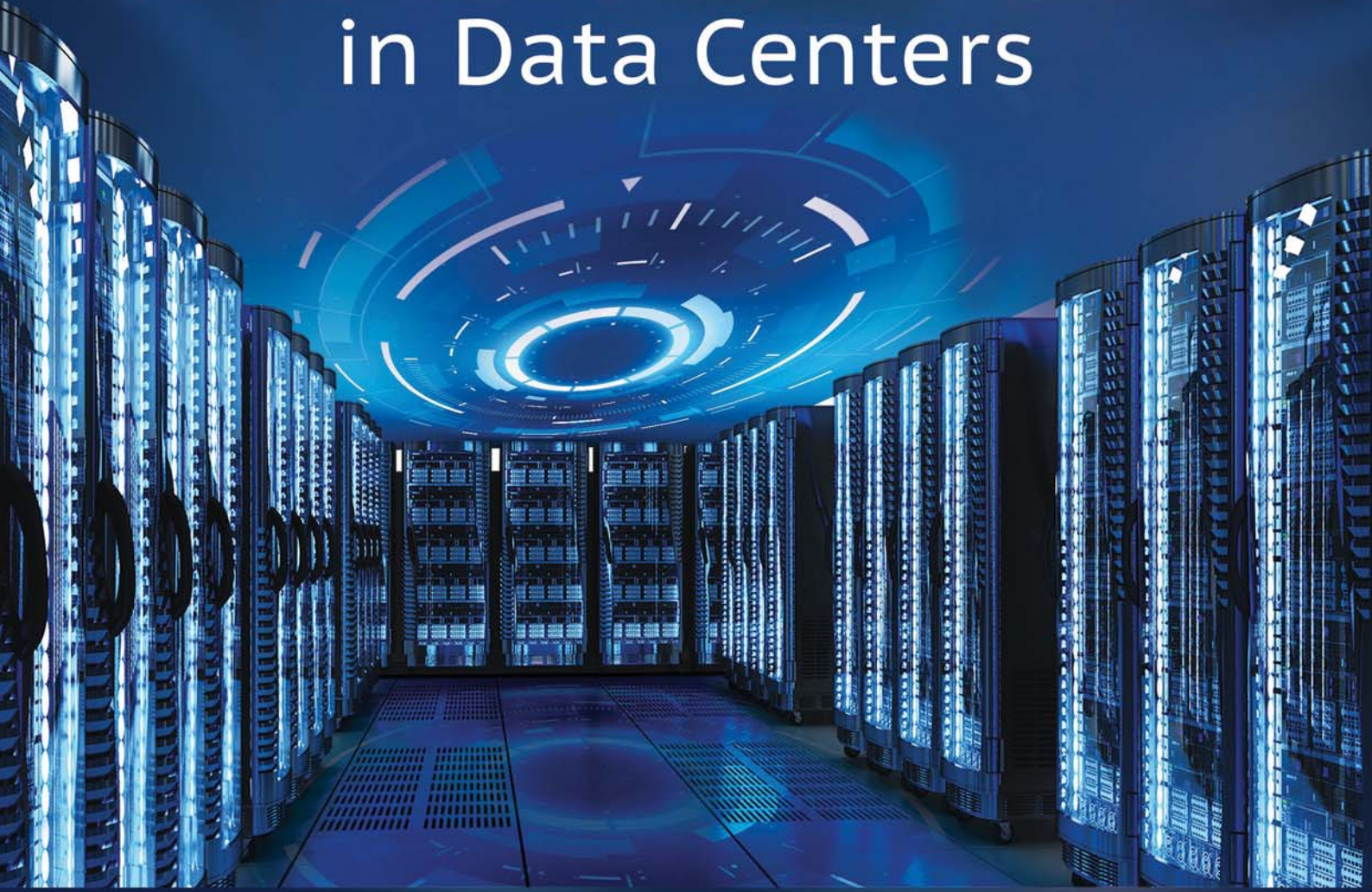
## The biggest investment of 2022

Eroğlu said that in 2022 they aim to launch the DCC (Data Center Cooling) Lab, which can perform the tests of data center cooling units. "With this laboratory investment that we'll launch, we are preparing to become the center of Europe with the latest technology. As Turkey, we will bring a brand new perspective to data center cooling solutions around the world with the strategic location of our production facility." Eroğlu explained.





# HIGHER EFFICIENCY in Data Centers



*We provide precise and cost-effective solutions with our **DC Master Adia Mechanic Cooler** and **DC Pro Precision Controlled DX** air conditioner products, specially designed and manufactured for globally increasing data center projects.*



# Your Air, We Care!



Our companies are founded by mechanical engineers and expert technical staff who bring together over 15 years of their experience. Technowell is an engineering and manufacturing company specialized in the field of air conditioning, dehumidification and humidification systems. Since its establishment in 2001, Technowell has been providing engineering services for air conditioning in industrial and commercial areas for 15 years. Technowell has completed more than 2,000,000 m<sup>2</sup> area climate projects in different geographies of the world with engineers and technical specialists.

Technowell Ultrasonic Humidifier, gives water particles less than 10 µm to the air by an oscillator in order to increase the humidity of the environment. The unit has a compact appearance with its stainless steel case and digital control screen. Automatic water level control provides ease of use.

High Pressure Humidification Unit, water particles of approximately 10 µm are sprayed to the humidification chamber in the air handling unit with the help of a high pressure pump. The air passing through the chamber saturates with moisture and reaches the desired relative humidity value. High pressure pumps used are complete stainless steel, oil free with 40,000 hours of maintenance free operation life.

Desiccant Dehumidifier, is developed to effectively treat applications requiring low air humidity. The desiccant dehumidifier operates based on the adsorption principal. Treated air is simply passed through a porous wheel of solid

desiccant and the moisture in the air is absorbed and the humidity level is decreased.

Home Dehumidifier, adopts refrigeration principle to dehumidifying the air. The unit has a high energy efficient compressor, high air circulation with external rotor fan, strong dehumidifying ability, automatic control and convenient operation. The dehumidifying capacity is designed and produced according to the customer's request.

Commercial Type Evaporative Pad Cooling Unit, is a device that cools the air through the evaporation of water. Evaporative cooling differs from typical air conditioning systems that use vapor compression or absorption refrigeration cycles. Evaporative cooling works by employing water's large enthalpy of vaporization. The temperature of dry air can be dropped significantly through the phase transition of liquid water to water vapor (evaporation), which can cool air using much less energy than refrigeration. The unit can be used in cafes, restaurants, factories, supermarkets, etc.



# Thermoway Heat Exchanger Solutions for HVAC Experts



Thermoway Inc. since its establishment, it has been following the technological developments, making needs oriented designs regarding customer expectations, and making growth oriented investments every day by observing the principles of energy efficiency and environmental protection.

**For these purposes, Thermoway Inc. it expands its product range by adding new products to its product range.**

- In our newly designed TLG series condensers, thermal efficiency has been increased and energy efficiency has been brought to the forefront by using inner grooved pipes and changing the lamella surface structure.

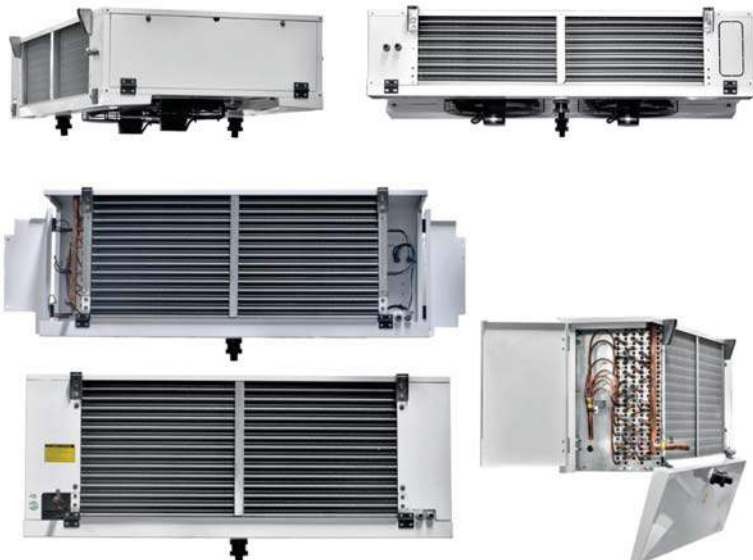


**Capacity Range:** between 17,8kw - 709,4kw

**Lamella Spacing:** 2,1mm - 2,5mm

**Fan Diameter Range:** From Ø500mm to Ø800mm

- Our new TEC series for cold room evaporators which have been designed to insure high heat transfer efficiency along with along easier assembling and maintenance processes are begin produced with 4-6-8-10 mm fin spacings.



- TEC series evaporators are offered to your service in 4 different series according to their intended use.
- TEC C series standard room wall type,
- TEC S series corner ceiling type in small sized rooms,
- TEC D series is generally double blow ceiling type in working environments and places where low air velocities are preferred,
- TEC A series is designed to reduce product loss in fruit and vegetable storage, to increase thermal efficiency and to provide more homogeneous air distribution in the room.

**Capacity Range:** 2,0kw – 83,4kw

**Lamella Spacing:** 4-6-8-10mm

**Fan Diameter Range:** From Ø250mm to Ø500mm



- Box series condenser units designed in line with customer demands are designed to be able to install many types of compressors and auxiliary equipment, and 4 different types (TBOX, MBOX, SBOX, HBOX) are offered to our customers.

**Capacity Range:** between 2kw - 224kw

**Lamella Spacing:** 2,1mm - 2,5mm

**Fan Diameter Range:** From Ø250mm to Ø800mm



Thermoway Inc. it will continue to work with the aim of improving its machine park day by day, ensuring that its personnel are trained in a way that will ensure their development, and making product traceability possible under all conditions by improving the quality management system and will continue to be your reliable business partner by offering new products to our customers.

For the further information please visit our webside

# Ulpatek Filtre continues its activities for a better future...



ULPATEK leads the industry in terms of filtration, whose significance is better comprehended with the pandemic. Answering the filter demands of this period by offering solutions with engineering know-how rather than the popular approach, that is, just producing and selling, Ulpatek has pioneered the industry with its production quality and guidance in identifying the filter classes to be inserted in the "Air Cleaner Devices", whose usage areas were expanded during this period. Although "indoor air quality" was more widely recognized in particular industrial practices until the pandemic, its importance in office spaces, meeting rooms, hotels, gyms, stores, and similar day-to-day living spaces was a part of our post-pandemic daily life is now better understood. During this period, air purifiers with HEPA filters have become the most frequently-utilized devices in our living spaces. Manufacturing filters for air cleaner devices to combat the pandemic, Ulpatek also produces custom design filters for its national and global business partners.

After managing to achieve growth aims despite the pandemic conditions and conducting successful R&D activities, ULPATEK ended 2021, the year that created a difference in product support, product development, and engineering activities with the brand's thriving

R&D engineers and professional employees in the R&D department. With the activities conducted in its filtration testing laboratories called ULPALAB, the brand continues to offer the optimum filtration solutions to the industry.

Besides the improved and updated version of its available product group, Safe Change Housing-BIBO, equipped with cutting-edge technology and test systems, ULPATEK also exhibited all its ventilation filter groups manufactured under the standards at the ISK SODEX fair and the CPHI Worldwide 2021 fair organized in Italy. Moreover, the brand introduced its "Laminar Flow Unit for Weighing and Sampling" and "Laminar Flow Unit with Fan Filter (FFU)" during the same events. "Safe Change Housing-BIBO" in the high-tech product category was the most notable product group in these fairs.

At the ISK SODEX and CPHI Worldwide 2021 Milan fairs, the brand highlighted the significance of proper filtration yet again, exemplifying the ideal engineering practices to protect the environment, processes, and human health. Regarding filtration, the fairs focused mostly on how enhancing the energy performance of buildings with the ideal engineering solutions affects the total cost.

With the awareness of elevating its brand value via the positive feedback received from the partner companies regarding product quality and performance, Ulpatek also continues to excel in the European market with its product quality and engineering activities.

ULPATEK Filtre manufactures cartridges under the ISO 16890 standard, metal oil slingers, bags, panels, rigid filters, also EPA (E10, E11, E12), HEPA (H13, H14) and ULPA (U15, U16, U17) filters and gas turbine filters in accordance with the ISO 29463 & EN 1822 standards, cylindrical and cartridge filters, active carbon filters (AFV), fan filter units (FFU), safe change housing, laminar flow units, and hygienic air conditioning equipment.

As a global brand selected by many companies in the hygiene industry, including medicine, food, hospital, and electronics industry, with its expertise in air filtration, Ulpatek Filtre continues to increase its market share in over 76 countries each day. Aiming to expand its partnerships, the brand will also attend the fairs of the German Filtech to be held in March this year and the Italy Mostra Convegno Expocomfort, which has been rescheduled to take place in June.

With the motto of "High Quality Filtration for a Better Future" in mind, ULPATEK Filtre will continue its journey with firm steps by increasing its product range while maintaining its quality in 2022.

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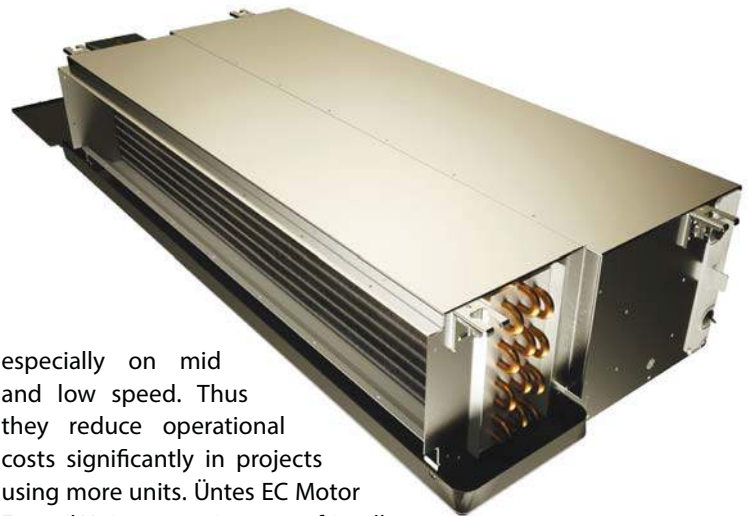
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# Maximum Energy Efficiency and Minimum Sound with Üntes EC Motor Fancoil Units



especially on mid and low speed. Thus they reduce operational costs significantly in projects using more units. Üntes EC Motor Fancoil Units are environment friendly thanks to their low electric consuming and efficient design.

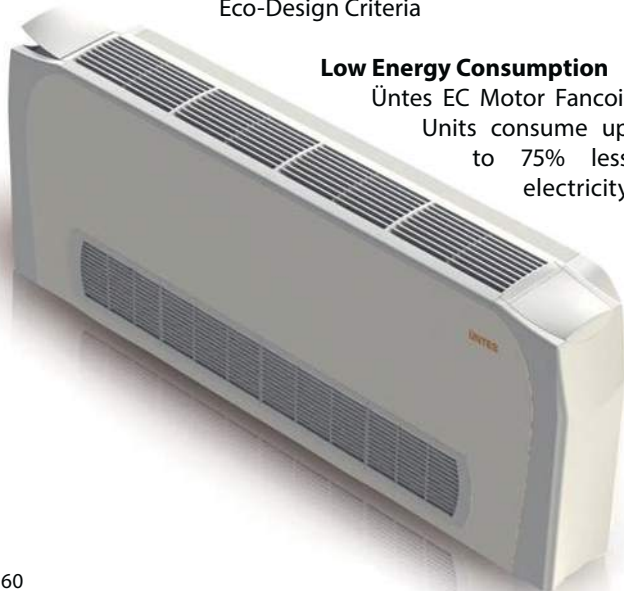


Üntes EC Motor Fancoil Units stand out thanks to their unique and aesthetic design, silence, easy assembly and space saving size. Eurovent Certified EC Fancoil units offer maximum energy efficiency and minimum sound, therefore creating a comfortable space.

- Maximum Energy Efficiency, Minimum Sound
- Eurovent Approved High Performance
  - Fully Compliant with the Current Eco-Design Criteria

### Low Energy Consumption

Üntes EC Motor Fancoil Units consume up to 75% less electricity



### Precise Temperature Control

EC Motor Fancoil Units can control temperature in the neighborhoods more precisely when they're used with thermostats that have proportional and automatic control features. Thus creating a more comfortable space for users.

### Low Sounds

Aside from consuming less electricity and being high performance, one of EC Motor Fancoil Units' unique features is running silently thanks to their brushless motor design. Having no brushes means the impeller spins over a magnetic field without any friction which reduces the sound caused by the motor.

### Eurovent Certified High Performance

During manufacture, EC Motor Fancoil Units go through extensive tests at Üntes laboratories in accordance with the quality standards. The EC Motor Fancoil Units are also approved and certified by Eurovent.

### Affordable

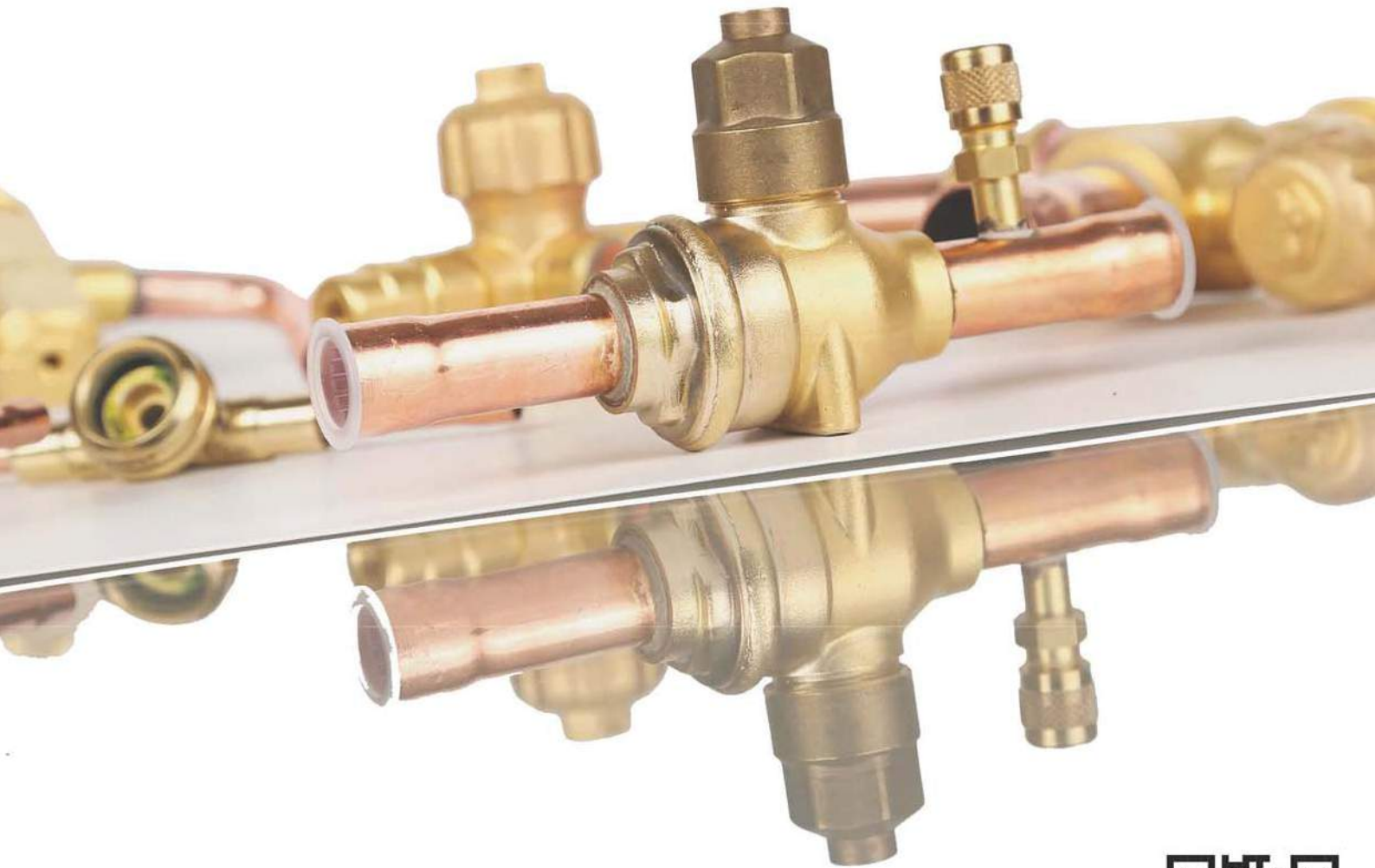
Üntes EC Motor Fancoil Units reduce operational costs significantly thanks to their energy efficient design and low energy consumption feature, and they can pay off the initial investment costs in 3 to 4 years.

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- Alarm output relay.

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# Venco V Remote Eye & V Remote Plus Applications



V Remote Plus Remote Access and Control System allows you to control Venco products (up to 25 units) by your smartphone or computer through internet connection.

System status and errors are monitored instantly via control panel. All connected units and errors (if any) are listed on the panel.

Fan speed control, temperature control, timer and alarm control, mode selections could be done on touch pad screen.

V Remote Eye Jet Fan Remote Monitoring System allows monitoring whether the system is in working properly or not and being aware about the all errors instantly. Moreover V Remote Eye aims to prevent problems that may arise before they occur by means of its automatic warning system. By internet connection to Jet Fan MCC

Panel, it can be monitored and received information via e-mail.

Status of the all the equipments of jet fan system (axial fans, jet fans, fan and shaft dampers) can be monitored. In case of any error or malfunction, a notification e-mail will be sent to Venco technical team or to the technical team of the customer.

It can be observed that the car park ventilation system is not working, due to any problem (detection, signalization, connection etc.).

V Remote Eye Emergency Reaction System allows you to control Venco Car Park Ventilation with your smartphone, tablet or computer through Wi-Fi or wired internet connection.

Thus, loss of life and property is prevented.



# Architectural Trends in the Pandemic Period



**Yasemin Somuncu** | MA, Professional Architect

With the global effects of climate change and the pandemic, the importance of the sustainable, eco-friendly architectural approach that consumes the least amount of energy resources and uses renewable energy is now understood better. People want to live and work in spacious buildings lit by natural lighting, with fresh air and high indoor air quality. In this context, Yasemin Somuncu, MA, Professional Architect, responded to the questions of ISKID Magazine.

## **Could you briefly tell us about your background?**

I was born in 1971 in Ankara. I graduated from the Department of Architecture of METU in 1994. After graduating from the university, I took part in numerous

small and large-scale projects and practices at Mimerya Architecture. In 2002, I completed my master's degree in Environment and Energy at the Architectural Association School of Architecture (AA) in London, England. Between the years 2012 of 2020, I developed the EU-supported NEED4B, BRICKER, and NEXT-GEN projects as well as the Islamic Development Bank-supported NEXT-GEN projects as a senior researcher at Özyeğin University Center for Energy, Environment, and Economy (ECEM). I also have joint journals regarding my completed projects as well as guidelines for the popularisation of projects. Besides working on my Islamic Development Bank-supported SMART-GEN project, as a Certified Passive House Designer & Trainer, I aim to ensure that the Passive House standards are used with materials produced locally and included in the public housing laws in Turkey.

I also work intensively with NGOs, as the Founding Member of Clean Energy Foundation and Slow Food Turkey Association, the General Secretary of Zero Energy and Passive House Association of Turkey (SEPEV), the Board Member of Energy Efficiency and Management Association (EYODER), the Advisory Board Member of Turkish Women in Renewable Energy (TWRE), the Member of Association of Women Engineers and Architects (MÜKAD), and the Member of Towards Non-Toxic Tables and Cities Platform.

## **How were architectural designs affected by the pandemic period in general? How did the demands and requirements change?**

It is true that we have experienced the effects of climate change directly and experienced around 1.000 extreme climate events in Turkey alone last year. However, we still live in a country where we can make the most of four seasons. For these reasons, building solutions which are fit for the climate of our lands, and those reached us by the ancient knowledges, finally started to draw broad attention. We still spend nearly 85% of our time in the buildings, which we locked ourselves in for days during the pandemic period. Thus, people have started to move out of facilities where they can't access fresh air. In cases without the ability to access fresh air via a mechanical system, they at least try to clean the indoor air by opening up their windows for some time, provided that they live in a neighbourhood without air pollution. They also try to leave places that do not offer the opportunity to set their feet on the grass. Namely, people



are now more aware of the significance of the quality of a building's interior and its close neighborhood. Accordingly, there has been an increase in the demands for non-toxic and low-emission materials, quality outdoor spaces such as gardens and terraces, and energy-efficient, carbon-neutral buildings to deliver quality outdoor air conditions. Responding to these basic needs is now more important than if a building is horizontal or vertical or has pastel or bright colors. After the essential quality conditions are met, criteria like practicality, and flexibility for adapting to the contemporary needs in the living spaces of the buildings are observed.

***What kind of changes have been seen in the preferences, especially in ventilation systems? Was the industry able to produce solutions sufficiently?***

Different solutions must be provided based on the diverse typologies of the buildings and their locations. First, the importance of CFD analysis-based design was recognized more. There were also discussions regarding ventilation designs to create personal air space, where necessary. Many

started to increase and standardize the filter quality in the indoor units of FCU, VRF, and VRV systems. After receiving the attention they deserve with the pandemic period, HEPA filters are now being used more in the mechanical systems of many buildings.

However, the outcomes of the practices conducted by numerous commissions and boards will be reflected in the entire market and field realistically and accurately over time. Long-term school closures during the pandemic period had a negative impact on education. Yet, the school buildings designed and implemented based on passive house standards worldwide were never closed, allowing students and teachers to continue face-to-face education. We hope that the passive house standards will be recognized and implemented in Turkey soon. Here, I would like to stress the need for companies producing heat recovery ventilation devices to collaborate more with passive house designers and practitioners.

We can reduce the initial investment costs and bring to life this standard, a universal prototype in Turkey applicable under any climate conditions, using locally manufactured materials.



Villa Velanidi, Corfu-Certified by the PE Institute, Hellenic

***The pandemic period also increased the number of new housing sales. Can we consider that people's search for pandemic-friendly spaces affected some of these housing sales?***

Indeed, this factor was one of the reasons. Yet, we should also remember the unsustainable lifestyle caused by constructing new buildings and moving to new buildings continuously. We only have one planet, resources of which we are consuming rapidly. However, consuming less resources and implementing smart practices such as the enhancement and deep renovation of existing buildings will allow us to reach the comfy and enjoyable places we aspire to. The EU aims for a yearly 3% renovation in the existing building stock to achieve the 2050 Carbon-Neutral Continental target. There is no reason that holds us back from achieving this goal either. We just need to make the essential changes in our perspective as a society.

***How did this period reflect its effects on office designs? What kind of solutions have been developed for open-plan workspaces?***

Many exquisite furniture designs and interior layouts have been developed by considering distances and addressing personal and public spaces. However, we should also keep in mind that all these come at a cost with a necessity to be evaluated thoroughly by considering sustainability.

Considering the long-term effects, we must focus on the practices suitable for general instead of those appealing to a small segment. As I have mentioned, developing ventilation designs that provide individual air space, especially in large and crowded areas, is necessary. However, it is also significant to achieve the best values with realistic simulations than just including these devices in spaces.

***Considering the design and application of spaces, what kind of effects has the pandemic process had on the use of hygienic products?***

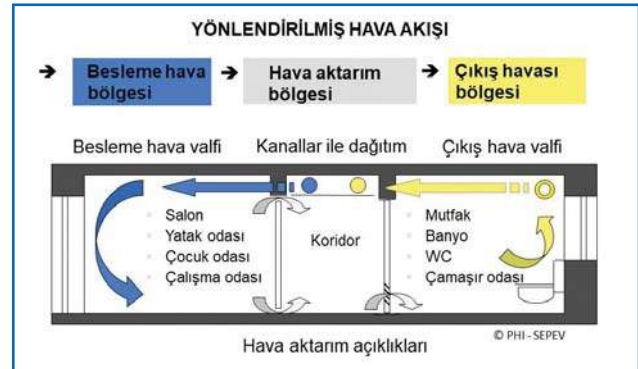
The primary goal has been to reduce the risk of airborne transmission of the virus. Accordingly, designs and applications that allow 100% fresh air to enter the indoor space are crucial. It is also necessary to utilize CO2 sensors along with the filters with maximum efficiency and performance of the ventilation system. Today, there is an increased demand for products that affect all senses while ensuring and improving the quality of the indoor environment, rather than using only visually appealing accessories.

***If you would like to add something, could you mention the things you would like to highlight?***

Imagine a house that always provides clean air, maintains a comfortable temperature, and with a bathroom that never

gets moldy, in return of budget-friendly bills. This house is not just a dream. Thanks to the passive house standards created by the Passive House Institute (PHI) founded in 1994, ten small candles or even the body heat of 4 individuals can keep a 20 m2 room warm even in the middle of winter and extremely cold climates. In such buildings, good insulation, high-efficiency windows, heat recovery ventilation system, and air-proof building envelope ensure the reduction of heating and cooling needs. Without the need for producing unused energy, efficiency becomes the primary energy "resource". The energy amount needed for heating and cooling a passive house building is no more than that is required for domestic water heating in the same house.

We hope to see more buildings constructed based on these standards in Turkey. There are nearly 5.000 passive house designers and consultants worldwide. Moreover, the number of passive home craftsmen is also rapidly increasing. Turkey also has qualified designers and consultants from various disciplines to implement passive house standards, the optimum way to reach zero energy buildings. Among the mechanical devices needed for the implementation of these standards, each heat recovery ventilation unit needs to be evaluated in terms of heat recovery rate, electricity consumption, comfort criteria, internal and external leaks, acoustic performance, room air hygiene (filter), and freezing prevention properties, based on laboratory measurements. Minimum values must be reached for each item. For each compact heat pump, heat pump, and mini-split unit for



heating and cooling, characteristics such as comfort criterion, seasonal efficiency for heating and cooling, acoustic performance, control, room air hygiene (filter), defrosting of the evaporator during the heating season, dehumidification feature, efficiency determination for heating hot water use (COP values in the storage tank for heating and reheating), and standby power consumption are considered based on laboratory measurements. Again, each item must reach the minimum value. Although there are many devices with these specifications in Turkey, most are exported. Soon, we hope that many projects where we can use these devices will be implemented nationally. I would like to invite everyone interested in this subject to our training we organize a few times a year. Moreover, companies interested in Passive House Component Certification can also contact us. I also would like to thank ISKID for this delightful interview.



# Benefits of Energy Modeling for Building HVAC Design



Levent Koçalioğlu<sup>1</sup>



Assoc. Prof. Dr. Ayhan Onat<sup>2</sup>

Buildings account for roughly 40% of primary energy use and 70% of overall electricity use and are frequently identified as a key target for reducing carbon emissions. Improving the efficiency of building design has become a significant strategic effort for the entire industry. Building energy modeling has been recognized as a critical tool for enhancing the design of energy-efficient buildings.

Building Energy Modeling (BEM) is the process of analyzing a building's energy use using computer-based simulation tool. The simulation tool operates through a numerical model that presents a building's thermal model. External

weather conditions, orientation of the building, building's geometry, construction materials, user schedules, and HVAC system equipment will all be input into the building model. The calculation engine solves thermodynamic and building science equations. Based on required complexity level of the analysis, simple energy simulation runtime can be a couple of seconds or even hours to complete. The building's zone heating and cooling loads, HVAC system energy use and costs breakdown, natural daylight mapping, and other significant energy and occupant comfort related parameters are typically reported for annual building performance. Figure 1 shows an image of thermal model generating process.

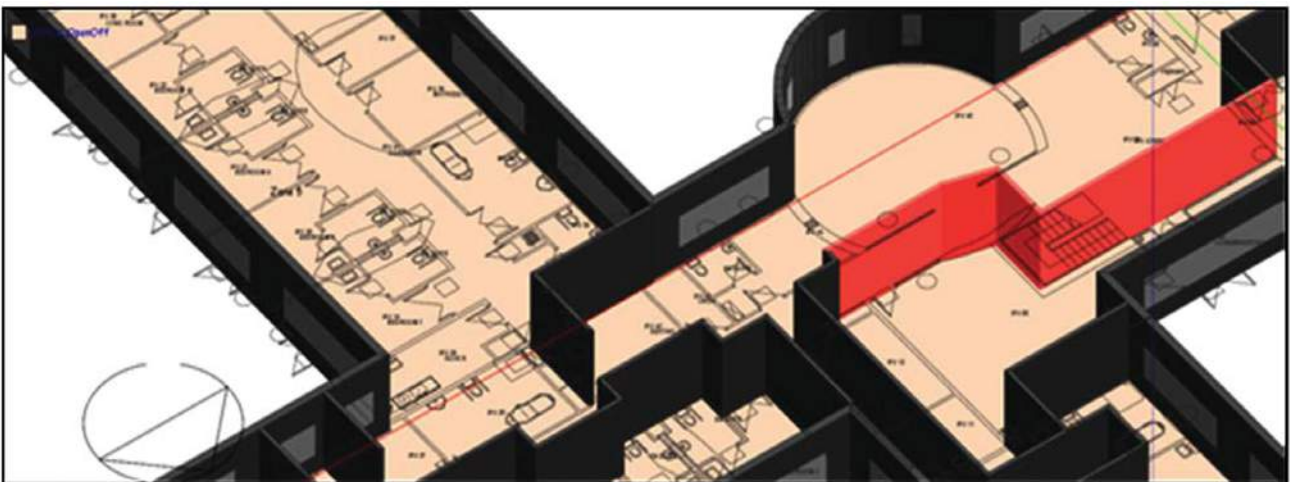


Figure 1. Building Energy Modeling Process

Prior to construction, BEM can be utilized for comparing energy-efficient design options and help to finalize design decisions. It also assists existing buildings in maximizing their efficiency or evaluating retrofit options. BEM incorporates building performance simulation and comprehensive HVAC equipment analysis using specific tools for indoor air quality, daylighting, occupant comfort, and natural ventilation. Figure 2 illustrates examples for popular energy modeling softwares.

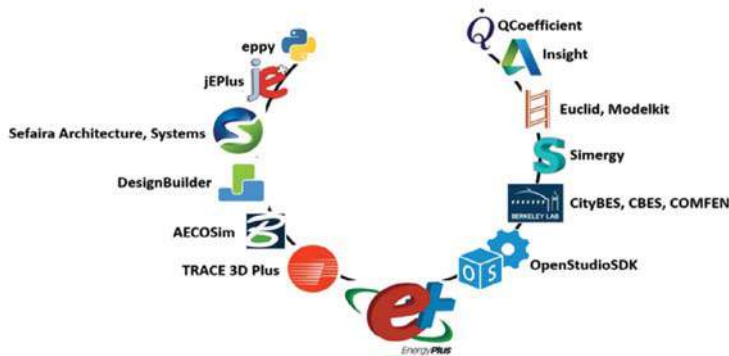


Figure 2. Energy Modeling Softwares

**What is the Purpose of BEM?**

BEM could help to achieve wide range of goals. The applications are divided into three categories based on their general modeling purpose: comparing, complying, and predicting. There are several parameters (purpose, complexity, scope) that can all be influenced by the underlying goal. Understanding the differences between efforts can assist defining the project modeling scope and securing the services required.

**1. Comparison Model**

Most modeling efforts rely on BEM to compare energy efficient design options for zone, system, and plant level HVAC equipment. Performance comparisons are almost always included in the process.

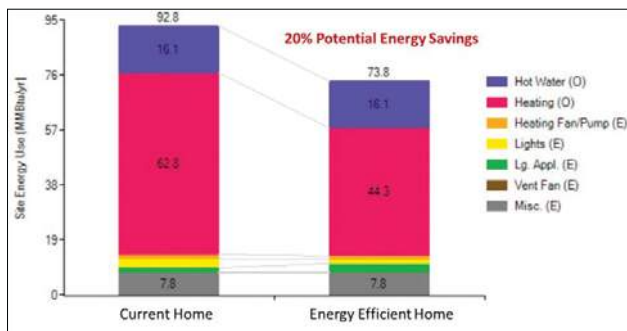


Figure 3. Energy Use Reduction for Proposed Energy Efficiency Measures

Throughout the design process, modeling can help the project team. Multiple design alternatives can be compared side by side for a quick and low-cost assessment for several alternatives. Design decisions have a wide range of consequences that aren't easy to predict. The cross effects

between building thermal properties and HVAC systems control and operation can be analyzed and quantify with reliable building simulation modes. In general, a computer simulated analysis is required to complete a cost-effective analysis of a design decision. Comparing performance allows the design team to compare and contrast different design concepts quickly. For example, simulating specific glazing types to see how they affect several key parameters such as heating and cooling load demand, lighting systems energy use. Energy efficient options may be combined to understand harmonious effects for reducing the need for air conditioning, using passive measures, and decrease initial investment cost.

**2. Compliance Model**

The proposed and baseline case models are two models to make a comparison analysis for energy performance as part of compliance modeling. The baseline case is a building that ensures code compliance program's reference standard.

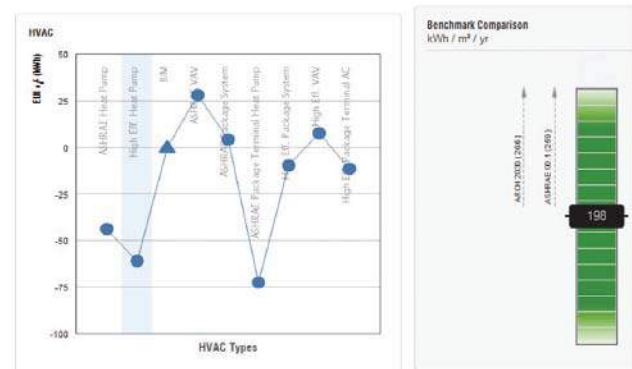


Figure 4. Energy Use Intensity for Different HVAC System Selection

For instance, the Leadership in Energy and Environmental Design (LEED) program of the United States Green Building Council (USGBC) awards performance credits over to a baseline case costs. The ASHRAE 90.1 Standard serves as the LEED reference baseline. The energy model must be in compliance ASHRAE 90.1 Appendix G to create the base case model. Many of the base case model input parameters, e.g., climatic region, building construction area, and building height are dependent on design model details; while other data inputs, e.g., zone, system, HVAC equipment minimum efficiency requirements, are documented in the 90.1 Standard Appendix G. Even if LEED energy modeling's ultimate goal is certification, it can also be used to compare design options. As a result, both comparison and compliance scope should be included in the certification modeling effort.

**3. Prediction Model**

Energy models that incorporate utility bills data sets can depict the building's current energy use and anticipate the renovated building's energy use. Developing a complex detailed model requires time and effort. Several building systems, such as lifts, escalators, and large exhaust fans, must be added in energy model, although those systems will remain constant throughout design variations. Additionally,

the model must incorporate current occupant and HVAC system operation profiles, which might be challenging to get even while the building is operational. Furthermore, the model's weather data input must be relevant to its location.

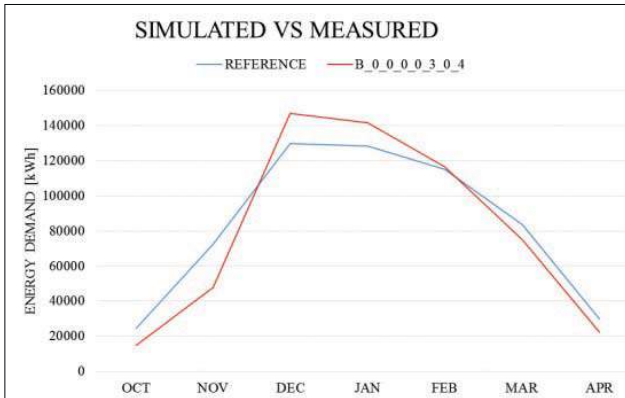


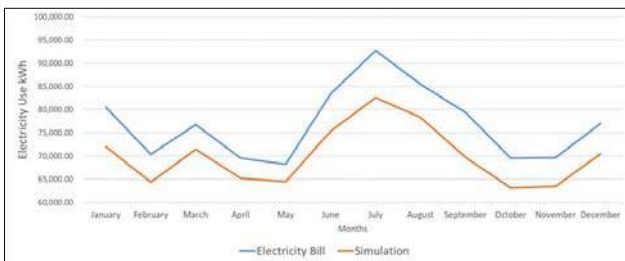
Figure 5. Simulated and Measured Heating Energy Demand Variation

The majority of building energy modelling inputs start with common occupancy patterns, and ideal operation of building HVAC systems. However, there might be unexpected problems during construction, such as improper installation or control sequence of HVAC system. Therefore, for parameters that are unknown during design, the latter must rely on assumed input values. However, after full occupancy completed and utility bills data gathered, building energy model calibration can be performed for those outputs.

Making direct connection between design and operation can give valuable feedback to project teams. This contributes to mutual understanding of energy efficient design and alternative solutions. Moreover, elements that are underperforming can be identified and corrected using the performance gap analysis between calibrated simulation model and final construction model.

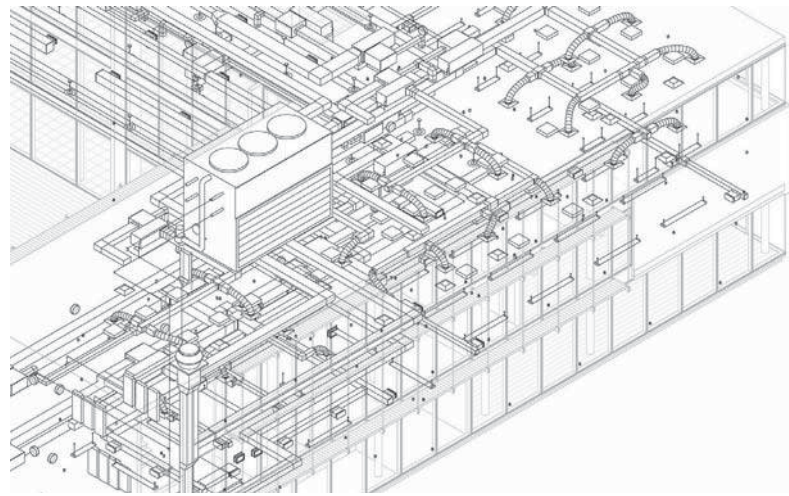
**Conclusion**

It is critical that any sustainability initiative aimed at reducing greenhouse emissions includes major efforts to enhance building energy performance. There are several ways for improving buildings' energy efficiency, and energy models should be used to compare these strategies.



Actual Annual Electricity Use (kWh)	Modeled Annual Electricity Use (kWh)
922,770.81	840,878.42

Figure 6. Comparison of Actual Electricity Use and Modeled Electricity Use



For existing buildings, every attempt to find optimal energy efficiency measures should begin with an energy model that depicts how the building currently consumes energy. A recent case study included energy model of an existing building and studied how modeled energy can be compare with actual utility bill results. Although the modeled annual energy use is comparable to the actual energy use, there are greater variances in monthly energy use between the actual and modeled results due to the current difficulties in obtaining data accurately describing building occupants' behavior/activities and accurate identification of buildings' thermal properties, temperature set points, and internal loads.

**REFERENCES**

Rocky Mountain Institute. 2013. "Building Energy Modeling for Owners and Managers: A Guide to Specifying and Securing Services." [https://rmi.org/Knowledge-Center/Library/2013-18\\_BEM](https://rmi.org/Knowledge-Center/Library/2013-18_BEM).

Crawley, D. B., Hand, J. W., Kummert, M., Griffith, B. T. (2008). Contrasting the Capabilities of Building Energy Performance Simulation Programs. *Building and Environment*, 43(4), 661-673. <https://doi.org/10.1016/j.buildenv.2006.10.027>.

ASHRAE. 2013. Energy standard for buildings except low-rise residential buildings. ANSI/ASHRAE/IESNA Standard 90.1-2013.

Waltz, J. P. (1999). *Computerized Building Energy Simulation Handbook*, Chap. 6. Lilburn, Ga.: Fairmont Press.

Crawley, D.B., L.K. Lawrie, F.C. Winkelmann, W.F. Buhl, Y. Joe Huang, C.O. Pedersen, R.K. Strand, R.J. Liesen, D.E. Fisher, M.J. Witte, and J. Glazer. EnergyPlus: Creating a new generation building energy simulation program. *Energy and Buildings* 2001;33(4):319-331.

IPCC, 2013b: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T. F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P. M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp., doi:10.1017/CBO9781107415324.



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# Turkey's Mysterious Underground Cities

*Shelter and housing have been some of humanity's essential needs for survival since ancient times. Since the first age, people have built underground cities to protect themselves from wars and wild animals and live securely. For this, they chose areas with easily carvable rocks. Especially, some of the underground cities of Cappadocia in Turkey stand out as grand structures that could house thousands of people. An inconspicuous narrow door takes you into the underground city, many storeys connected via tight hallways and stairs. The cities have various rooms used as storage, kitchen, living room, cistern, ventilation shafts, and temple. People would live out their lives taking care of livestock and farming the fertile earth surrounding the underground city.*



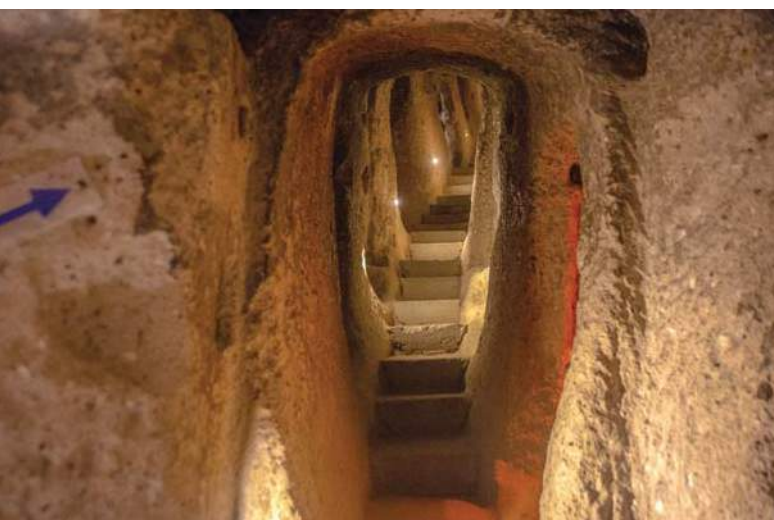


### Derinkuyu Underground City

With a history that is estimated to have started in 3.000 BC, the city of Derinkuyu is eight storeys and 85 m deep. It has various rooms used as a stable, cellar, dining room, chapel and winery. The city houses over 20.000 people, and its connection to the surface with 52 ventilation shafts, each 55 m deep. The ventilation shafts start from the surface and go all the way to the city's bottom and are considered an engineering marvel. The shafts branch out and distribute the air around every corner of the city. They're also known to have been used as natural elevators. The people who built the city used these ventilation shafts to get all the dirt and rocks out after digging or bringing food down from the surface. The first few storeys are the oldest. They were primarily used as stables since bringing the animals down to the lower levels was difficult. The underground city is warm through summer and winter. The people used to make wine from the grapes native to the region. They built the wineries in the upper levels to make it easier to carry the grapes. The researchers have found 52 drinking-water wells in the city.

#### **The storeys of the city are as follows:**

**Entrance:** Hidden well and isn't easily found from the outside.



**1st Storey:** Stables, a missionary school, baptistry.

**2nd Storey:** Living room, kitchen, pantries, stable.

**3rd Storey:** Ventilation shaft that goes through all storeys and a 9 km long tunnel that connects to the Kaymaklı Underground City.

**4th Storey:** Living rooms and bedrooms, pantries.

**5th Storey:** Ventilation shaft, the landing where the 3rd storey tunnel ends and the tunnel that connects the 5th and 7th storeys begin.

**6th Storey:** A tunnel that connects the 5th and 7th storeys.

**7th Storey:** The widest storey in all of the Derinkuyu Underground City. that has a meeting room, tomb, chapel, hall, and cistern.

The first inhabitants of Derinkuyu, the most significant underground city in Cappadocia, were the Assyrian Colonies. It's known that in the II. century, the first Christians who ran away from the oppression of Rome came to Kayseri then to Cappadocia through Mesopotamia and lived in this city. Derinkuyu underground city was opened for visitation in 1965. Even now, it's possible to see 10% of the city.

#### **Transportation**

Derinkuyu Underground City is located 30 km from the Nevşehir province. You will need to follow the Nevşehir – Kaymaklı – Derinkuyu route to get to the city by car. There are also shuttles taking off from the Nevşehir airport every hour.

#### **Mimar Sinan and Ağırnas Underground Cities**

With its vaults, caves and underground city ruins, Ağırnas carries the remnants of people who lived there at least 3.000 years ago. Ağırnas is also the birthplace of the great architect Mimar Sinan, one of the prominent names in Turkish architecture. A large underground structure was found under Mimar Sinan's house, which is a museum today. It was then revealed that the structure wasn't limited



to only Mimar Sinan's house. It was webbing out further under every historic house in Ağırnas and connecting them, forming an underground city. The underground structure complex below Mimar Sinan's house is spread over a 1.850 m<sup>2</sup> area in two storeys. Some connections between the structures were closed off, leaving four separate, underground structures below the house. It's known that these made up a complete structure in the past. The stone doors used to close off the entrances to the underground city are impossible to open from the outside. They are 140 cm and 155 cm in diameter, which is very big compared to those in Cappadocia.

Ağırnas Underground City was carved into a rocky mountainside 200 m to the south of Ağırnas. Its architecture is in typical Cappadocia fashion designed for defence. It has a small chapel in the entrance, pantries, stone doors and living spaces. The city is connected with many rooms open to valleys through narrow passes. The great hall that can be reached from the eastern wing of the chapel is an impressive 24 m long structure with certain parts as wide as 4 m. The 60 m long main tunnel towards the southeast of the hall covers 11 living spaces and storage rooms. These rooms are grand and spacious, incomparable to other known Cappadocia underground cities.



#### Transportation

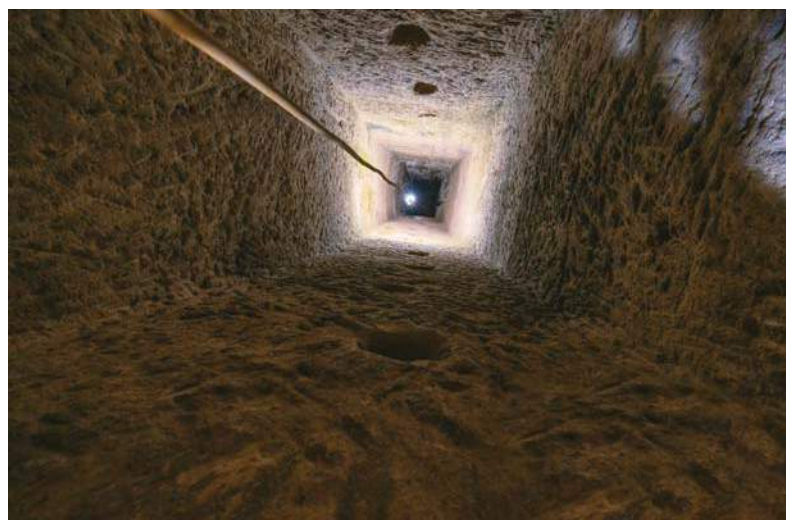
Ağırnas is located 26 km from the Kayseri city center, accessible by car. There are also shuttles that take off from the Kayseri airport every hour.

#### Kaymaklı Underground City

Located 20 km from Nevşehir in the Kaymaklı Town, Kaymaklı Underground City's roots go back to 3.000 BC. This city was carved into tuff rocks by the Hittites. Eight more storeys were carved during the Roman and Byzantine periods, becoming an underground city. The city is quite long, 4 storeys and 20 m deep. There are linseed oil lamps on the walls for lighting. The first storey is once again used as a stable. The second storey has a chapel and tomb. The city also has a 9-10 m long tunnel that goes all the way to the Derinkuyu Underground City. Its living conditions are suitable for housing 5.000 people. Rooms, halls, wineries, chapel, kitchen and pantries are connected with narrow hallways. Just like in the Derinkuyu Underground City, Kaymaklı has ventilation shafts, cisterns and large sliding rock doors for keeping the dangers out.

#### Transportation

Kaymaklı Underground city is located 20 km from Nevşehir, in the sub-province of Kaymaklı. It's accessible by car or via mini busses taking off from the city center. There are also shuttles that take off from the Nevşehir airport.



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