

VENTS

MAGAZINE

ABOUT VENTILATION AND MORE

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VENTILATION

A TO Z





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DOUBLE POWER

The new TT-MD EC model from VENTS is designed for supply and exhaust ventilation systems requiring strong air flow while meeting stringent noise requirements. The unit is a mixed-type duct fan with a maximum air flow of 11 100 m³/h. The new model combines outstanding capabilities and technical parameters of axial and centrifugal fans- the best of both worlds.



The outer casing of the fan is made from steel with a durable polymer coating. The conical shape of the impeller and specially profiled blades contribute to an increase in air flow angular velocity which translates into higher pressure and air capacity compared to conventional axial fans. The diffuser, the impeller designed specifically for this model, and the set of straightening vanes provide for an optimum air flow distribution resulting in an optimum balance of high performance and increased operating pressure while maintaining low noise levels. VENTS TT-MD EC fans are fitted with highly efficient electronically commutated (EC) direct-current motors. The motors benefit from long-life ball bearings designed to last 40 thousand hours. ■



SMOKE TAMER

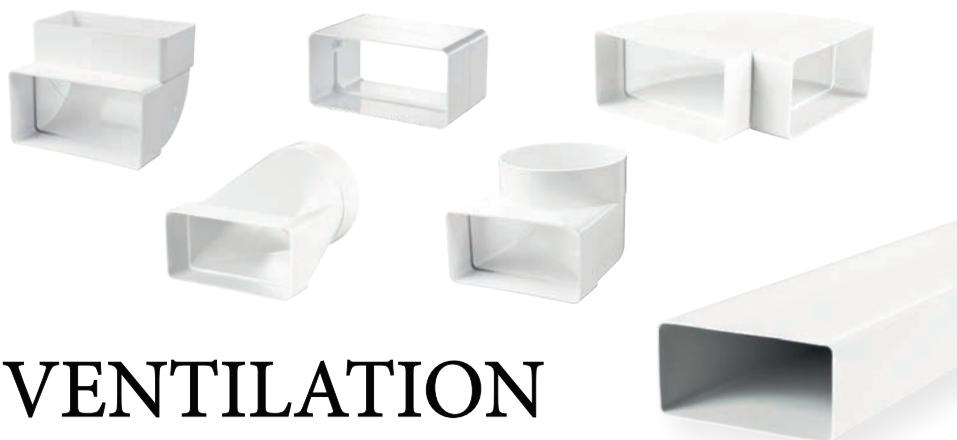


The VKT roof-mounted fan for fireplaces, a new model from "VENTS", is designed to boost draft and provide hot gas and combustion product extraction from fireplaces, furnaces and other open flame sources.

Boasting an air capacity up to 1 000 m³/h, the fan is designed to guarantee extraction of smoke with a maximum temperature of 200 °C for five hours.

The casing of the new addition to the company's range is made from galvanised steel with a polymer coating resistant to the elements and aggressive environments. The unit is equipped with a single-phase asynchronous motor for trouble-free operation. The motor runs on ball bearings and features a built-in thermal protection suite.

The VKT roof-mounted booster fans, which are mounted in the upper part of the chimney, are suitable for houses and cottages with fireplaces as well as for restaurants, cafés and hotels equipped with furnaces, barbecues and other flame sources. ■



VENTILATION GOES RECTANGULAR

Introducing yet another innovative solution from "Vents" – a system of flat PVC air ducts with a cross section of 220x90 mm. The new system is ideally suited for building ventilation systems in small and medium-size spaces (residential buildings, office and commercial spaces) and connecting air extraction equipment such as kitchen hoods, drafts cupboards etc.). The system consists of rectangular air ducts with a cross section of 220x90 mm and a wide range of connectors and fixtures such as L-joints, adapters, connectors and others.

All the elements of the system are made from environmentally-friendly plastic, which is non-combustible and corrosion-resistant, to guarantee many years of trouble-free operation. A smooth inner surface of the ducts helps minimise dynamic drag across the entire ventilation system. A wide range of connectors and fixtures enables building most complex air duct systems while the compact footprint of the system elements facilitates installation in ceiling voids where free space is at a premium. ■

THE SWISS ARMY KNIFE OF HOME VENTILATION

If you are looking for a cost-saving solution for a supply and air exhaust ventilation system with extended control capabilities, look no further than the new series of VENTS VK EC centrifugal duct fans. Boasting an air flow up to 1 500



m³/h these units are perfectly suited for exhaust ventilation systems in spaces with elevated humidity levels such as bathrooms, kitchens etc.

The VK EC series fans are equipped with high-efficiency electronically commutated (EC) DC motors with an external rotor and an impeller with backward-curved blades. These motors represent the current state-of-the-art in energy efficiency. The casing is made from high-quality ABS plastic which does not corrode. The fans are also offered in the variant with a built-in stepless speed controller and a power cord with an IEC C14 plug (VK ... EC P) for added operation and connection convenience. ■

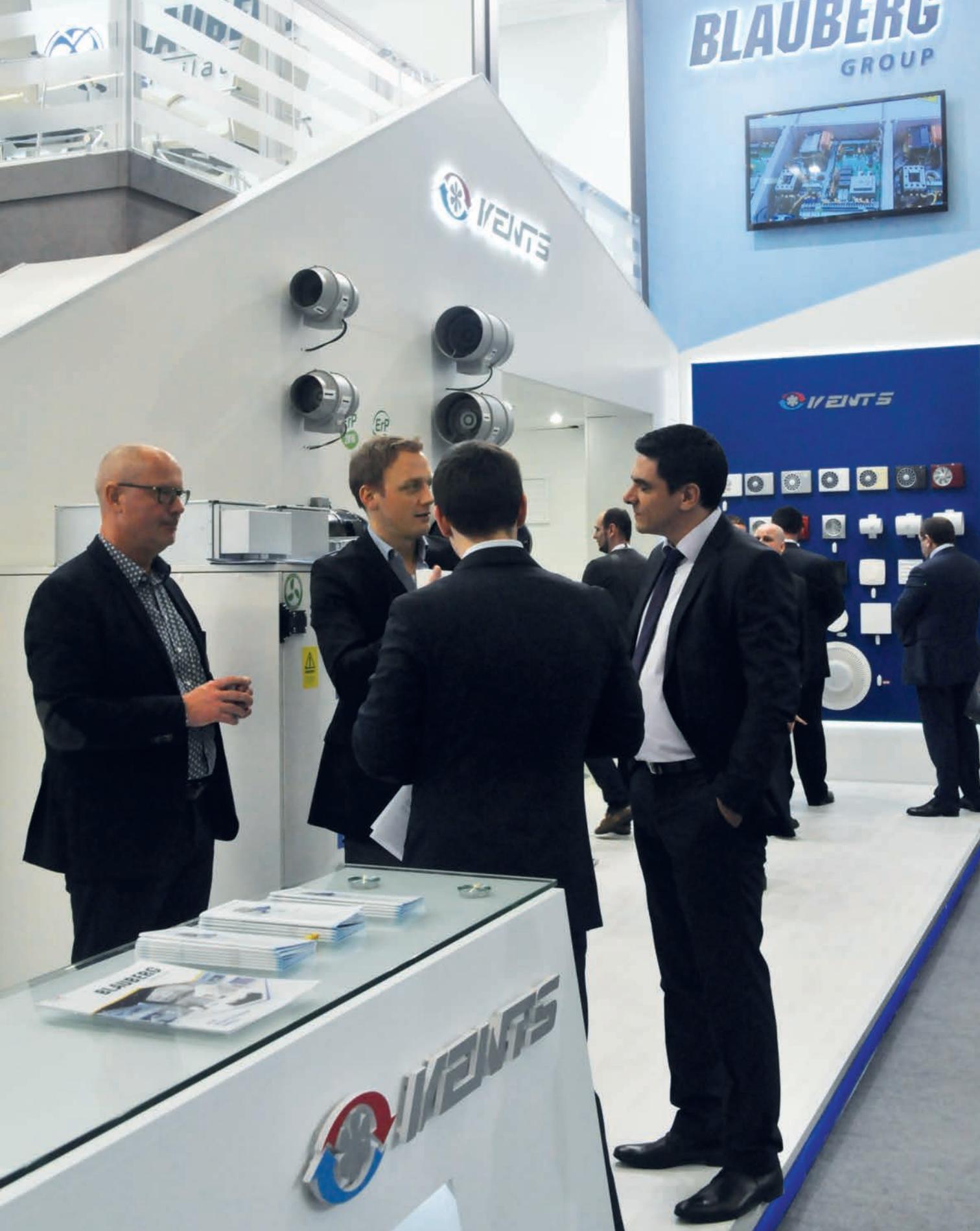


A JUMP-START TO A TRADE SHOW SEASON



Each year ISH international HVACR and construction trade fair held in the German city of Frankfurt becomes a convergence point for a host of high-profile events in the industry. Being a member of the global Blauberg Group, VENTS used this golden opportunity to present its latest products and solutions in the field of energy-efficient ventilation. This year's ISH attracted more than 2 400 companies and some 200 000 visitors from Germany, Canada, Spain, Japan, Turkey, Argentina, Australia and many other countries. The visitors

showed a particular interest in CO₂-free heating systems and ventilation systems which rely on renewable energy sources. As usual, the VENTS team which manned the exhibition booth were very busy as the stream of visitors never seemed to end. This was quite expected as this year VENTS presented a wide range of ventilation products and all-in-one solutions aimed at minimising ventilation and heating bills. The company also presented its latest domestic and industrial ventilation products which combine performance improvements,





ISH attracted more than 2 400 companies and some 200 000 visitors from worldwide



extended functionality (such as Wi-Fi connectivity and lighting), and simplified installation (heat recovery air handling units with no dedicated ductwork required). It is also worth mentioning that VENTS products comply with the EC ecodesign directive. The VENTS Style series of silent exhaust fans is a prominent representative of the latest generation of the company's domestic ventilation products. The recently launched Style Eco fan raises the bar in energy efficiency, air capacity, and smart functionality. The combination of maximum air flow of 101 m³/h and low noise (22 dBA) helps create a balanced breathing environment

for maximum occupant comfort. The presentation also included the silent VENTS Quiet fans with an air flow up to 370 m³/h and the unique Lumis axial fans with a built-in light. The energy-efficient industrial ventilation solutions from VENTS were represented by TT PRO, VK, and VKM fans with EC motors, TT Silent-MD EC fans, AirVENTS air handling units and a range of ventilation equipment for smoke extraction. VENTS also displayed its latest FlexiVent air distribution system which comprises semi-rigid air ducts and offers outstanding ease of installation without using any special tools. ■

Ventilightion



VENTS Lumis

Axial fans with built-in
light for extract ventilation
with a capacity of up
to 115 m³/h







ONE HUNDRED SQUARE METRES' WORTH OF FRESH IDEAS

From 30 May to 2 June the city of Kyiv hosted the 19th Aqua Therm Kyiv international exhibition with "Ventilation systems" among the most prominent participants. The VENTS booth with a floor area of 100 square metres showcased the company's latest energy-efficient ventilation offerings. The wide range of modern domestic, commercial, and industrial ventilation products presented at Aqua Therm Kyiv included the most recent additions to the VENTS range such as DVUT HB EC and DVUT PB EC floor and ceiling-mounted single-room air handling units, MICRA single-room ventilation units, FlexiVent modular air distribution system, AirVENTS air handling unit with a built-in heat pump, centrifugal pulse fans for underground and semi-open car parks, and the latest models of heat recovery air handling units.

The DVUT HB EC and DVUT PB EC single-room air handling units, which made a debut appearance in the Ukrainian market, stirred a keen interest among the exhibition visitors. This equipment is intended for education establishments, offices, libraries, conference rooms and other public and commercial spaces. The units can be mounted to the floor (DVUT HB EC) or under the ceiling (DVUT PB EC). The air flow of the new units reaches 550 m³/h while the maximum heat recovery efficiency is 97 %.

The DVUT units represent a substantial advance in the organisation of ventilation systems for specific spaces. Thanks to modest space requirements these systems can be installed in both newly erected and renovated buildings. The installation does not require laying an air duct system or any costly building and installation works which excludes tampering with the structural elements of the building and altering the interior. The booth visitors also had an unceasing interest in the FlexiVent ventilation system which was launched in the Ukrainian market in 2019. The system can be assembled and installed quickly and conveniently without using any special tools. The air ducts are suitable for installation both in the ceiling void (between the concrete floor slab and the faux ceiling) and in the floor. The plastic air ducts are corrugated to withstand the pressure of concrete blinding coat. With a dazzling array of new products and a wide range of best-selling models presented at the exhibition booth "VENTS" once again confirmed its recognised status of an undisputed ventilation market leader. The numerous guests were introduced to the latest high-tech ventilation offerings incorporating the company's know-how and the latest technology, which undergoes constant improvement and adaptation to the ever-changing demands of both home and foreign markets. ■

BEWARE OF DUST!

According to World Health Organisation reports, air pollution is directly related to more than 6 million deaths every year. Dirty air promotes the development of cardiovascular diseases, apoplexy, lung cancer, and many other serious conditions. However, what we may not realise is the continual exposure to one of the most dangerous air pollutants. It is fine dust or particulate matter that we are talking about.





A supply ventilation system can effectively reduce the amount of dust in the room

Dust is basically solid organic and mineral particles. These particles can be of both natural and anthropogenic origin. While the volume of the so-called natural dust in the atmosphere remains virtually the same over the years, the amount of dust which results from human activity is gradually rising. The contributing factors include the operation of coal-fired power plants and factories, the use of motor vehicles, erection of new construction projects, waste incineration and many others.

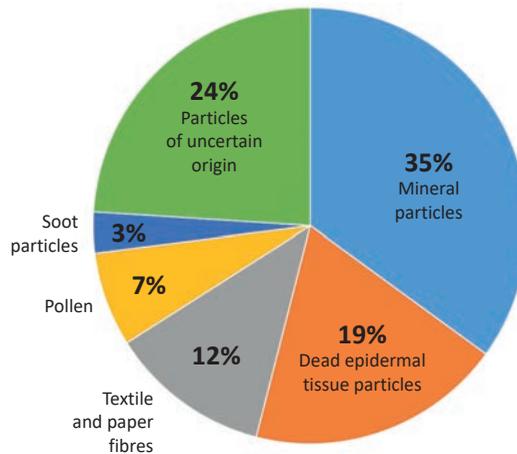
The dust which typically occurs in cities consists of minerals (quartz, silica, black carbon, cement dust and others), metals (lead, cadmium, nickel, beryllium and others), organic chemical compounds and pesticides, organic dust (flour, timber dust, pollen etc.) as well as various biological particles (such as spores and mould).

Finely dispersed hazard

Contrary to a common misconception, dust is far from being uniform as it contains particles of various size and origin. Dust particles may vary in size from fractions of a micron to 0.1 mm. According to research, it is the finely dispersed particles with an aerodynamic diameter of less than 2.5 μm (PM2.5) that pose a serious hazard for human health.

Once inhaled particulate matter is not retained in the nose and rhinopharynx and goes directly into the lower respiratory airways (the bronchi, the bronchial tubes, and the alveoli) and the cardiovascular system. Particulate matter carrying viruses, bacteria and microbes easily penetrates the lung barrier and slips into the blood system. Due to an extremely low weight particulate matter can linger in the air without settling for a

APPROXIMATE COMPOSITION OF INDOOR DUST



long time maintaining an almost continuous presence.

According to the World Health Organisation (WHO), it is PM2.5 particles that stand behind a staggering number of fatalities worldwide caused by lung cancer and other diseases. For example, American researchers found out that air pollution with particulate matter smaller than 2.5 μm in diameter is responsible for about 9–10 thousand premature deaths in the state of California. The number of cases of lung cancer in Chinese cities which are often covered with smog has grown 50%. In addition to that PM2.5 particles cause a reduction of weight in newborns which, in turn, triggers other diseases.

The annual mean limit for PM2.5 particles as established by the WHO guidelines is 10 mg/m^3 . However, 92% of the global population reside in areas with inadequate air quality and particulate matter concentrations in excess of the annual mean limits.

Tracing the particle origins

What are the sources of particulate matter?

OPEN SOIL EROSION. Lawn grass, trees and other vegetation prevent top soil from eroding. However, there are many land plots with open soil exposed to the elements making it prone to erosion. It is the steppes and deserts which are the largest contributors to land erosion on a planetary scale.

VOLCANIC ACTIVITY. Volcanic eruptions are associated with the release of massive dust clouds, which can drift for thousands of kilometres, into the atmosphere.

MOTOR VEHICLES. The tires of motor vehicles moving on road surfaces constantly wear out releasing man-induced dust which consists of rubber and asphalt particles. Furthermore, winter roads are often strewn with sand and crushed marble which dry out in spring and turn into dust.

CONSTRUCTION. Construction-related dust is as inevitable as eggshells after making an omelette. This industry has always been a major contributor of dust emissions into the atmosphere.

FIRES. Burning forest expanses and peat moors, landfills and construction sites release a tremendous amount of soot which travels very far carried by winds.

INDUSTRIAL ACTIVITY. The major industrial sources of air pollutants and dust are the heat generation industry, ferrous and non-ferrous metal industries, chemical industry, and construction material factories.

Is there a solution?

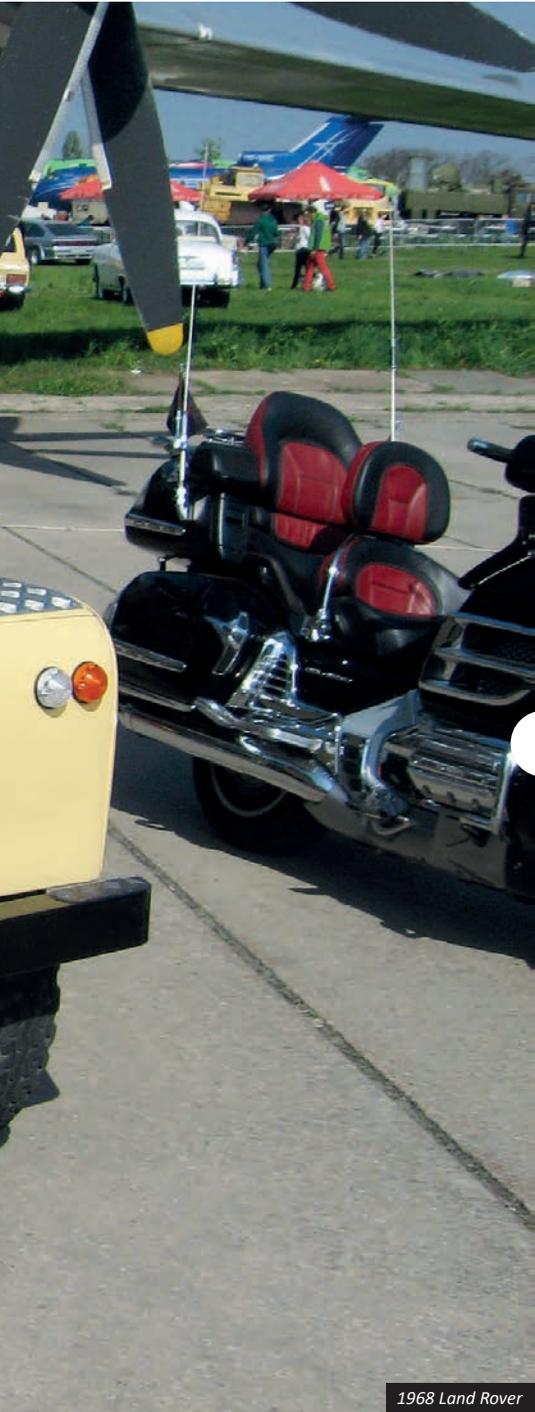
Although it is quite impossible to get rid of all the dust both outdoors and indoors, we can still mitigate its negative impact on the respiratory system. Here are some simple tips to follow:

- wet-clean the rooms as often as possible;
- if possible, try to get rid of rugs, wall-to-wall carpets and other similar items;
- limit the duration of outings while the weather is windy and dry;
- use face masks and respirators in dense dust or smoke conditions;
- equip your home with a supply ventilation system with an air filter. See other issues of our magazine for more information about such ventilation systems. ■



Like exquisite wine, cars only get better and more exclusive as years go by. The festival of classic and retro motor vehicles OldCarLand held in Kyiv this spring proved that this statement is as true as ever.

THE CARS THAT CHANGED THE WORLD



1968 Land Rover



1935 Opel



ZIS-155



1973 LAZ-697 M "Tourist"



"Moskvich-401"



The famous ZAZ-965 "Zaporozhets"

In addition to cars the exhibits of the event held on the grounds of the State Aviation Museum in the capital of Ukraine also included public transit vehicles, lorries, motorcycles, mopeds and bicycles totalling more than 900 units. Over 40 thousand visitors of the festival had a chance to admire the unique exhibits at a distance and even ride some of them. The most interesting new arrivals to the festival exhibition included an early 1960s

Lincoln Continental, an Opel P4 - the first affordable European car of 1920s, a Volkswagen Beetle - the most mass-produced car ever, a Willys MB- the first multi-purpose all-terrain vehicle, a Citroen DS- the first passenger car with air suspension and hydraulic power steering and many other interesting models. The real star of the show was Benz Patent-Motorwagen – the first motor vehicle in history which was patented in 1886.



1936 FIAT Topolino



ZIL-115 from Vladimir Shcherbitsky's motorcade



Restored ZIS-110



1996 Bentley Continental R



An early Harley-Davidson motorcycle

American car industry was represented by a number of exclusive models including a 1973 Chevrolet Impala, the most powerful car of the festival, and the only 1937 Buick Executive remaining in Ukraine. The most notable representatives of the Soviet automotive industry included a GAZ M72 "Pobeda", a ZIS-110 - the first Soviet limousine, the ubiquitous ZIL-41052 as well as a rather rare GAZ-23 "Volga".

Interestingly, the exhibits included quite a few products of the Ukrainian automotive industry as well. The 14 LAZ buses

displayed at the festivals allowed an exciting insight into the history of Ukrainian bus-making - especially the unique LAZ-699 "Ukraine" restored to the smallest detail. The fans of Ukrainian retro vehicles also had a chance to appreciate an experimental off-road vehicle created at Lutsk car factory - a LuAZ-1301 with a fibreglass body. In addition to that the guests were presented an exclusive Dnepr Vintage Limited Edition - a heavily modified version of the KMZ "Dnepr" motorcycle with a sidecar. ■



Comfort expert

VENTS TwinFresh Expert

Energy recovery
single-room ventilators with
WiFi control



Ventilation system installation is a complex process which requires rigorous training, and strict compliance with the project requirements and the applicable installation instructions on part of the installation engineers. The entire ventilation system ventilation process can be divided into three major phases each associated with particular challenges and complexity.





**Petro SINGAYEVSKY,
Director of LLC "Belvest-Trade"**

Belvest Trade has been doing business in Ukraine since 1999. The company offers a full range of ventilation and air conditioning equipment design, installation, manufacturing and commissioning services.

VENTILATION AS EASY AS ONE, TWO, THREE

Phase one: pre-installation preparation

Any installation work requires a thorough study of the project. The ventilation system design phase includes equipment selection; calculation of air flow, heat and cold parameters, as well as power input; air duct system layout design; air duct cross-section calculation and other activities. Therefore, pre-installation preparation includes a number of highly important steps such as:

- review of ventilation project plans and diagrams;
- site inspection to establish construction readiness of the facility for ventilation system installation;

- checking for the presence of temporary openings and the readiness of ventilation chambers (if present);
- coordination of deadlines and activity schedule execution;
- assignment of tasks to related contractors (e.g. electricians, plumbers etc.);
- creating an environment conducive to a proper execution of works.

While preparing for equipment installation it is essential to clearly define the deadlines for its delivery (production) as well as relate the said deadlines to the general activity schedule. That being said, it is also vital to allow for a potential delay in the delivery of necessary equipment.

If the delivery terms for the equipment selected in accordance with the pro-

ject requirements fail to meet the time frames provided in the activity schedule, we recommend seeking approval for replacing the said equipment with a matching alternative which can be delivered (produced) in time.

In such case the changes must be coordinated with the project engineers and the client with subsequent amendments to the project design.

Phase two: completing the installation

The ventilation system installation process consists of the following steps: package of pre-plastering works (including concealed works), installation of the equipment and control system compo-

nents. Now let's go through these steps one by one.

The pre-plastering works (concealed works) includes laying signal and control cables, installation of fire and air flow dampers. Successful completion of this step requires strict compliance with the project requirements and equipment installation instructions. The equipment being installed must be checked for proper performance and inspected for potential defects and malfunctions. Installation of equipment without conducting the pre-installation checks may result in negative implications. As a rule, any errors made at this step manifest themselves only during start-up and adjustment when all the fit-out works have been completed. This makes correction both technically complicated and costly.





Ventilation system installation includes the following phases: pre-plastering works, installation of ventilation equipment and installation of automatic control system components



Attention should be paid to the presence of access hatches at the equipment installation locations as required for proper servicing, condition inspections and checking the nominal characteristics against the project specifications. The state of actual completion of the pre-plastering works is reflected in the concealed works certificate.

Equipment installation. Upon taking delivery of the equipment at the site, start with a visual inspection to identify any damage sustained while in transit.

Before installing any equipment make sure to carefully study the installation guide provided by the manufacturer. Remember: installation errors are one of the most common reasons of equipment failures.

Pay attention to the level of construction readiness of the space where the equipment is to be installed. If the space is not ready (i.e. not plastered, still being painted etc.), equipment installation should be accordingly postponed.

While carrying out the installation works particular attention should be paid to mounting brackets or frames. Try to use only quality fasteners. Ideally, use a mounting system provided by the equipment manufacturer.

If the manufacturer's instructions require vibration mounts, make sure to use them accordingly.

When installing a complex high-performance assembly transported and delivered to the installation location disassembled, make sure to involve a representative of the manufacturer or supplier in the assembly and installation

of the equipment (also called 'supervised installation').

Once the equipment has been assembled, it must be tested. The test results are reflected in the pre-operational testing certificate.

Installation of automatic control system components. All the equipment being installed requires operator control. To that end various control elements are used. Pay attention to the automatic control system components provided by the equipment manufacturer. Do use them if you want to make sure that the equipment functions properly.

Phase three: commissioning

Once the installation works have been completed, proceed with the package of start-up and commissioning works. This includes:

- measuring the actual performance of the equipment;
- balancing the ventilation system in accordance with the design air flow rate values at each terminal device;
- checking the rated parameters of the equipment during operation. The parameters must correspond with the values stated in the manufacturer's technical certificate and contained in the project specifications.

The results of start-up and commissioning works must be reflected in the start-up and commissioning certificate and the ventilation system certificate. ■

PAINTINGS THAT MADE MILLIONS

How can you make several dozen – or even hundred – thousand million Euros overnight? Buy a lottery ticket with an eight-figure prize? The chances are too slim. Rob a major bank? Too risky. Find Hetman Polubotok's treasure? Is it even real? The secret is quite simple. Learn to draw like, say, Pablo Picasso or Mark Rothko and sell your paintings at specialised auctions. To prove that it is actually possible here is the TOP 11 of the most expensive paintings in the world according to the results of open and restricted tendering. Maybe, it is worth a try after all?



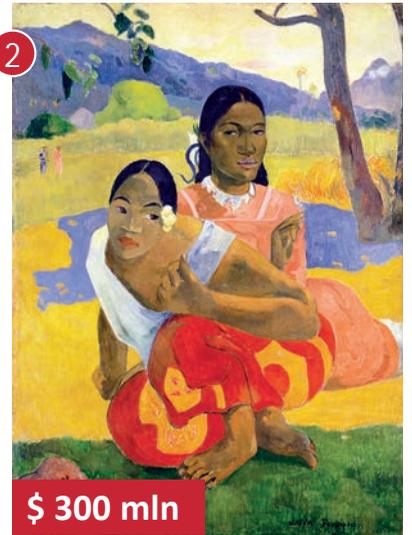




\$ 450,3 mln

Leonardo da VINCI "Saviour of the World" (circa 1499)
Sold in 2017 at Christie's

1



\$ 300 mln

Paul GAUGUIN
"When Will You Marry Me?" (1892)
Sold in 2015 at a private auction

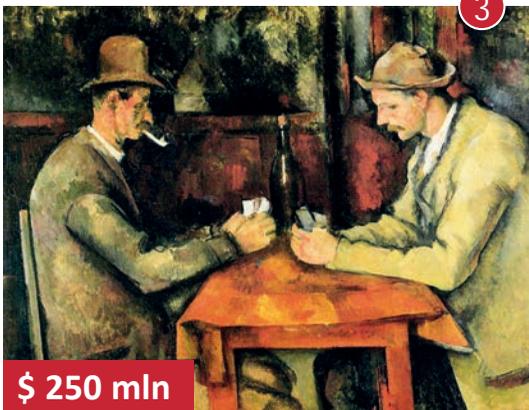
2



\$ 186 mln

Mark ROTHKO "No. 6 (Violet, Green and Red)" (1951).
Sold in 2014 at a private auction

4



\$ 250 mln

Paul CEZANNE
"The Card Players" (1893)
Sold in 2012 at a private auction

3



\$ 179,365 mln

Pablo PICASSO
"Women of Algiers (Version O)" (1955)
Sold in 2015 at Christie's

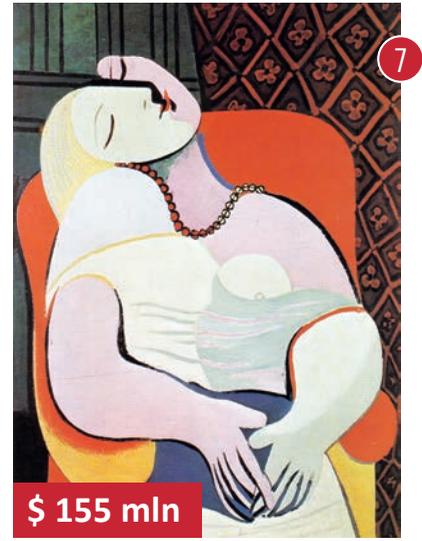
5



\$ 170,4 mln

6

Amedeo MODIGLIANI
 "Reclining Nude" (1917-1918)
 Sold in 2015 at Christie's



\$ 155 mln

7

Pablo PICASSO "The Dream" (1932)
 Sold in 2013 at Christie's



\$ 142,4 mln

8

Francis BACON "Three Studies of Lucian Freud" triptych (1969)
 Sold in 2013 at Christie's



\$ 137,5 mln

10

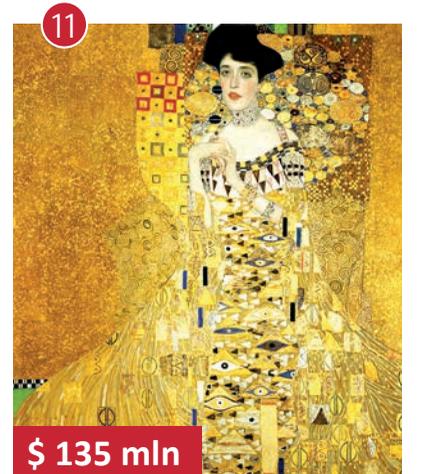
Willem de KOONING
 "Woman III" (1953)
 Sold in 2006 at a private auction



\$ 140 mln

9

Jackson POLLOCK
 "No. 5" (1948)
 Sold in 2006 at Sotheby's



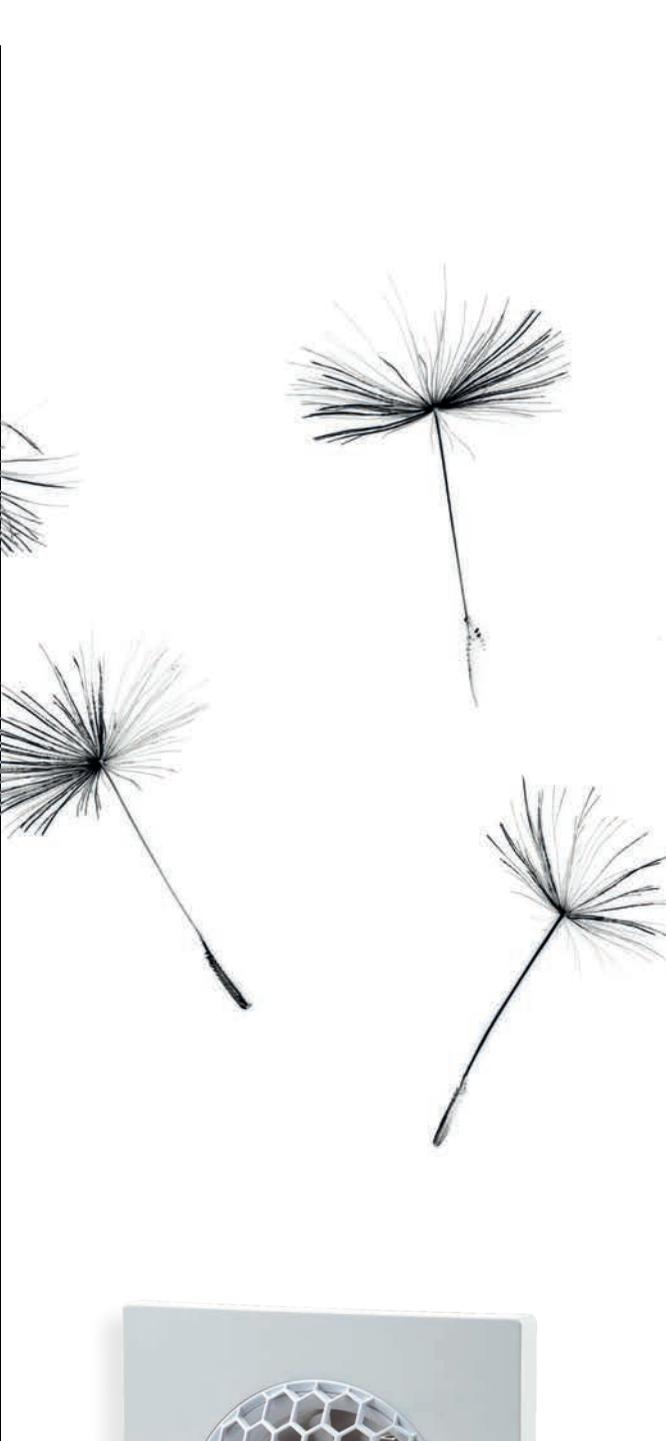
\$ 135 mln

11

Gustav KLIMT
 "Portrait of Adele
 Bloch-Bauer I" (1907)
 Sold in 2006 at
 Sotheby's



Gentle air



VENTS QUIET-S

An innovative low-noise axial fan

Air flow up to 99 m³/h.
A combination of maximum air flow rate and low noise emissions results in excellent occupant comfort





AN ALL-IN-ONE SOLUTION

AirVENTS air handling units

Do you need to arrange proper air exchange in a large space or a multi-storey building? An AirVENTS air handling unit is capable of striking just the right balance between the cost and performance. Each AirVENTS unit is an all-in-one ventilation solution for a fully complete heat recovery ventilation system with a maximum air flow of 128 000 m³/h. AirVENTS air handling units provide regulated supply of fresh air to the treated room with preheating and filtering as necessary as well as stale air extraction. What makes these units really stand out is a fully modular

design. Such a unit is assembled from several functional sections which can be combined in a variety of configurations according to the customer's specification. Thanks to the modular concept the configuration of each air handling unit can be optimised for specific operating conditions. AirVENTS air handling units are suitable for a wide range of applications. They can be used for ventilation of office spaces, banking institutions, cinemas and concert halls, gyms, swimming pools, hotels, residential spaces, manufacturing shops, warehouses, supermarkets and many others. ■



POWERFUL, QUIET, ECONOMICAL





VENTS Quietline low-noise energy-saving axial fan

The new VENTS Quietline low-noise energy-saving fan is intended for continuous or periodic ventilation of bathrooms, showers, kitchens and other domestic spaces. The unit provides an air flow of up to 375 m³/h in a stylish package.

A combination of high air flow rate and low noise emissions results in excellent occupant comfort.

The casing and impeller of VENTS Quietline fan are made from high-quality durable plastic. The outlet pipe has

special flow guide vanes which straighten the air flow, reduce turbulence, increase air pressure and contribute to improved noise control. The impeller construction helps improve the fan efficiency and ensure low noise during operation. VENTS Quietline fans are equipped with reliable motors, which utilise ball bearings, with a minimum power input of 4.5 W. The motor rests on rubber vibration mounts which ensure silent operation of the fan (except VENTS Quietline 150 Q). ■

XXI CENTURY VENTILATION

DVUT HB EC, DVUE HB EC and DVUT PB EC single-room air handling units



The new air handling units are intended for single-room ventilation at schools, libraries, conferences halls and other spaces. The units can be mounted to the floor (DVUT HB EC and DVUE HB EC) or under the ceiling (DVUT PB EC).

The new models from VENTS represent a radically new approach to organising proper air exchange in educational,

public, and commercial spaces. Due to modest space requirements DVUT air handling units can be installed in both newly erected and renovated buildings. The installation does not require laying an air duct system or any costly building and installation works which excludes any tampering with the structural elements of the building and altering the interior.



The DVUT units operate according to the following principle: cool outdoor air passes through the heat exchanger, then – through the filter and is finally fed into treated room by means of the centrifugal supply fan. Warm stale air from the treated room also passes through the filter and the heat exchanger and is then extracted outside by the centrifugal extract fan. This

method ensures air purification and retaining indoor heat.

The floor-mounted DVUT HB EC and DVUE HB EC offer an air flow of up to 550 m³/h while the air flow of the suspended DVUT PB EC units reaches 510 m³/h. The equipment, which is contained in a heat and sound-insulated casing, is characterised by a high heat exchange efficiency of up to 94%. ■



FRESHNESS AND HEAT

MICRA 100 E single-room heat recovery air handling unit

The new addition to the "Ventilation Systems" portfolio is designed to ensure constant air exchange and create a comfortable breathing environment in houses, offices, hotels, cafés, conference halls and other domestic and public spaces.

The MICRA 100 E air handling unit provides fresh air supply into the treated room and purification as well as stale air extraction. The unit is also capable of boosting supply air temperature as necessary. The key feature of the unit, however, is the ability to recover extract air heat and retain it in the treated room thanks to the built-in heat exchanger. The MICRA 100 E is a simple yet effective ventilation solution for newly erected and renovated spaces which does not require dedicated air ducting.

The operating principle of the MICRA 100 E is as follows: after entering the unit warm stale air from the treated room is stripped from impurities in the exhaust filter, then passes the heat exchanger and is discharged outside by means of the exhaust fan. The cooler outdoor air enters the unit through an air duct, loses impurities in the supply filter, passes the heat exchanger and is fed into the treated room by means of the supply fan. The heat exchanger ensures the transfer of heat energy of the extract air stream to the supply air stream resulting in the delivery of heated air into the treated room. The unit is fitted with a 350 W PTC heater with overheating protection to boost the supply air temperature as necessary. ■









VENTILATION MEETS AESTHETICS

VENTS Flip, VENTS Solid and VENTS Wave decorative domestic fans

The new fans with an air flow of up to 85 m³/h are intended for continuous or period ventilation of bathrooms, showers, kitchens and other domestic spaces. In addition to fresh contemporary design and an aesthetically pleasing appearance the fans are characterised with low noise and modest power input. The fans are based on a common technical platform which incorporates unique and innovative know-how of VENTS. The technical perfection of the fans is naturally complemented by an aesthetic exterior which reflects the latest design trends. Each series has a distinctive pattern to blend with a variety of interiors and satisfy most discerning tastes. Furthermore, the face panel of VENTS Solid is offered in two colours- red and black. ■



THE AIR OF YOUTH

Have you ever noticed that prolonged outings in the countryside bring noticeable improvements in the complexion and skin health? This is all due to the exposure to fresh air barely containing any contaminants and rich in oxygen. It is the kind of treatment that our skin needs every day in order to retain its functional properties and visual appeal.

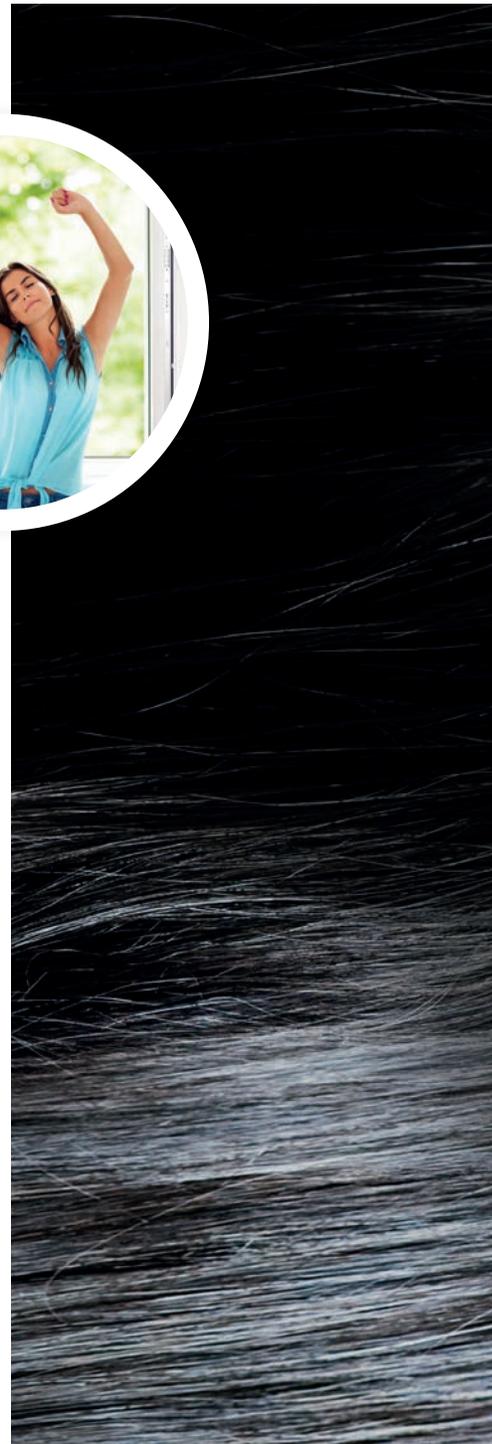
In the never-ending quest for beauty and youthfulness ladies resort to most sophisticated cosmetic treatments and procedures. All these means meet the same end: to reverse or at least contain the development of various skin conditions. However, any qualified cosmetologist would surely insist on prolonged exposure to fresh air to comple-

ment proper cleansing, restoration, and moisturising of skin.

An average Ukrainian spends not more than one hour outside every day. As a rule, this hour includes a walk along the neighbourhood streets or in a nearby park. Every once in a while these activities may be complemented with escaping the city bustle to enjoy fresh air near a river, a lake or in a forest. However, such breaks are infrequent and nowhere near sufficient to meet the body's natural needs in fresh air. Our skin breathes 24/7. This means that even if you manage to spend one hour outdoors, it would still do little good unless you also pay attention to proper indoor ventilation. How does fresh air affect the beauty and youthfulness of our skin cover? Let's take a closer look.

The maths of juvenescence

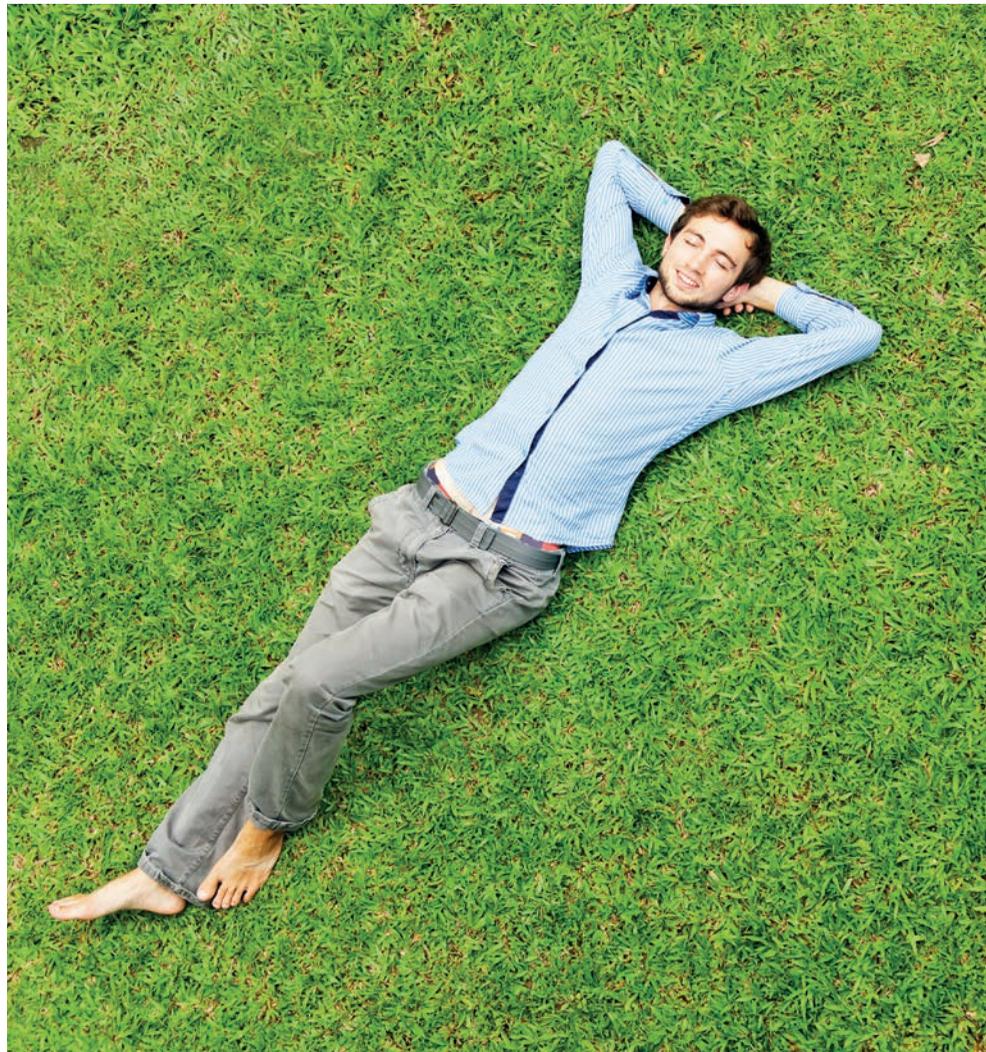
Young skin is healthy skin. In addition to visual appeal it also excels at accomplishing its physiological functions. The skin remains elastic and well-toned, the vessels do not come in star-shaped clusters







Oxygen starvation of skin causes a shortage in the supply of building blocks required for continuous regeneration



while the surface always appears light and fresh. Therefore, to extend skin juvenescence we should provide a healthy intake of all the essentials- first and foremost, oxygen.

Just like lungs, human skin sends all the oxygen obtained from the air further down the line. After the re-distribution of oxygen in favour of vital organs all that remains for the skin is 1–2% of the total volume of oxygen circulating in the blood stream. The upper-layer skin cells get a significant amount of oxygen directly from the air rather than from the blood. Each day the human skin cover can absorb 3–4 g of oxygen: 1 mg of gas per every 10 cm² which amounts to only 2% of gaseous exchange in the body. Dust, sweat, excess skin fat and some cosmetic products prevent the absorption of oxygen by the skin resulting in its deficiency. As you can see, the skin of a modern-day human basically starves for oxygen.

Oxygen deprivation

So what exactly happens to our skin in case of oxygen starvation?

- A lack of oxygen creates a deficiency of substances that our body requires for anaerobic generation of energy used for skin rejuvenation.
- There is a rapid drop in the number of generated proteoglycans, complex proteins, and hyaluronic acid which retains moisture in skin cells.
- There is also a reduction in the synthesis of special lipids which strengthen the upper-layer epidermis and thereby protect it from drying on the outside. This results in skin thinning, peeling and loss of natural shine.
- Epidermal cells are regenerated more slowly causing the skin to grow coarse.
- The skin accumulates collagen aggregated into fibres.

All the said changes cause wrinkles to ap-



Vents TwinFresh ventilators provide a continuous supply of oxygen to let your skin breathe normally to keep it smooth and supple for as long as possible

pear. Systemic exposure to free radicals also contributes to skin ageing. Although free radicals are continuously formed in the body, their adverse impact is mitigated by the natural antioxidants synthesised in the course of normal metabolic processes. A lack of oxygen ruins the balance, and free radicals overrun the natural defences of skin cells.

In such conditions the skin also receives an insufficient amount of amino acids, lipids, and glycogen – the building blocks required for continuous regeneration. The lack of the said vital substances can be compensated with cosmetic products, but the effect is never lasting.

The barriers we build ourselves

If we spent the largest part of our time outdoors, our skin would never starve for oxygen and would remain young for as long as possible. However, the modern lifestyle involves spending a substantial part of the day in closed spaces which more often than not lack adequate ventilation. As a result we end up surrounded by air containing abnormal concentrations of carbon dioxide, all kinds of admixtures and hazardous vapours. All the said factors cause oxygen deficiency and excessive exposure to skin pollutants. The situation gets even worse during the heating season due to a drop in relative air humidity in the heated spaces which further contributes to skin drying.

However, this is not the whole story – not at all! The skin cover has one more potent adversary lurking in closed spaces. Being a powerful allergen undermining the comfort of highly allergic individuals, domestic dust is a major factor contributing to skin deterioration. Large areas covered with textiles and carpets, stuffed toys, upholstered furniture, open shelves with books quickly turn into deposits of dust which remain even after repeated wet cleaning. If you spend much time in such a room, you may safely expect dust to penetrate the pores of your skin and block them. Instead of promoting skin respiration, closed pores inhibit oxygen penetration into body tissues. This also reduces the efficiency of walks in the open and airing the rooms since the skin may no longer absorb the necessary amount of pores through the blocked pores. Facial cleansing and other cosmetic treatments only provide a temporary

solution to the problem as further exposure to domestic dust causes a rapid blockage of pores and, consequently, a loss of skin vitality and elasticity.

Secret of youth

What should you do if you want to keep your skin healthy and baby-smooth?

- First of all, there is bad news for those who enjoy staying in closed spaces: you need to get out more often – make it a habit and don't forget about physical exercise. A morning jog or even some stretching on the balcony would provide a healthy boost of oxygen in your system and activate metabolic processes in the body. If you spend your day at an office or any other indoor space, consider a lunch break in the open. Even a short walk would do a lot of good for your body. When the working day is over, you can cover some of the distance home on foot (unless you drive to the office, of course). You might also enjoy a stroll in a nearby park, walk your dog, do a work out on public exercise machines or join a volleyball game. While it is very important to dress for the weather, do allow your skin to breathe.

- While staying indoors, always remember about regular ventilation. This is especially important for crowded spaces. The insulated glazing units that are so popular today create additional obstacles for proper air exchange – try the good old airing by opening windows or vent panes.

Supply dampers (ventilators) with heat recovery or high-performance supply and exhaust ventilation systems provide a much more convenient and contemporary solution to this problem. In addition to providing a readily available supply of fresh air while keeping windows closed such equipment enables considerable savings during the heating season in the winter thanks to heat recovery.

- And, finally, one last thing: make a habit of taking a bath or a shower every once in a while. Warm water opens up skin pores and cleans them from deposits of dust and dirt so that oxygen may get it.

Skin healthiness is directly related to fresh air exposure. While looking after your body make sure to pay attention to the basic things affect the quality of life such as enjoying clean fresh air, engaging in physical activity and keeping a healthy diet. ■



Riding
the fresh wave



VENTS WAVE

A new decorative axial fan

Air flow up to 85 m³/h.
Built on a new technical platform which
incorporates unique innovative
know-how of VENTS

The biggest problem of Ukraine's housing facilities stems from their technical and moral depreciation. As energy resources are becoming more and more expensive such depreciation causes building maintenance costs to soar sky-high into the realm of unreasonable. This is why rational use of energy resources and the implementation of energy-efficient solutions in residential buildings are as current as ever.





Serhiy STARCHENKO,
*project manager, department of integrated climatic
 engineering solutions of "Ventilation systems"*

BUSTING HEAT LOSSES IN HOMES

The notoriously high energy intensity of Ukraine's housing and utility sector is due to a very limited penetration of modern technology. The lack regulated heat carrier supply to the heated buildings depending on weather conditions presents a key disadvantage. At the same time poor thermal insulation turns buildings into convectors heating surrounding areas.

According to integrated data from various researchers, about 30% of heat losses in an average block of flats correspond to the exposed walls, 20% – to the windows, 10% – to the roof, 10% – to the basement, and 30% – to the ventilation. Thermal modernisation of old housing facilities could result in saving up to 35% of energy resources used nationwide.

Ventilation is key

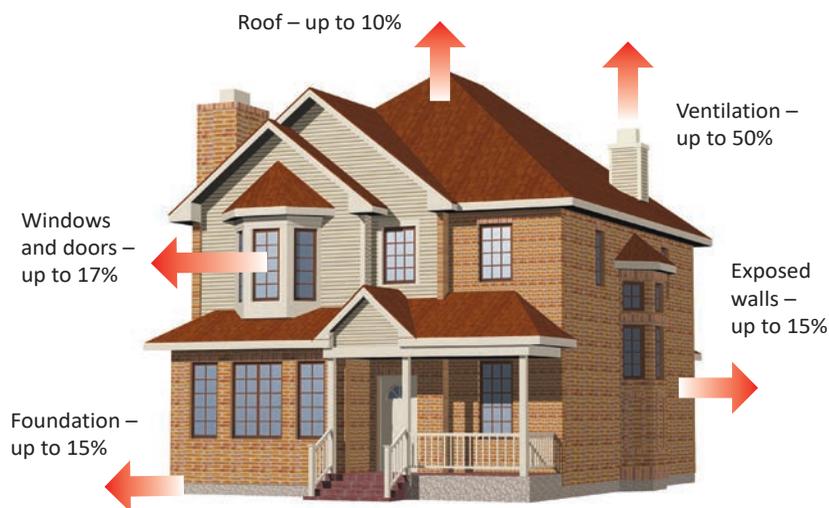
Thermal modernisation essentially means a package of measures aimed at cold-proofing buildings and upgrading the utility systems in order to ensure their compliance with modern energy efficiency standards. As many have found out, a minimum scope of work would include fitting insulation panels to the building exterior, installing a heat meter, and providing for automatic control system components to regulate heat supply.

However, experience has it that such measures are often insufficient as they often yield mixed results- in particular, an air exchange drop in the building. With little exception all the buildings commissioned during the Soviet and post-Soviet era





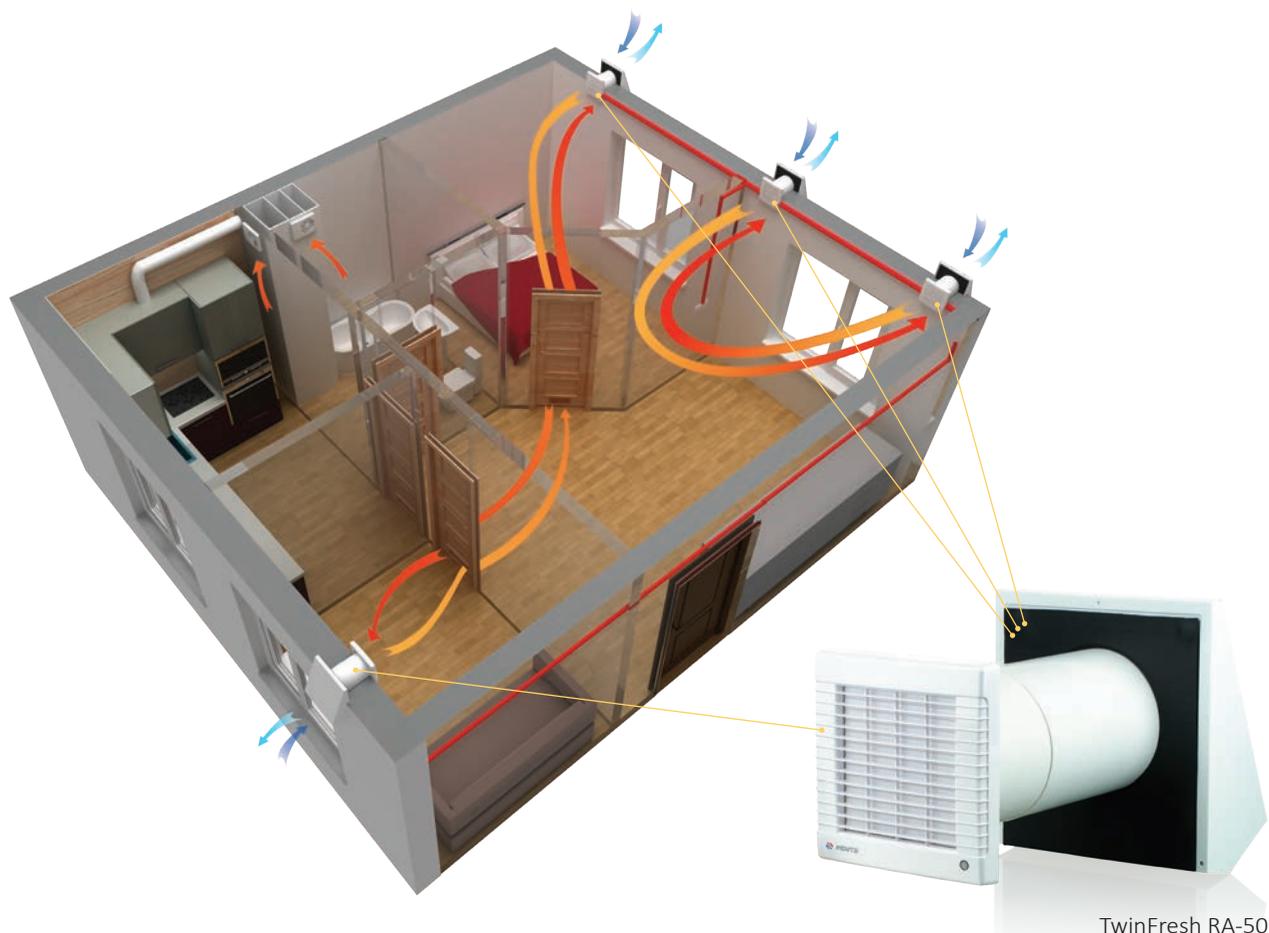
MAJOR AREAS OF HEAT LOSSES IN A BUILDING



were built with natural ventilation in mind - i.e. fresh air supply through leaky windows. After being ineffective (i.e. excessive ventilation in the winter and insufficient ventilation in the summer) yet working, such ventilation simply disappears existent and fitting air-tight insulating glazed units as part of thermal modernisation. This leads to elevated humidity and, consequently, mould formation. Ventilation by airing would no longer address the issue since this would put all the cold-proofing efforts to waste.

As a result, thermal modernisation exposed the need for the implementation of ventilation systems to solve the problem of excessive thermal losses, even out the imbalances due to excessive and insufficient air exchange, and meet the following basic requirements: compliance with building regulations as well as sanitation and hygiene standards; high energy efficiency; minimum cost and rapid time to value; ease of installation and maintenance; minimum operating costs; automatic control.

NEWLY ERECTED BUILDINGS AND EXISTING HOUSING FACILITIES



TwinFresh RA-50

Single-room ventilation system for flats built with VENTS TwinFresh ventilators

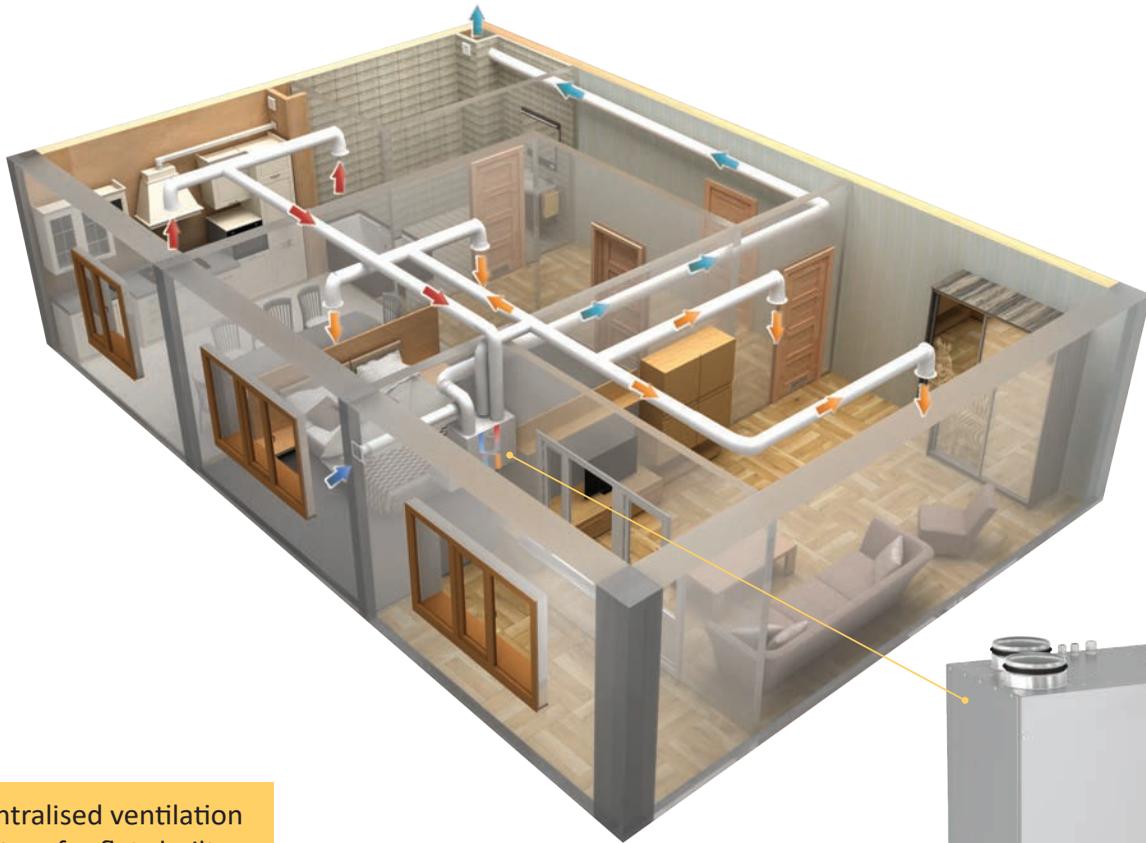
Single-room ventilation systems utilising specially designed equipment provide a happy middle ground for thermal modernisation of existing housing facilities. Such approach provides for equipping residential spaces with ventilators utilising energy-efficient EC motors and heat exchangers, which boost the supply air temperature by recycling extract air heat with a maximum efficiency of 91%. Toilets are fitted with exhaust fans with a built-in light, back-draft damper and an automatic control system with a de-activation delay timer. Bathrooms and showers are equipped with exhaust fans with back-draft dampers and an automatic control system connected to a humidity sensor. An optimum solution for kitchens would include an exhaust fan with a back-draft

damper and an automatic control system gathering feedback from a humidity sensor with forced start capability.

ADVANTAGES

- Creates a comfortable breathing environment in the treated room contributing to occupant health and well-being.
- Enables ventilation project implementation both during the erection and after the commissioning of the building.
- Individual air flow regulation for every standalone space.
- Prevention of back draft while using the exhaust hood over the stove by means of fitting exhaust fans with back-draft dampers and evening out imbalances with ventilators.

COMFORT-CLASS AND PREMIUM HOUSING



Centralised ventilation system for flats built with VENTS air handling units



Single-room ventilation systems may not always suit flats in newly erected complexes due to certain design features of the buildings. However, there is nothing to worry about as an individual flat can be equipped with a centralised air handling unit during the erection and finishing works.

ADVANTAGES

- Individual approach to flat ventilation to meet all the specific goals to ensure ultimate occupant comfort.
- Wide selection of equipment (price range, air capacity, heat exchanger type, motor type, automatic control system type, installation method etc.).
- Wide choice of system components (air ducts and air distribution devices) and

individual approach to their integration with the flat interior.

- Ventilation and air conditioning functionality can be integrated into a single system.

While choosing between a single-room and a centralised ventilation system, these are the factors to consider:

- Housing class (budget or premium).
- Capital value of the system and total appreciation of the housing.
- Return on investment for each option compared to natural ventilation.

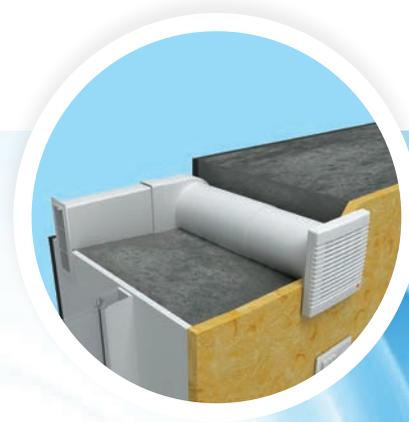
While a single-room ventilation system is quite a popular choice for budget housing, in case of premium housing a bespoke ventilation system built to a custom specification would be a much more reasonable choice.



Ventilator installation into a standard-thickness wall using an EH hood



Ventilator installation into a thin wall using an EH-2 hood



Angled installation of the ventilator using the NP 60x204-0021 kit



HEAT ECONOMY CALCULATION WHILE USING A SINGLE TWINFRESH VENTILATOR

Heating season duration: 6 months (180 days).
Mean outdoor air temperature during the heating season (Kyiv): $-1\text{ }^{\circ}\text{C}$.
Room temperature: $+22\text{ }^{\circ}\text{C}$.

Ventilator air flow in the heat recovery mode (air exchange): $25\text{ m}^3/\text{h}$.

Average heat recovery efficiency of the ventilator: 70%.

Average supply air temperature downstream of the heat exchanger: $+16\text{ }^{\circ}\text{C}$.

With the window open the supply and indoor air temperature difference would be: $T_{\text{win}} = 22\text{ }^{\circ}\text{C} - (-1\text{ }^{\circ}\text{C}) = 23\text{ }^{\circ}\text{C}$.

With the window closed and the ventilator on the supply and indoor air temperature difference would be: $T_{\text{sup}} = 22\text{ }^{\circ}\text{C} - 16\text{ }^{\circ}\text{C} = 6\text{ }^{\circ}\text{C}$.

While using the ventilator in the flat the heating system must warm up the air coming from

outdoors $17\text{ }^{\circ}\text{C}$ lower than in case of an open window ($T_{\text{win}} - T_{\text{vent}} = 23\text{ }^{\circ}\text{C} - 6\text{ }^{\circ}\text{C} = 17\text{ }^{\circ}\text{C}$).

It should be noted that the air supply through the open window equals air supply through the ventilator in the heat recovery mode and amounts to $25\text{ m}^3/\text{h}$.

THE HEAT ECONOMY WOULD AMOUNT:

Hourly:

$$Q_h = L * 0.335 * \Delta T = 25\text{ m}^3/\text{h} * 0.335 * 17\text{ }^{\circ}\text{C} = 143\text{ W (0.143 kW)}$$

Daily:

$$Q_d = 0.143\text{ kW} * 24\text{ h} = 3.43\text{ kW}$$

Monthly:

$$Q_m = 3.43\text{ kW} * 30\text{ d} = 103\text{ kW}$$

During the entire heating season:

$$Q_{hs} = 103\text{ kW} * 6\text{ months} = 618\text{ kW}$$



<https://hotree.com>

LAUNDRY MADE EASY



Is your washing machine a watt-hungry monster? No worries- there is a way to cut your laundry bills! The first thing you notice about the new portable Drumi washing machine developed by Yirego of Canada is how small it is, but there is more: it does not need electricity at all! You just need to press a pedal to start it. In addition to energy savings Drumi also saves water and detergent as it only needs up to 10 litres of water and a tiny bit of washing powder. The entire process takes under five minutes and includes washing, rinsing and spinning. The drum is big enough to wash up to seven items simultaneously.

While the manufacturer does admit that new product is no match for conventional washing machines, it markets the Drumi as a machine to use while away from home or laundromats or a quick-wash solution. Furthermore, Drumi would certainly find use in households with children or pets: whenever there's a fresh stain, no longer do you have to waste water and detergent on a single item. The compact footprint (only 55 cm high) make the new washing machine quite indispensable while spending time in the country as it can easily fit into a rucksack or a car boot. ■

KEEPING THE KILOWATTS UNDER CONTROL

If you want to keep your energy bills under control and use your electric appliance more efficiently, you definitely need a portable electricity meter- a wattmeter (also called an energometer). In addition to showing how expensive each appliance is to operate, it also shows the electric grid parameters such as amperage, frequency and power. The device is extremely easy to operate and does not require any special knowledge or training. All you have to do is connect it to the power mains and then plug in an electrical appliance. All the parameters are shown digitally on the external display. The wattmeter also helps to calculate the costs of using

various electrical appliances. After you set the price per 1 kW the device displays the total cost of electricity consumed by the appliance over the tracked period of time. In addition to that the wattmeter also allows for accounting the power consumption of electrical appliances in the standby mode. The energometer has non-volatile memory which retains some of the information (e.g. time, price per kW of energy etc.) even after disconnection from the power mains. Some models of wattmeters are capable of storing two electricity rate values simultaneously which is convenient for accounting electricity during the day and at night when the rates differ. ■



<http://brennenstuhl.com.ua>



<https://mir-s3-cdn-cf.behance.net>

SUN ENERGY TO POWER YOUR HOME

The sun provides an infinite source of thermal energy. After passing through windows, a substantial part of this energy disappears forever. However, two postgraduate students of Samsung Art and Design Institute (South Korea) decided to partially transform this energy into electric power by means of their invention- the windowpane power socket. The new gadget can be easily mistaken for a conventional wall socket, but if you look closely, you will see that the back of the device is actually a photovoltaic panel. After fixing to a windowpane the socket begins accumulating solar energy in the built-in 1 000 mA-h battery. A full charge takes 5 to 8 hours depending on solar activity. ■

A full-page photograph of a woman with long, wet, light-brown hair, wearing a black bikini. She is splashing in water, with droplets visible on her skin and in the air around her. She is wearing several pieces of jewelry: a wide, multi-strand bracelet on her right wrist, a matching bracelet on her left wrist, a necklace with a butterfly pendant, and a ring on her left hand. Her right hand is raised to her head, and her left hand is near her chest. The background is dark and filled with water droplets.

*You drink it in
autumn, you heed
it in winter, you gulp
it in summer and
drown in it in spring –
and that's all air!*

- Stanislav Rodionov

VENTS

MAGAZINE

ABOUT VENTILATION AND MORE

VENTILATION AS ART



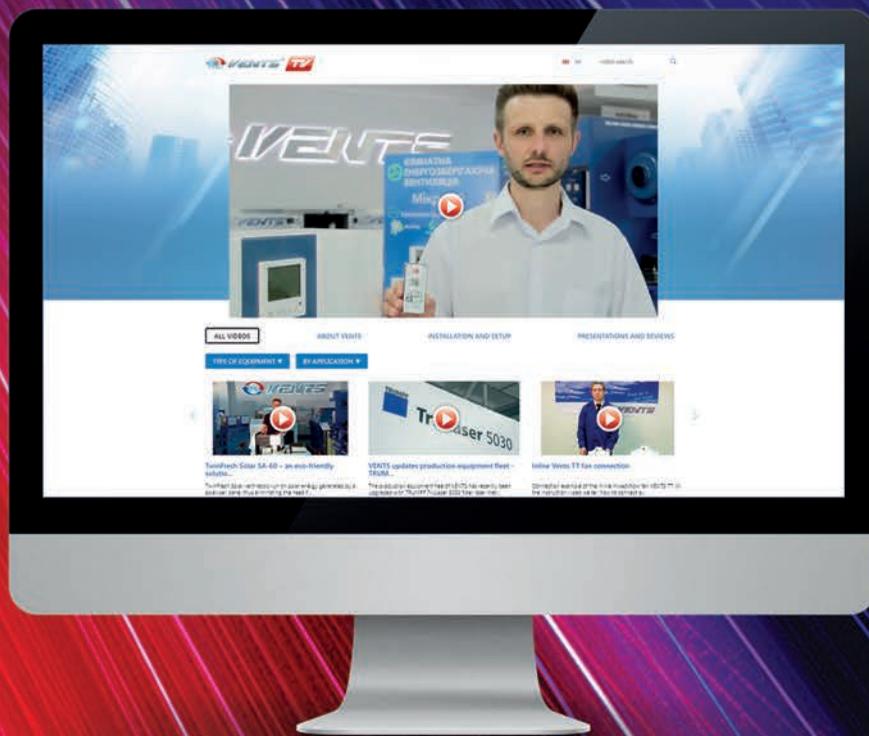
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