Библиотека СОК

NED
New Engineering Discoveries®

AIR CONDITIONING AND VENTILATION EQUIPMENT

Version 4.0

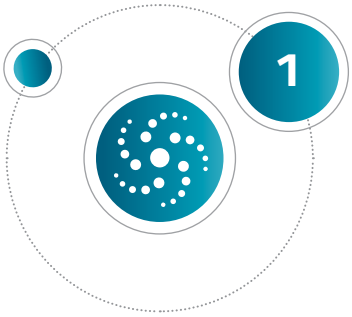
NED
New Engineering Discoveries ®

NED — IS A LEADING RUSSIAN BRAND FOR AIR CONDITIONING AND VENTILATION EQUIPMENT.

WE DESIGN AND MANUFACTURE EQUIPMENT, CREATE COMPREHENSIVE ENGINEERING PRINCIPLES FOR CIVIL AND INDUSTRIAL BUILDINGS INCLUDING HOSPITALS, OFFICE BUILDINGS, PRODUCTION PLANTS AND NUCLEAR POWER STATIONS.

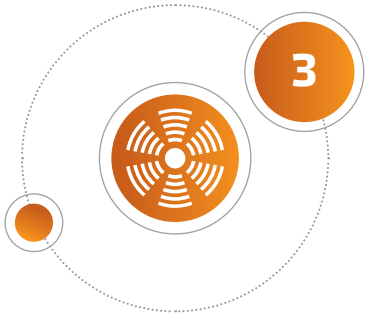
NED
New Engineering Discoveries
www.air-ned.com

Contents:



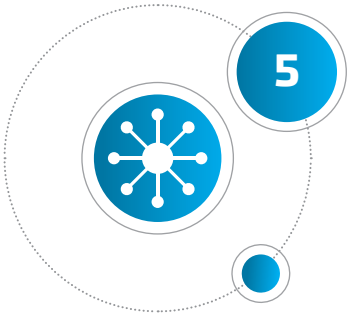
ABOUT THE COMPANY

EQUIPMENT



PORTFOLIO

GEOGRAPHY OF SALES



CONTACTS

ABOUT THE COMPANY

1

About the Company

NED — best engineering solutions for ventilation and air conditioning based on full range of Russian climatic equipment.

The company NED has been working on Russian market of ventilation equipment for more than 25 years and has acquired high visibility 9 and rich experience.

Our specialization is production, sale, design, installation, servicing of ventilation systems and air conditioning.

NED engineering company —
New Engineering Discoveries —
is the leading manufacturer and supplier
of high-tech climate equipment.

VOLUME OF RELEASED PRODUCTS IN 2020

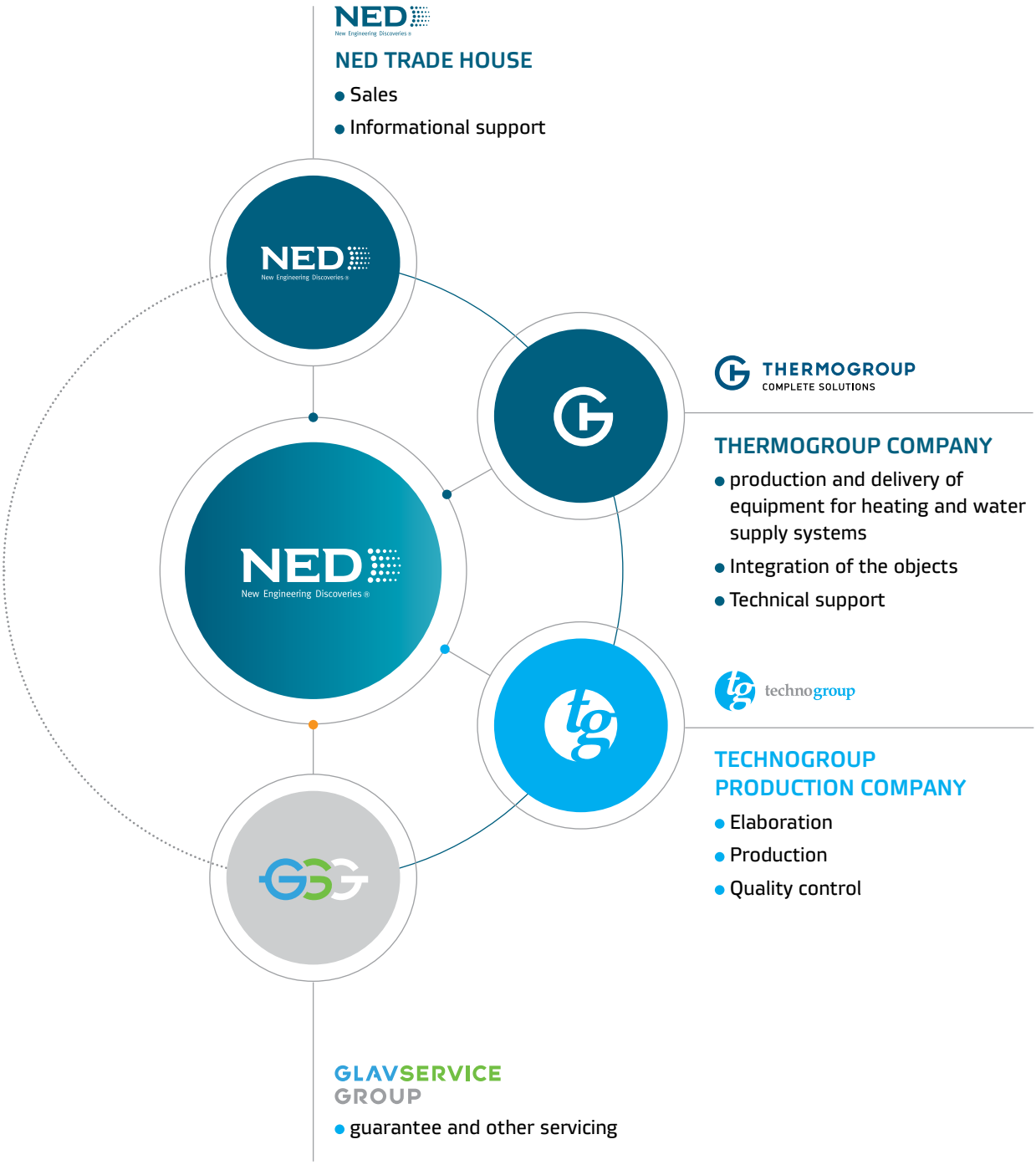
- **2 550** condensing units
- **285** units of chillers
- **279 000** units of duct equipment
- **17 000** air handling units
- **23 500** elements of automatics and process control
- **28 300** elements of fire safety ventilation equipment

NED IS RUSSIA'S NUMBER ONE TRADEMARK IN THE HEAT INSULATION EQUIPMENT MARKET

Own technical department with staff engineers more 50 people

- Possibility of developing customized equipment
- Technical support from technical directors with focus on Ventilation, Refrigeration, VRF-systems, Automation and Dispatching.
  Qualified consultation in designing
- Convenient online selection program
- 3D models for design in the REVIT program

Company's Structure



NED
New Engineering Discoveries ®

NED TRADE HOUSE

- Sales
- Informational support

THERMOGROUP
COMPLETE SOLUTIONS

THERMOGROUP COMPANY

- production and delivery of equipment for heating and water supply systems
- Integration of the objects
- Technical support

technogroup

TECHNOGROUP PRODUCTION COMPANY

- Elaboration
- Production
- Quality control

GLAVSERVICE GROUP

- guarantee and other servicing

Production

Ned equipment catalogue has all elements for creating a modern climate system.

Vast range of ned's equipment allows to solve any engineering task involving the creation of ventilation and cold-supply systems for premises.

- AIR HANDLING UNITS
- SPECIAL DESIGN EQUIPMENT
- ROUND DUCT EQUIPMENT
- RECTANGULAR DUCT EQUIPMENT
- FIRE SAFETY VENTILATION EQUIPMENT
- AUTOMATICS AND PROCESS CONTROL
- COOLING EQUIPMENT
- SMARTNED VRF SYSTEMS

Territory of Innovations

Well-developed regional network all over the territory of russia

Convenient transportation availability of warehouses for self-delivery

The quality-management system is certified in accordance with GOST R ISO 9001:2013.

- **Wide range of equipment is always available in stock**
- **Wide range of climatic equipment**
- **Possibility of completing the object of any complexity and purpose**
- **Flexible system of discounts and payment terms**

MACHINE TOOLS AND PRODUCTION LINES

- < **TRUMPF,** Germany
- < **Eckold,** Germany
- < **Fanuc,** Japan
- < **NITTO KOHKI CO,** Japan
- < **Tecna,** Italy
- < **OXYWELD SNC,** Italy
- < **ShuTung Machinery,** Taiwan
- < **CPIRO INTERNATIONAL SA,** Sweden
- < **Corelocker Combite,** Switzerland
- < **SMA MACHINES,** Spain

Own production facilities, located at: **bld.1, Energetikov st., Dzerzhinsky, Moscow region**

Our suppliers

The use of supplies and component parts by well-known Russian and global producers is an important factor providing for the high quality of NED's equipment.

- < **RUSAL** aluminum foil
- < **ALMETA** aluminium profile
- < **NLMK** galvanized metal
- < **SEVERSTAL** galvanized metal
- < **URALELECTRO** electric motors
- < **RUSELPROM** electric motors
- < **CHISTIYMIR** filter inserts
- < **TEKFOR** plastic pits
- < **SIEMENS** controllers, motor means, sensors
- < **CAREL** controllers, steam generators
- < **ZIEHL-ABEGG AG GERMANY** engines, fan wheel, ventilation units
- < **DANFOSS** frequency converters, compressors, connection kits for condensing units, controllers
- < **VILMANN** gagues, electric motors, servo-drives, motor-wheels, ventilation units
- < **IRCA** heating coils
- < **DAB** pumps
- < **KLINGENBURG** regenerators
- < **ABB** automatic equipment
- < **SCHNEIDER ELECTRIC** automatic equipment
- < **COMEFRI** fan wheels

Our quality is certified

The quality-management system is certified in accordance with GOST R ISO 9001:2013.

In Russia, equipment with NED trademark has special certificates for installation in medical institutions, at atomic energy enterprises, and oil-and-gas facilities (Gazprom certificate).

NED equipment has CE labeling, which proves its conformity to the European standards including 2004/108/EC, 2006/95/EC, and 2006/42/EC directives related to electromagnetic compatibility; electric safety; and safety while producing, assembling, installing, and outer supervising.

Guarantee commitments

All products* under the NED trademark are subject to the following guarantee commitments.

STANDARD GUARANTEE COMMITMENTS **3 YEARS** UPON SALE

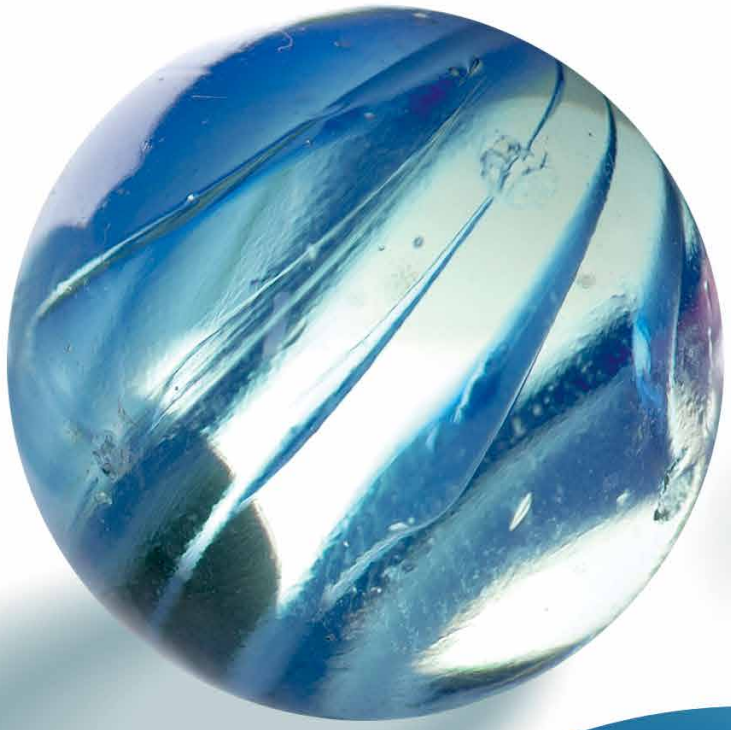
EXPANDED GUARANTEE COMMITMENTS **5 YEARS** UPON SALE

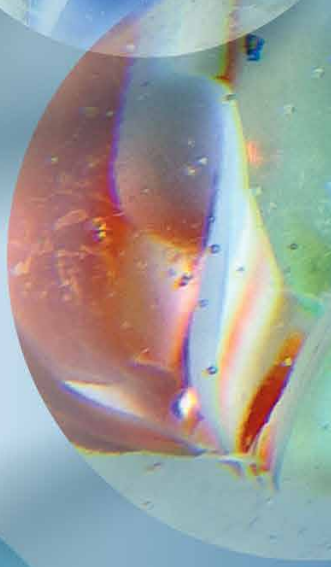
Warranty, post-warranty service and installation supervision of NED equipment is provided by GLAVSERVICE company

You may receive more information about ensuring the guarantee commitments by calling the following hot line phone number:

8 (495) 748-04-16

or ask your question on the website **www.gv-s.ru**



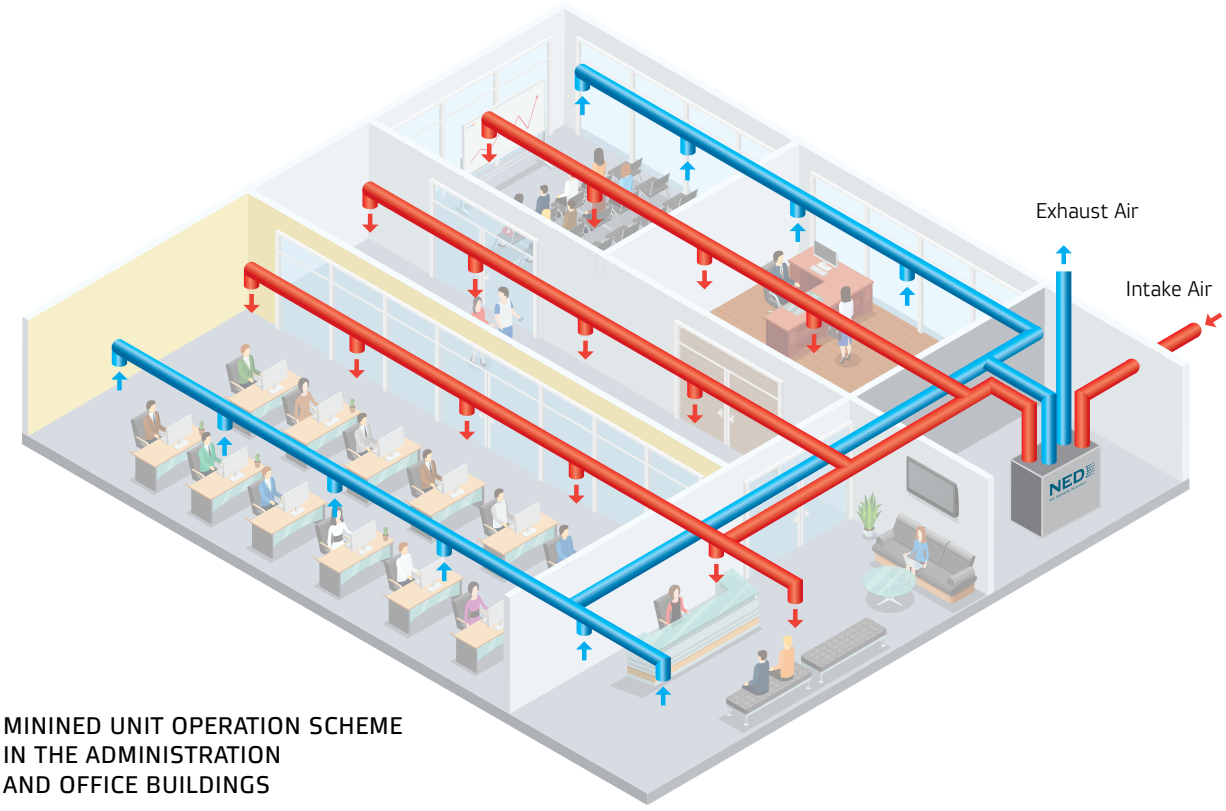



EQUIPMENT

Air handling units

Air Handling Units MININED

- MININED line includes 7 types of units offering capacities between 130 and 3800 m^3/h (supply side).
- Simple installation: the unit is completely ready for connection, assembled in a single sound-proof casing; round or rectangular openings are provided for connection to the air duct network.
- Available air treatment processes provided by the units: filtration, regeneration/recuperation, heating (electric or water).
- The high pressure of the fans up to 800 Pa allows the connection of long air duct networks.
- Each unit has a builtin automation unit that provides reliable protection, precise operation, and flexible control.
- Small footprint and compact sound-proof casing allow the equipment to be placed in both technical and serviced premises.
- Installation of the compact units on the floor or in the ceiling cabinets does not require installation of the counter ceilings and ensures ease of installation and operation.



MININED UNIT OPERATION SCHEME IN THE ADMINISTRATION AND OFFICE BUILDINGS

The units feature heat recovery with an efficiency of up to 85%

Round or rectangular openings are provided for connection to the air duct network

The removable service panels come with plastic handles

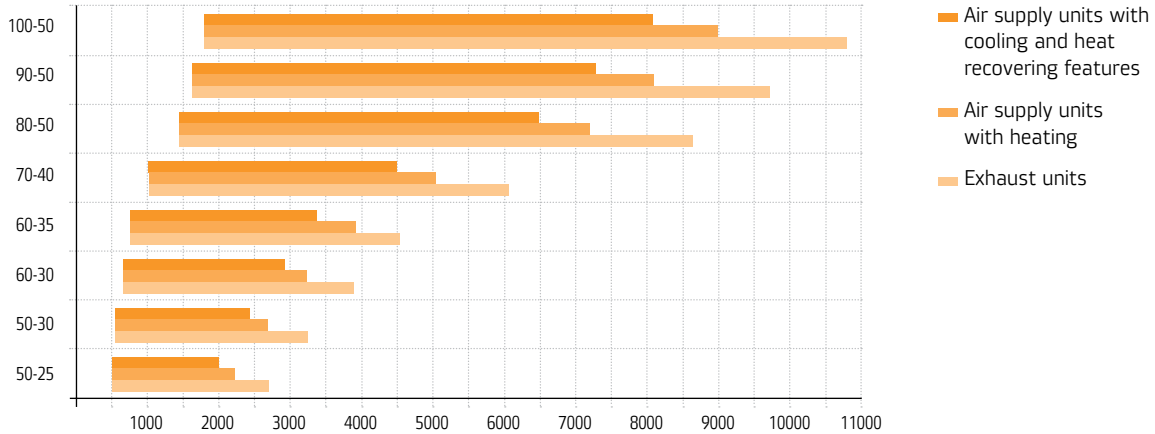
In the supply sections of the unit, G2 prefilter is used as a coarse filter, F7 cassette filter is used as a fine filter. In the exhaust part, G3 cassette filter is used

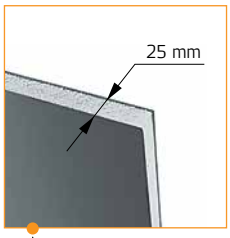
Each unit has a builtin automation unit that provides reliable protection, precise operation, and flexible control

Air Handling Units LITENED

- A broad range of air handling units allows us to build any type of air treatment systems for air conditioning and ventilation purposes.
- Each solution is made up of interchangeable modules, allowing designers to quickly design the required configuration.
- Our solutions can be manufactured for indoor and outdoor installation; special versions are available for installation in cold climates and medical facilities.
- Our units use lightweight 25 mm thick polyurethane foam sandwich panels that are effective at reducing both noise and heat loss as well as improving the strength and rigidity of the body.
- The well-thought-out and very practical design ensures ease of installation and maintenance: the same standard version is used for all the sections on the maintenance side allowing the removal of all panels, suspended or on-the-floor mounting by transforming the legs into brackets for suspending the unit without the need for any additional parts.
- All units can be easily connected to the air ducts via the rear end panels that can be installed on any units at the extreme ends of the system.
- Automation kits are offered for all units (control units, sensors, dampers, actuators etc.) to ensure reliable protection, precision of operation and flexibility of control.
- Our solutions can be operated at outside temperature as low as -60ºC if the following conditions are met: the equipment is placed inside the premises and the temperature of air supplied to ventilation unit is not less than -40ºC.

Quick selection of the correct type





The 25 mm thick sandwich panels are made of two galvanized steel with lightweight polyurethane foam filler between them. Effective reduction of noise and heat loss as well as improved strength and rigidity of the structure of sections are provided

The units feature heat recovery with an efficiency of up to 85%

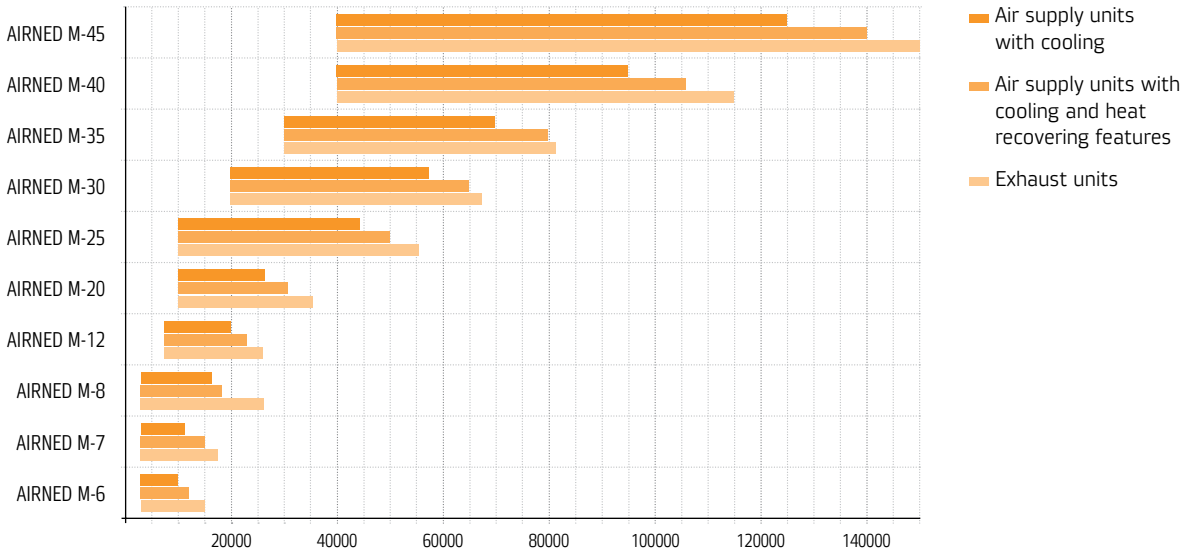
Removable panels are mounted on the special frame from extruded aluminum

Units can be suspended or floor amounted. Special design of the brackets allows both types of installation

Air Handling Units AIRNED-M

- A wide range of air handling units allows us to build any type of air treatment systems for air conditioning and ventilation purposes.
- The modular design of the units allows the designer to easily build the required configuration.
- Our solutions can be manufactured for indoor and outdoor installation; special versions for cold climates and medical facilities are available.
- A unit can be made up of separate components as well as combination of mono-block sections to reduce cost, size and weight, while simplifying the installation process.
- The unique code of the unit is generated automatically when the software estimates its parameters and allows engineers to determine the precise configuration of the unit to a great level of detail.
- Our units use lightweight 45 mm thick polyurethane foam sandwich panels that are effective at reducing both noise and heat loss as well as improving the strength and rigidity of the structure.
- Removable service panel allow easy maintenance as all the panels have handles cliped to the frame.
- Automation kits are offered for all units (control units, sensors, dampers, actuators etc.) to ensure reliable protection, precision of operation and flexibility of control.

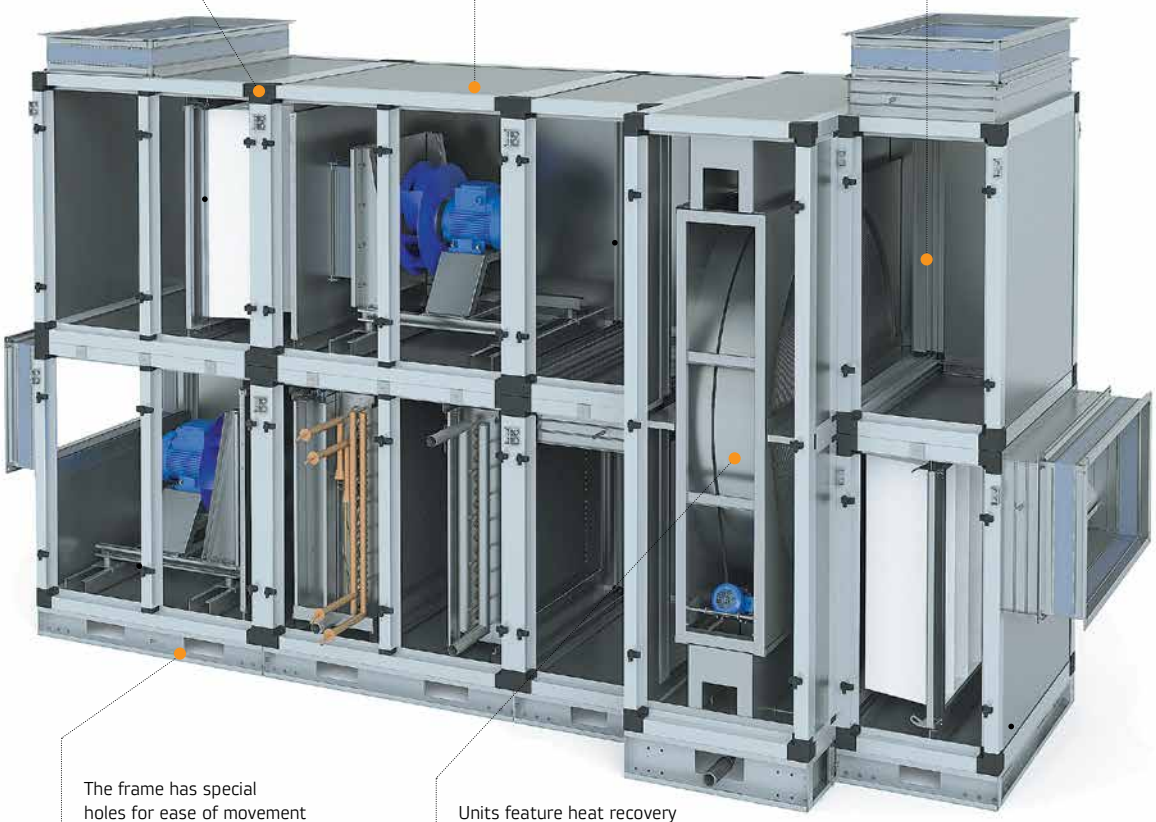
Quick selection of the right type



The strong hold of the structure is guaranteed by aluminum profile that is connected using plastic angle

The 45 mm thick sandwich panels are made of two galvanized steel with lightweight polyurethane foam filler between them. Effective reduction of noise and heat loss as well as improved strength and rigidity of the structure of sections are provided

The removable service panels come with plastic handles



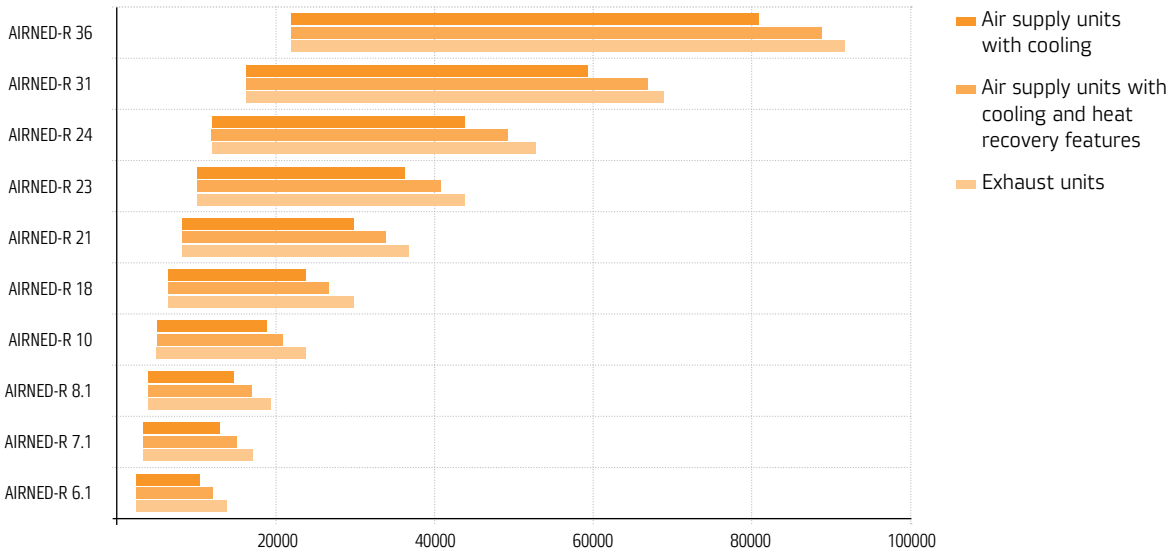
The frame has special holes for ease of movement and installation

Units feature heat recovery with an efficiency of up to 85%

Air Handling Units AIRNED-R

- AIRNED-R line includes 7 types of units offering capacities between 6000 and 90000 m^3/h.
- Special cross-section design with 1:2 ratio allows double deck installation possibility in low-ceiling ambients. Put together the double deck units create a square cross-section thus maximizing efficiency when using plate heat exchangers up to 70% and rotary exchangers up to 85%.
- The design features of the unit allow the operation of the heat exchanges to be optimized by maximizing the use of the internal cross-section.
- Our solutions are designed for indoor and outdoor installation; special versions for installation in cold climates and medical facilities availbale.
- A single ventilation section can use two fan units arranged in parallel.
- Our units use lightweight 45 mm thick polyurethane foam sandwich panels that are effective at reducing both noise and heat loss as well as improving the strength and rigidity of the structure.
- Removable service panel allow easy maintenance, all panels have handles and are clipped to the frame.
- Automation kits are offered for all units (control units, sensors, dampers, actuators etc.) to ensure reliable protection, precision of operation and flexibility of control.
- Our solutions are designed to work with outside temperature as low as -60ºC if the following conditions are met: the equipment is installed indoors and the temperature of air supplied to ventilation unit is not lower than -40ºC.
- AIRNED-M and AIRNED-R units can meet the ventilation and air conditioning needs for a variety of buildings and premises.

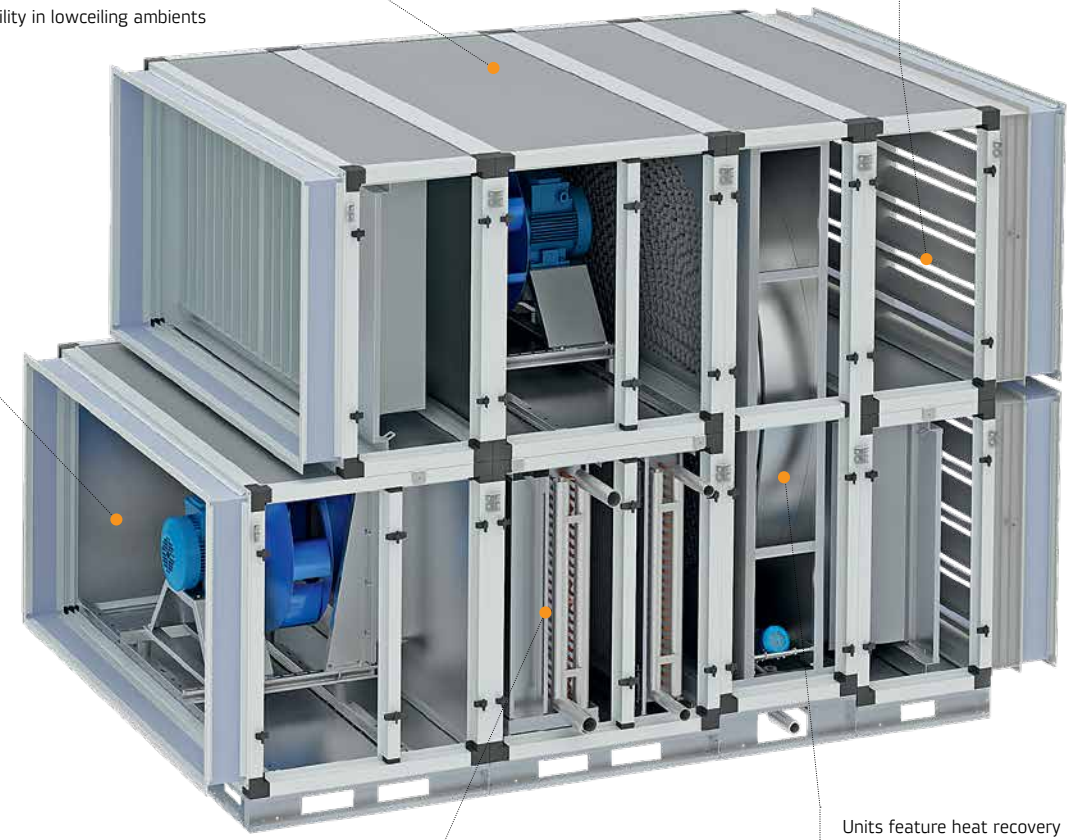
Quick selection of the right type



Special cross-section structure of sections are provided design with 1:2 ratio allows double deck installation possibility in lowceiling ambients

The 45 mm thick sandwich panels are made of two steel sheets with lightweight polyurethane foam filler between them. Effective reduction of noise and heat loss as well as improved strength and rigidity of the structure of sections are provided

Removable service panels with plastic handles make maintenance simple and easy



Maximum use of the internal cross-section of the unit and optimization of heat exchangers is provided

Units feature heat recovery with an efficiency of up to 85%

Hygienic Execution Air Handling Unit

AHUs intended for use in medical facilities must meet special requirements for the quality of air treatment.

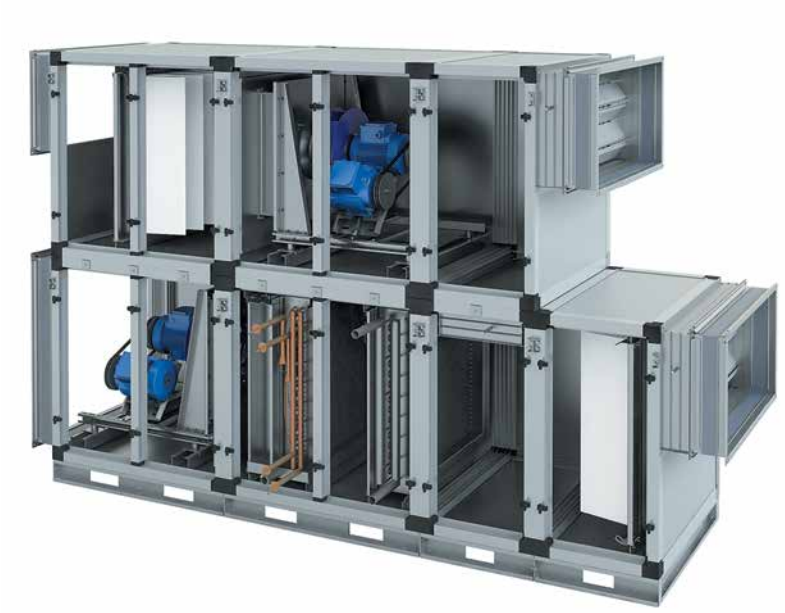
Units are offered in 8 models of MED version (LITENED) and in 10 models of MED version (AIRNED) with capacities between 500 m^3 and 150 000 m^3/h.

There are two executions of AHUs we offer:

- with internal elements made from galvanized steel,
- with internal elements made from stainless steel.

Fan sections feature polycarbonate sight windows and lamps.

Fan Sections With Stand-By Motors



Continuous work of AHUs units is ensured through the use of fan sections of LITENED and AIRNED units with stand-by motors.

The main (operating) motor is connected to the stand-by one via V-belt transmission with the impeller being installed on the shaft of the stand-by motor.

If the belt breaks or the main motor malfunctions, the automatic control system actuated by a differential pressure monitoring sensor will switch power supply from the main motor to the standby one.

The compact size of the stand-by means that in the majority of cases the size of the fan section does not need to be increased to accommodate it.

The original design allows for the quick replacement of a malfunctioning motor.

Outdoor Version Of Air Handling Units

LITENED and AIRNED units can be made for both indoor and outdoor installation.

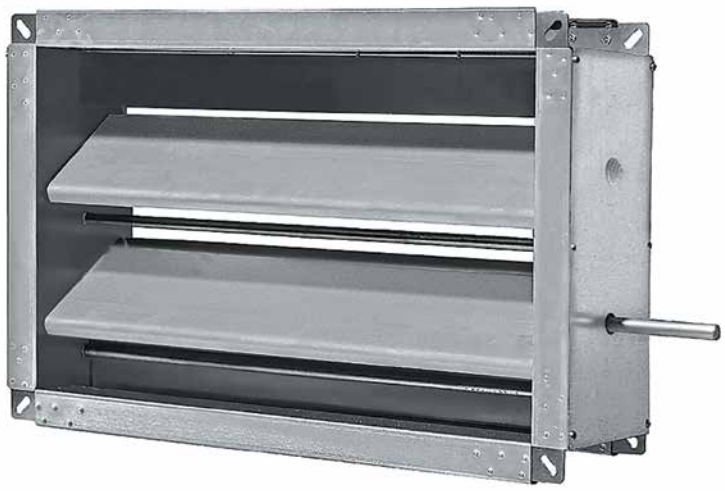
Units have a roof made from galvanized steel.

An air intake cover with a steel mesh is installed on the side of the outdoor air intake.

LITENED units feature an electrically driven flap in the air intake section.

In AIRNED units for outdoor installation, the air intake flap has a special cover made from a galvanized steel.

Air Handling Units For Extremely Cold Climates



Units designed for use in extremely cold climates feature heat insulated air intake flaps.

Heat insulated flaps can be installed on AIRNED units of all types as well as on LITENED units of type 50-30 and above.

The flap is made from a galvanized while the rotating blades are aluminum.

The tubular heating elements are positioned in the place where the blades attach to the main structure, which prevents them freezing to each other or to the flap.

The terminals for connecting the heat bundles are positioned in the mounting box on the side of the flap. The IP class of the terminal box: IP 54.

Equipment for pools and water parks LITENED BS and AIRNED R-BS

Additional condenser for unit operation in supply air cooling mode

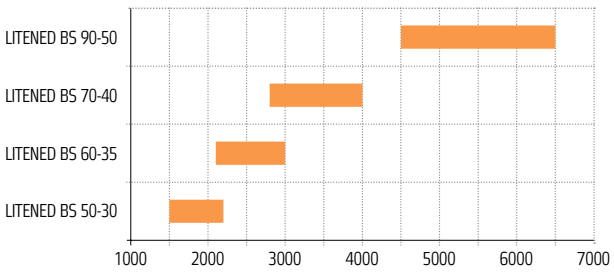
Air damper system for changing the flow direction of the supply and exhaust air for cooling and draining the outdoor air before it enters the pool

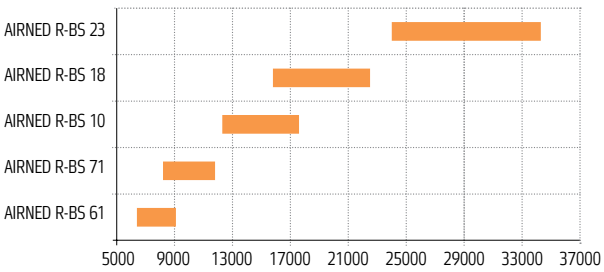
All elements of the AHU including fasteners and frame, are made of stainless steel or are powder coated

Heat exchangers and plate heat exchanger with anti-corrosion coating

Integrated cooling unit

Quick selection of size





Equipment for ice rinks
AIRNED R-LA

3 capacity steps of productivity regulation

Built-in heatpump control cabinet

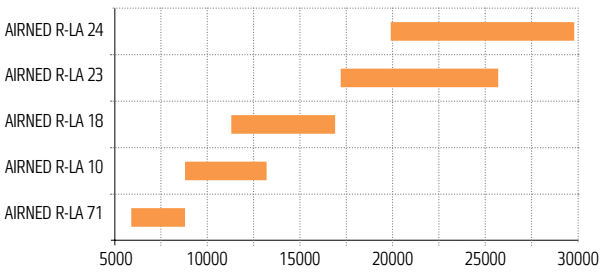
Low pressure oil return system

Liquid refrigerant supercooler increases compressor performance by 20%

Electronic expansion valve

Air damper system for year-round circulation without compromising the efficiency of the built-in cooling unit by CO_2 sensor

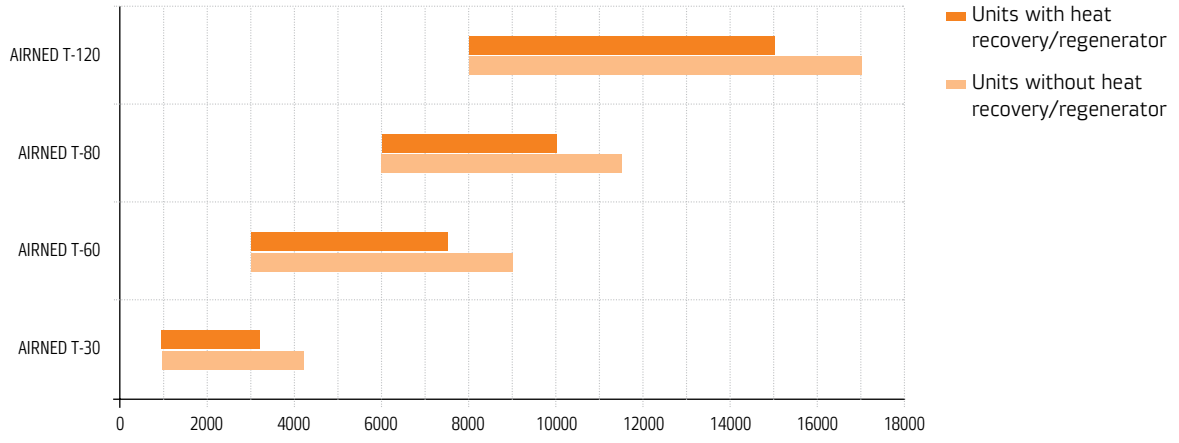
Quick selection of size



Ductless air handling units AIRNED-T

- The model range of AIRNED-T ductless air handling units, designed for the use in high single- storey premises (retail and exhibition halls, roofed stadiums, production facilities, sports halls), is presented in 4 standard sizes.
- There is no need for ventilation chambers inside the building. There are no supply and exhaust ducts, which saves usable space inside the room, and reduces the cost of design and installation work.
- Can be used in rooms with a ceiling height of at least 6 meters. When used in air heating mode (ΔT = 20ºC), the maximum ceiling height is 13 meters.
- Zonal maintenance of microclimate parameters. Maintaining comfortable parameters in the working area due to a specialized air distributor with variable jet geometry.
- The well-thought-out and practical design of the units provides convenient simple installation and maintenance, which does not require interruption of the main technological process and shutdown of the entire ventilation system.
- Climatic modification of the installation is U1. The working ambient temperature range is from -40ºC to + 40ºC. The maximum thickness of snow blanket is 500 mm.

Quick selection of the right type



The strong hold of the construction is ensured by a strong aluminum profile connected by plastic angular elements

Sandwich panels with a thickness of 45 mm are two galvanized steel with lightweight polyurethane foam filler. Effective reduction of noise and heat loss, as well as increased strength and rigidity of the sections

Removable service panels are equipped with plastic handles

The main frame has special holes for transportation and easy mounting

Adjustable swirl diffuser/nozzle of rectangular cross section

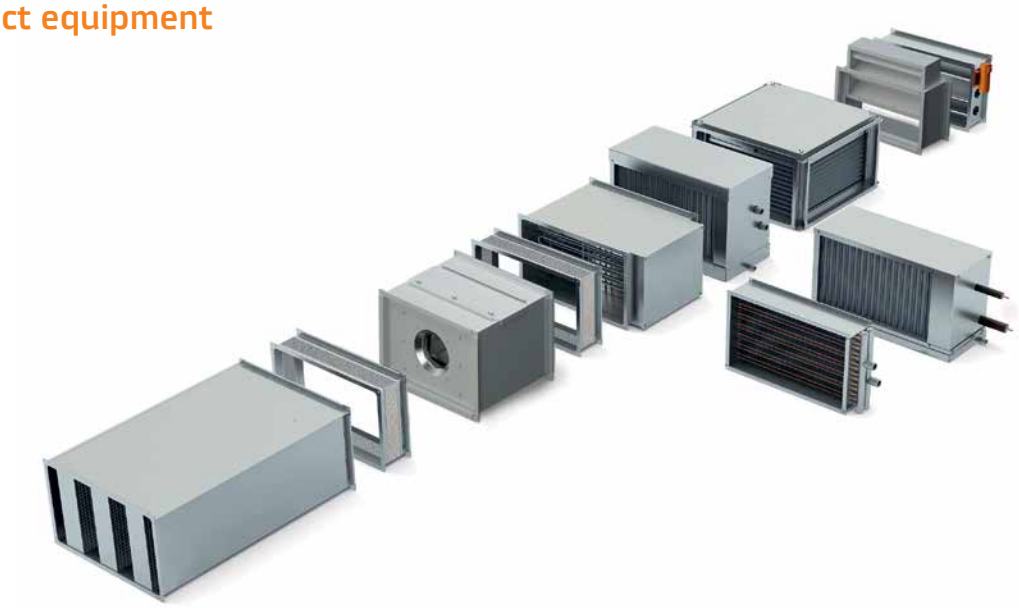
Explosion-proof equipment

Explosion protection is a measure ensuring that the equipment is explosion-proof and is suitable for use in explosive environments.

Explosion safety is the absence of an unacceptable ignition risk in the surrounding explosive environment, associated with the possibility of harm and (or) damage.

Explosion-proof equipment ensures safety of its use in explosion-hazardous premises and outdoor installations.

Duct equipment



Axial fans

Roof fans

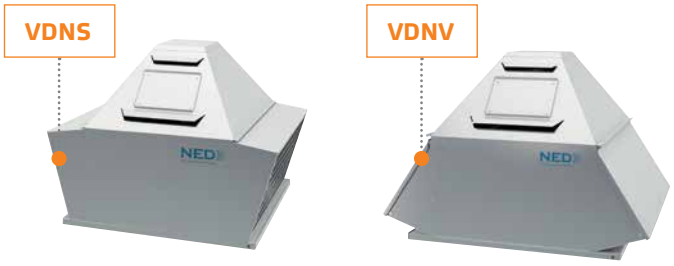
Radial fans

Air handling units LITENED-EX

Air handling units AIRNED-EX, AIRNED-R-EX

General purpose industrial fans

VDNS/VDNV — roof fans



VDNS and VDNV roof fans with air exhaust to the sides/up are designed to move air and other non-explosive gas mixtures.

Available in 12 sizes with a capacity of 700 m³/h to 100 000 m³/h and an available static pressure of up to 2100 Pa.

VDNV - 45 - A - 7.5 x 30 EX . C - KR U

- fan type
- impeller diameter, cm
- aerodynamic power index (A and B)
- electric motor power, kW
- motor speed reduced by 100 times, rpm
- execution type (EX — explosion-proof)
- explosion protection marking depending on the gas subgroup (B — IIB, C — IIC)
- special execution type (KR — corrosion-proof, AC — oxidation proof, HT — heat-resistant)
- climate version type (U, UHL and T)

VTR — radial fans

Radial fans VTR are designed to move air and other non-explosive gas mixtures.

Radial fans are available in 12 standard sizes with a capacity of 600 m³/h to 100 000 m³/h and provide static pressure of up to 2100 Pa.

VTR - 80 A - 1.1 x 10 EX . C - AC R 90 U

- fan type
- impeller diameter, cm
- aerodynamic power index (A and B)
- electric motor power, kW
- motor speed reduced by 100 times, rpm
- execution type (EX — explosion-proof)
- explosion protection marking depending on the gas subgroup (B — IIB, C — IIC)
- special execution type (KR — corrosion-proof, AC — oxidation proof, HT — heat-resistant)
- rotation direction of the impeller (R — right, L — left)
- housing installation angle
- climate version type (U, UHL and T)

Extra options for roof fans

MSN — installation curb

MSN-U — heat-insulated installation curb

TN — pallets

RVN — reverse-flow valve for roof fans

MPK — curb adapter for fire dampers

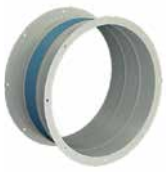
Extra options for radial fans

CZR — safety valve

VGPR — flexible joint, rectangular

VGKV — flexible joint, square

KGD — motor casing



VGKR — flexible joint, round

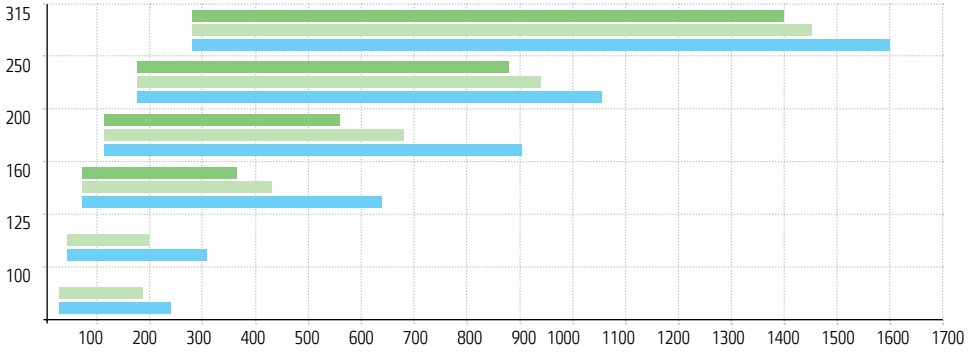
DO — vibration absorber

Round duct equipment

Equipment for round ducts

- Compact design, low acoustic properties and aesthetic appearance allow the equipment to be mounted both in special concealed recesses and inside serviced premises.
- The modular construction of the units allows the designer to quickly and easily select the required configuration.
- All elements are easily integrated into a round ducting system and do not require additional space for installation.
- For the connection of most of the elements with the round air ducts, no special measures are required to seal the joints, since the equipment is already provided with nipple sealing rings.
- An automation kit is offered for any installation, providing reliable protection, precise operation and flexible control (control units, sensors, dampers, actuators, etc.).

Quick selection of standard size



Radial fans KVR

The body is made of durable lightweight high-quality plastic. The impeller is backward curved. The overheating protection is provided for single-phase asynchronous motors with thermal contacts with automatic restart. Operating resource is 40,000 hours.

TYPE
KVR 100/1
KVR 125/1
KVR 160/1
KVR 200/1
KVR 250/1
KVR 315/1

KWH Water heater

A double row design. The body are made of galvanized steel. The surface of the heat exchanger is made of aluminum fins and copper pipes passing through them in a checkerboard pattern. Designed for operation at a maximum working pressure of 1.5 MPa and a maximum working temperature of the heat carrier of 170ºC.

TYPE
KWH 160/2
KWH 200/2
KWH 250/2
KWH 315/2

KEA Electric heaters

Housing and junction box are made of galvanized steel. Heating elements are made of stainless steel. Protection against overheating of the housing and air with two thermostats and a thermal contact circuit. The operating temperature range of the passing air is from -40ºC to +40ºC.

TYPE		
KEA 100/0,5	KEA 160/3	KEA 250/12
KEA 100/1,5	KEA 160/4,5	KEA 250/15
KEA 100/2	KEA 160/6	KEA 315/6
KEA 100/2,5	KEA 200/3	KEA 315/9
KEA 125/1,5	KEA 200/6	KEA 315/12
KEA 125/2	KEA 200/9	KEA 315/15
KEA 125/2,5	KEA 200/12	KEA 315/18
KEA 125/3	KEA 250/6	
KEA 160/2	KEA 250/9	

HTK Quick release clamps

These clamps are intended for the simple and convenient installation of circular ventilation systems' components, as well as for the prevention of vibration transmission from the fan to the air duct. The clamps are made of galvanised steel with an insulating sealing layer. They are tightened with two bolts.

TYPE
HTK 100
HTK 125
HTK 160
HTK 200
HTK 250
HTK 315

KKV Fan mounting brackets

Wall or ceiling mounting for KVR fans. Made of galvanised steel.

TYPE
KKV 100
KKV 125
KKV 160
KKV 200
KKV 250
KKV 315

KFC Cassette filters

Body of filter and inserts are made of galvanized steel. The removable cover has special mounts for easy replacement and removal of the filter insert. KFC filters are designed to work with KVC filter inserts.

TYPE
KFC 100
KFC 125
KFC 160
KFC 200
KFC 250
KFC 315

KCH Control dampers

The body and the flap of the damper are made of galvanized steel. Hermetic rubber seal on the edge of the flap. A manual mechanism with an angle lock is included in the standard supply. A pivoting square rod with a side of 8 mm ensures reliable locking of the damper actuator.

TYPE
KCH 100
KCH 125
KCH 160
KCH 200
KCH 250
KCH 315
PP drive stand

KNK Silencers

The silencer consists of two pipes of galvanized steel inserted one into the other. Sound absorbing material is a mineral fiber. Two modifications: 600 mm and 900 mm.

TYPE	
KNK 100/6	KNK 200/6
KNK 100/9	KNK 200/9
KNK 125/6	KNK 250/6
KNK 125/9	KNK 250/9
KNK 160/6	KNK 315/6
KNK 160/9	KNK 315/9

KVC Cassette inserts

Designed for KFC cartridge filters. Filtering material — synthetic fiber of EU3 purification category.

TYPE
KVC 100
KVC 125
KVC 160
KVC 200
KVC 250
KVC 315

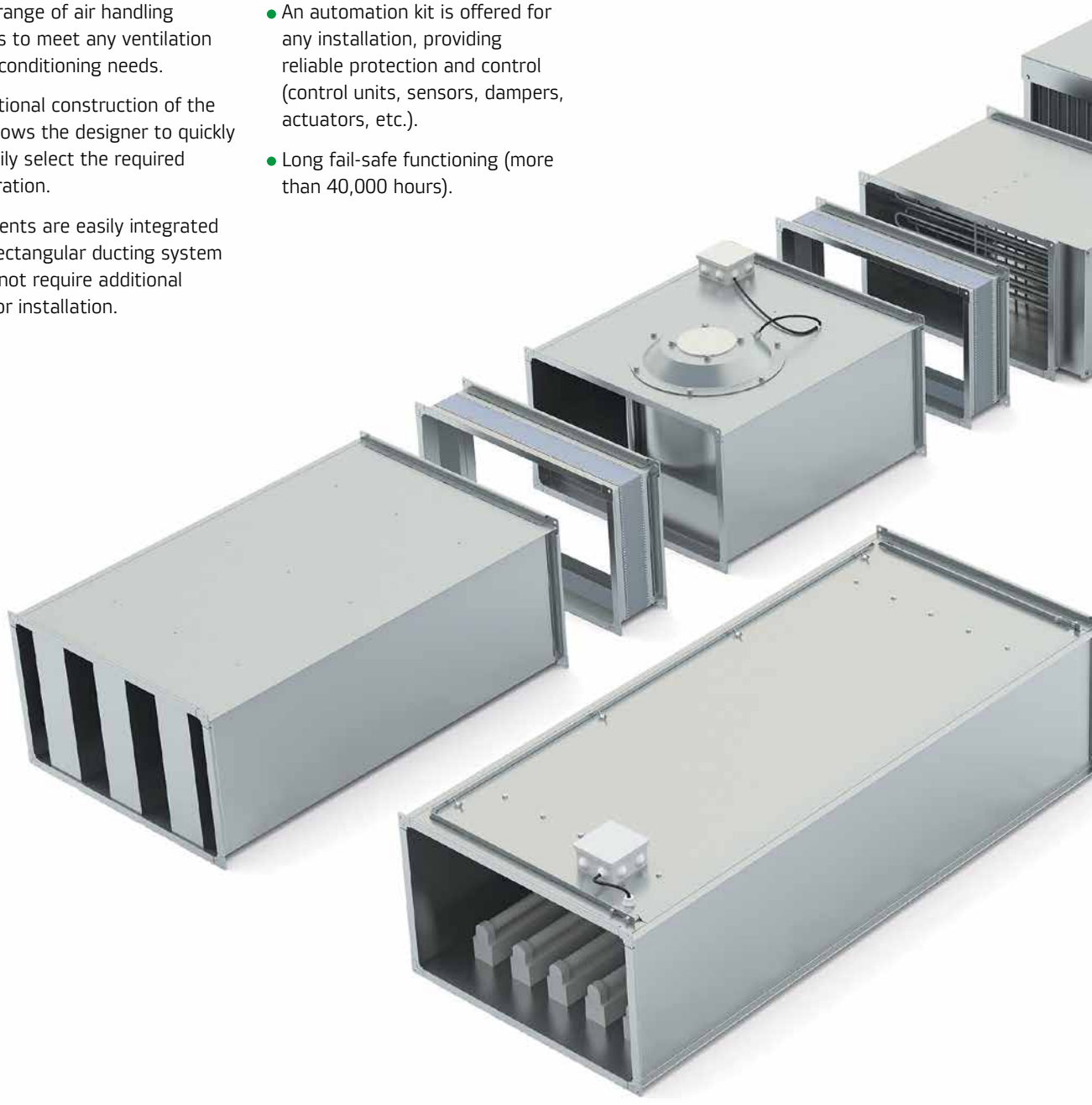
Return dampers KON

The damper body is made of galvanized steel. Inside the damper are built two one side spring-loaded blades made of aluminum.

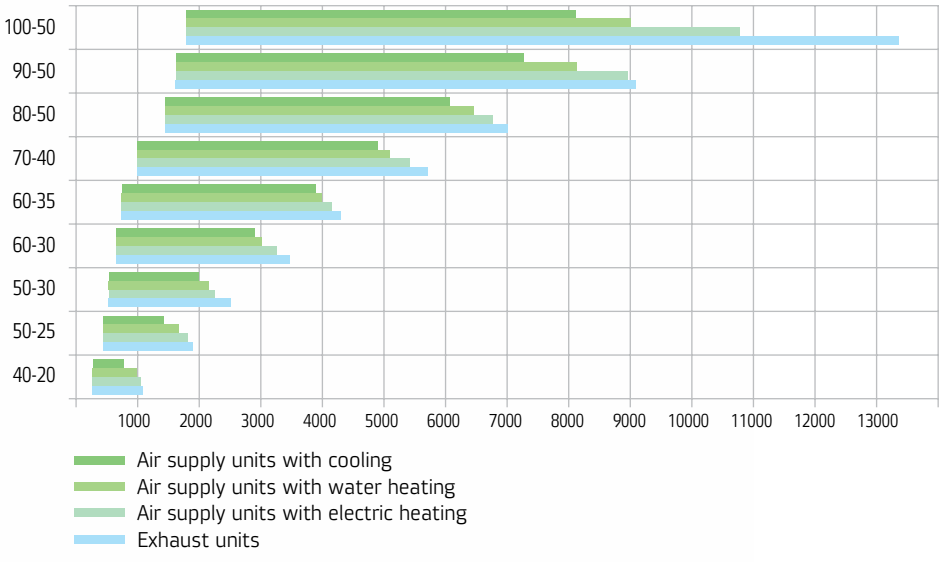
TYPE
KON 100
KON 125
KON 160
KON 200
KON 250
KON 315

Rectangular duct equipment

- A wide range of air handling schemes to meet any ventilation and air conditioning needs.
- The sectional construction of the units allows the designer to quickly and easily select the required configuration.
- All elements are easily integrated into a rectangular ducting system and do not require additional space for installation.
- An automation kit is offered for any installation, providing reliable protection and control (control units, sensors, dampers, actuators, etc.).
- Long fail-safe functioning (more than 40,000 hours).



Quick selection of standard size



VRN Fans

The fan housing is made of galvanised steel and has a removable service cover. Durable and light "free" impeller with backward bent blades made of polyamide reinforced with glass fibre is installed directly on the electric motor's shaft. Three-phase asynchronous electric motors are protected from overheating with the help of embedded heat contacts with remote circuit terminals. Insulation category: IP 54.

TYPE	
VRN 40-20/18.2D	VRN 70-40/31.2DM
VRN 50-25/22.2D	VRN 70-40/31.2D
VRN 50-25/20.2D	VRN 80-50/35.2D
VRN 50-30/25.2D	VRN 80-50/40.4D
VRN 50-30/22.2D	VRN 90-50/40.2D
VRN 60-30/28.2D	VRN 90-50/35.2D
VRN 60-30/25.2D	VRN 90-50/40.4D
VRN 60-35/31.2D	VRN 100-50/40.2D
VRN 60-35/28.2D	VRN 100-50/45.4D
VRN 70-40/35.2D	

VR Fans

The fan housing and impeller are made of galvanised steel. The backward curved impeller (standard sizes from 40-20 to 90-50) or "free" impeller with blades bent backward (standard size 100-50). Single-phase and three-phase asynchronous electric motors are protected from overheating with the help of embedded heat contacts with remote circuit terminals. Operating resource is more than 40,000 hours.

TYPE	
VR 40-20/20-4D	VR 60-35/31-6D
VR 40-20/20-4E	VR 70-40/35-4D
VR 50-25/22-4D	VR 70-40/35-6D
VR 50-25/22-4E	VR 70-40/35-8D
VR 50-25/22-6D	VR 80-50/40-4D
VR 50-30/25-4D	VR 80-50/40-6D
VR 50-30/25-4E	VR 80-50/40-8D
VR 50-30/25-6D	VR 90-50/45-4D
VR 60-30/28-4D	VR 90-50/45-6D
VR 60-30/28-4E	VR 90-50/45-8D
VR 60-30/28-6D	VR 100-50/63-4D
VR 60-35/31-4D	

Electric heater EA

Housing and junction box are made of galvanized steel. Heating elements are made of stainless steel. Protection against overheating of the housing and air with two thermostats and a thermal contact circuit. The operating temperature range of the passing air is from -40ºC to +40ºC.

TYPE		
EA 30-15/3	EA 60-30/15	EA 80-50/15
EA 30-15/4,5	EA 60-30/22,5	EA 80-50/30
EA 40-20/6	EA 60-30/30	EA 80-50/45
EA 40-20/12	EA 60-35/15	EA 80-50/60
EA 50-25/7,5	EA 60-35/22,5	EA 90-50/30
EA 50-25/15	EA 60-35/30	EA 90-50/45
EA 50-25/22,5	EA 70-40/15	EA 90-50/60
EA 50-30/7,5	EA 70-40/30	EA 100-50/45
EA 50-30/15	EA 70-40/45	EA 100-50/60
EA 50-30/22,5	EA 70-40/60	

Water heater WH

WH heaters are available in a double row and triple row design. The body is made of galvanized steel. The surface of the heat exchanger is made of aluminum fins and copper pipes passing through them in a checkerboard pattern. Designed for operation at a maximum working pressure of 1.5 MPa and a maximum working temperature of the heat carrier of 170ºC.

ТИП		
WH 30-15/2	WH 50-30/3	WH 80-50/2
WH 30-15/3	WH 60-30/2	WH 80-50/3
WH 40-20/2	WH 60-30/3	WH 90-50/2
WH 40-20/3	WH 60-35/2	WH 90-50/3
WH 50-25/2	WH 60-35/3	WH 100-50/2
WH 50-25/3	WH 70-40/2	WH 100-50/3
WH 50-30/2	WH 70-40/3	

Water coolers RW

The heat exchanger has three-row design. The casing is made of galvanized steel. The surface of the heat exchanger is made of aluminum fins and copper pipes passing through them. All coolers are equipped with a profile plastic droplet eliminator and a condensate tray with catch&drain manifold for collecting and draining condensate. RW coolers are designed for operation at a maximum working pressure of a coolant of 1.5 MPa.

TYPE	
RW 40-20	RW 70-40
RW 50-25	RW 80-50
RW 50-30	RW 90-50
RW 60-30	RW 100-50
RW 60-35	

Direct expansion coils RF

The heat exchanger has single- circuit three-row design. The casing is made of galvanized steel. The surface of the heat exchanger is made of aluminum fins and copper pipes passing through them. All coolers are equipped with a profile plastic droplet eliminator and a condensate tray with catch&drain manifold for collecting and draining condensate. Optional installation of a capillary thermostat to protect the cooler from frosting is available.

TYPE	
RF 40-20	RF 70-40
RF 50-25	RF 80-50
RF 50-30	RF 90-50
RF 60-30	RF 100-50
RF 60-35	

VRK Roof fans

The fan housing and impeller are made of galvanised steel. The backward curved impeller is used. Single-phase and three-phase asynchronous electric motors are protected from overheating with the help of embedded heat contacts with remote circuit terminals. Operating resource is more than 50,000 hours. The fans are mounted horizontally on flat-deck or slanting roofs.

TYPE	
VRK 30/22-2E	VRK 63/50-4D
VRK 40/31-4D	VRK 63/50-6D
VRK 40/32-4D	VRK 90/56-4D
VRK 56/35-4D	VRK 90/56-6D
VRK 56/35-4E	VRK 90/63-6D
VRK 56/40-4D	VRK 94/56-4D
VRK 56/40-4E	VRK 94/63-4D
VRK 63/45-4D	VRK 94/63-6D
VRK 63/45-4E	VRK 100/71-6D

LB Bactericidal sections

Air sanitising by means of ultraviolet bactericidal irradiation. Body is made of galvanised steel. The sections are equipped with low pressure mercury gas-discharge bactericidal lamps with a power of 36 W and 75 W and a voltage of 230 V.

TYPE		
LB 40-20/143	LB 60-30/190	LB 80-50/302
LB 40-20/95	LB 60-30/127	LB 80-50/206
LB 40-20/63	LB 60-30/79	LB 80-50/127
LB 40-20/32	LB 60-30/47	LB 80-50/79
LB 50-25/159	LB 60-35/222	LB 90-50/365
LB 50-25/111	LB 60-35/143	LB 90-50/238
LB 50-25/63	LB 60-35/95	LB 90-50/159
LB 50-25/32	LB 60-35/63	LB 90-50/95
LB 50-30/174	LB 70-40/270	LB 100-50/397
LB 50-30/111	LB 70-40/174	LB 100-50/270
LB 50-30/79	LB 70-40/111	LB 100-50/190
LB 50-30/47	LB 70-40/63	LB 100-50/111

Cassette filters FRC and DFC filter inserts

Body of filter and inserts are made of galvanized steel. The removable cover has special mounts for easy replacement and removal of the filter insert. FRC cassette filters are designed to work with DFC filter inserts. DFC filter inserts are not included. The filter element of the cleaning class EU3 is a non-woven cloth made of synthetic fibers, mounted on a galvanized steel mesh to protect against deformation by air flow.

TYPE	
FRC(DFC) 30-15	FRC(DFC) 60-35
FRC(DFC) 40-20	FRC(DFC) 70-40
FRC(DFC) 50-25	FRC(DFC) 80-50
FRC(DFC) 50-30	FRC(DFC) 90-50
FRC(DFC) 60-30	FRC(DFC) 100-50

Pocket filters FRP and FRU (short)

Body of filter and insert is made of galvanized steel. The removable cover has special mounts for easy replacement and removal of the filter insert. Pocket filters are designed to work with filter inserts DFP (for FRP filters) and DFU (for FRU filters).
DFP and DFU pocket filters DFC filter inserts are not included.

TYPE	
FRP/FRU 30-15	FRP/FRU 60-35
FRP/FRU 40-20	FRP/FRU 70-40
FRP/FRU 50-25	FRP/FRU 80-50
FRP/FRU 50-30	FRP/FRU 90-50
FRP/FRU 60-30	FRP/FRU 100-50

Filter inserts DFP

DFP filter inserts for FRP pocket filters. DFP filter inserts have a cleaning classes of EU3-EU9. The filter element is a non-woven cloth made of synthetic fibers, mounted on a frame in the form of pockets.

TYPE
DFP 30-15 G3/F5/F7/F9
DFP 40-20 G3/F5/F7/F9
DFP 50-25 G3/F5/F7/F9
DFP 50-30 G3/F5/F7/F9
DFP 60-30 G3/F5/F7/F9
DFP 60-35 G3/F5/F7/F9
DFP 70-40 G3/F5/F7/F9
DFP 80-50 G3/F5/F7/F9
DFP 90-50 G3/F5/F7/F9
DFP 100-50 G3/F5/F7/F9

Filter inserts DFU

DFU filter inserts for FRU pocket filters. DFU filter inserts have a cleaning class of EU3. The filter element is a non-woven cloth made of synthetic fibers, mounted on a frame in the form of pockets.

TYPE	
DFU 30-15 G3	DFU 60-35 G3
DFU 40-20 G3	DFU 70-40 G3
DFU 50-25 G3	DFU 80-50 G3
DFU 50-30 G3	DFU 90-50 G3
DFU 60-30 G3	DFU 100-50 G3

REC Plate heat recovery

Efficiency of exhaust air thermal energy use reaches 70%. Body is made of galvanised steel. The heat exchange surface represents a package of 0.2 mm thick specially shaped aluminium plates. Complete set includes a pan and nozzle with a fastening nut for draining of condensate.

TYPE	
REC 40-20	REC 70-40
REC 50-25	REC 80-50
REC 50-30	REC 90-50
REC 60-30	REC 100-50
REC 60-35	

Silencers NK

The silencer housing is made of galvanized steel. Sound- absorbing plates consist of non- combustible basalt fiber mineral wool covered with fiberglass to prevent blowing particles out.

TYPE	
NK 30-15	NK 60-35
NK 40-20	NK 70-40
NK 50-25	NK 80-50
NK 50-30	NK 90-50
NK 60-30	NK 100-50

Air damper CHR

The damper body is made of galvanized steel, and the air blades are made of aluminum. The rubber seals on the edges of the blades. A pivoting square rod with a side of 10 mm ensures reliable locking of the damper actuator.

TYPE	
CHR 30-15	CHR 60-35
CHR 40-20	CHR 70-40
CHR 50-25	CHR 80-50
CHR 50-30	CHR 90-50
CHR 60-30	CHR 100-50

FH Flexible joints

Prevent vibration transfer from the fan to the air-duct network and compensate the thermal expansion. Two flanges are made of galvanised steel with vinyl tape.

TYPE	
FH 40-20	FH 70-40
FH 50-25	FH 80-50
FH 50-30	FH 90-50
FH 60-30	FH 100-50
FH 60-35	

FN… Q Axial wall-mounted fans

The fan housing and square wall-mounted panel are made of galvanised steel. The crescent blades are made of aluminium alloy and manufactured by Ziehl-Abegg AG, Germany. Single-phase and three-phase asynchronous electric motors are protected from overheating with the help of embedded heat contacts with remote circuit terminals.

TYPE		
FN025-2EQ.WA.A7	FN045-SDQ.4F.A7P1	FN063-6EQ.4M.A7P1
FN025-4EQ.W8.A7	FN045-4EQ.4I.A7P1	FN071-VDQ.6N.A7P2
FN030-4EQ.WA.A7	FN045-6EQ.4FA7P1	FN071-SDQ.6FA7P1
FN031-4DQ.0F.A7P2	FN050-VDQ.4I.A7P1	FN071-ADQ.6FA7P1
FN031-4EQ.0F.A7P2	FN050-4EQ.4I.A7P1	FN080-SDQ.6N.A7P3
FN035-4DQ.0F.A7P2	FN050-SDQ.4FA7P1	FN080-ADQ.6N.A7P2
FN035-4EQ.0F.A7P2	FN050-6EQ.4FA7P1	FN091-VDQ.7Q.A5P1
FN035-6EQ.0C.A7P2	FN056-VDQ.4M.A7P2	FN091-SDQ.7M.A5P1
FN040-VDQ.0F.A7P2	FN056-SDQ.4FA7P2	FN0100-SDQ.7Q.A5P1
FN040-4EQ.2F.A7P1	FN056-6EQ.4I.A7P2	FN0100-ADQ.7M.A5P1
FN040-6EQ.0F.A7P1	FN063-VDQ.6N.A7P4	
FN045-VDQ.4FA7P1	FN063-SDQ.4I.A7P1	

FN… F Axial duct fans

The fan housing and duct shell are made of galvanised steel. The crescent blades are manufactured by Ziehl-Abegg AG, Germany. Single-phase and three-phase asynchronous electric motors are protected from overheating with the help of embedded heat contacts with remote circuit terminals.

ТИП		
FN031-4EF.0F.V7P2	FN045-6EF.4F.V7P1	FN056-6EF.4I.V7P2
FN031-4DF.0F.V7P2	FN045-VDF.4F.V7P1	FN063-VDF.6N.V7P4
FN035-4EF.0F.V7P3	FN045-SDF.4F.V7P1	FN063-SDF.4I.V7P1
FN035-6EF.0C.V7P2	FN050-4EF.4I.V7P1	FN063-6EF.4M.V7P1
FN035-VDF.0F.V7P2	FN050-6EF.4F.V7P1	FN071-VDF.6N.V7P2
FN040-4EF.0F.V7P2	FN050-VDF.4I.V7P1	FN071-SDF.6F.V7P1
FN040-6EF.0F.V7P1	FN050-SDF.4F.V7P1	FN071-ADF.6F.V7P1
FN040-VDF.0F.V7P3	FN056-VDF.4M.V7P2	FN080-SDF.6N.V7P2
FN045-4EF.4I.V7P1	FN056-SDF.4F.V7P2	FN080-ADF.6N.V7P2

KPN (KPN-S) Installation curbs

These pods are designed for the installation of roof fans on the roofs of buildings. Available in standard (KPN) version and with a silencer (KPN-S). Made of galvanised steel. Installation curbs with silencers have built-in noise reduction plates.

TYPE	
KPN/ KPN-S 30	KPN/ KPN-S 90
KPN/ KPN-S 40	KPN/ KPN-S 94
KPN/ KPN-S 56	KPN/ KPN-S 100
KPN/ KPN-S 63	

TOS Reverse-flow valves

Reverse-flow valves are designed to prevent the formation of backdraft.

TYPE	
TOS 30	TOS 90
TOS 40	TOS 94
TOS 56	TOS 100
TOS 63	

TOB-W Air and heat curtain

The process chamber and the impeller, developed jointly with the PUNKER corporation (Germany), ensure the high quality and reliability of the fans. Efficient heat pick-up thanks to the location of the engine in front of the heat exchanger.
Possibility to turn the heat exchanger (location of branch pipes on the other side). Use in openings from 1 to 2 m. Operating range up to 4 m.

TYPE
TOB-W 8
TOB-W 10
TOB-W 12
TOB-W 16
TOB-W 22

CAP-N… H Air curtains without heating

Universal prefabricated structure comprises the intake grid, VRN fan, as well as a set of slotted sections with a total length from 2 to 5 m. The curtains are delivered disassembled. Complete set includes the bottom plug.
It is possible to mount the curtains both in a horizontal and upright position.

TYPE	
CAP-N 60-30 H/2	CAP-N 70-40 H/2
CAP-N 60-30 H/2,5	CAP-N 70-40 H/2,5
CAP-N 60-30 H/3	CAP-N 70-40 H/3
CAP-N 60-30 H/3,5	CAP-N 70-40 H/3,5
CAP-N 60-30 H/4	CAP-N 70-40 H/4
CAP-N 60-30 H/4,5	CAP-N 70-40 H/4,5
CAP-N 60-30 H/5	CAP-N 70-40 H/5
CAP-N 60-35 H/2	CAP-N 80-50 H/2
CAP-N 60-35 H/2,5	CAP-N 80-50 H/2,5
CAP-N 60-35 H/3	CAP-N 80-50 H/3
CAP-N 60-35 H/3,5	CAP-N 80-50 H/3,5
CAP-N 60-35 H/4	CAP-N 80-50 H/4
CAP-N 60-35 H/4,5	CAP-N 80-50 H/4,5
CAP-N 60-35 H/5	CAP-N 80-50 H/5
CAP-N 70-40 H/2DM	CAP-N 90-50 H/2
CAP-N 70-40 H/2,5DM	CAP-N 90-50 H/2,5
CAP-N 70-40 H/3DM	CAP-N 90-50 H/3
CAP-N 70-40 H/3,5DM	CAP-N 90-50 H/3,5
CAP-N 70-40 H/4DM	CAP-N 90-50 H/4
CAP-N 70-40 H/4,5DM	CAP-N 90-50 H/4,5
CAP-N 70-40 H/5DM	CAP-N 90-50 H/5

CAP-N…W2 Air curtains with water heating

Universal prefabricated structure comprises the intake grid, FRC cartridge fan with EU3 joint, WH two-line water heater, VRN fan, as well as a set of slotted sections with a total length from 2 to 5 m. The curtains are delivered disassembled. The complete set includes the bottom plug. It is possible to mount the curtains both in a horizontal and upright position.

TYPE	
CAP-N 60-30 W2/2	CAP-N 70-40 W2/2
CAP-N 60-30 W2/2,5	CAP-N 70-40 W2/2,5
CAP-N 60-30 W2/3	CAP-N 70-40 W2/3
CAP-N 60-30 W2/3,5	CAP-N 70-40 W2/3,5
CAP-N 60-30 W2/4	CAP-N 70-40 W2/4
CAP-N 60-30 W2/4,5	CAP-N 70-40 W2/4,5
CAP-N 60-30 W2/5	CAP-N 70-40 W2/5
CAP-N 60-35 W2/2	CAP-N 80-50 W2/2
CAP-N 60-35 W2/2,5	CAP-N 80-50 W2/2,5
CAP-N 60-35 W2/3	CAP-N 80-50 W2/3
CAP-N 60-35 W2/3,5	CAP-N 80-50 W2/3,5
CAP-N 60-35 W2/4	CAP-N 80-50 W2/4
CAP-N 60-35 W2/4,5	CAP-N 80-50 W2/4,5
CAP-N 60-35 W2/5	CAP-N 80-50 W2/5
CAP-N 70-40 W2/2DM	CAP-N 90-50 W2/2
CAP-N 70-40 W2/2,5DM	CAP-N 90-50 W2/2,5
CAP-N 70-40 W2/3DM	CAP-N 90-50 W2/3
CAP-N 70-40 W2/3,5DM	CAP-N 90-50 W2/3,5
CAP-N 70-40 W2/4DM	CAP-N 90-50 W2/4
CAP-N 70-40 W2/4,5DM	CAP-N 90-50 W2/4,5
CAP-N 70-40 W2/5DM	CAP-N 90-50 W2/5

CAP-N…E Air curtains with electric heating

Universal prefabricated structure comprises the intake grid, FRC cartridge fan with EU3 joint, EA electric heater, VRN fan, as well as a set of slotted sections with a total length from 2 to 5 m. The curtains are delivered disassembled. Complete set includes the bottom plug. It is possible to mount the curtains both in a horizontal and upright position.

TYPE	
CAP-N 60-30 E/2	CAP-N 70-40 E/2
CAP-N 60-30 E/2,5	CAP-N 70-40 E/2,5
CAP-N 60-30 E/3	CAP-N 70-40 E/3
CAP-N 60-30 E/3,5	CAP-N 70-40 E/3,5
CAP-N 60-30 E/4	CAP-N 70-40 E/4
CAP-N 60-30 E/4,5	CAP-N 70-40 E/4,5
CAP-N 60-30 E/5	CAP-N 70-40 E/5
CAP-N 60-35 E/2	CAP-N 80-50 E/2
CAP-N 60-35 E/2,5	CAP-N 80-50 E/2,5
CAP-N 60-35 E/3	CAP-N 80-50 E/3
CAP-N 60-35 E/3,5	CAP-N 80-50 E/3,5
CAP-N 60-35 E/4	CAP-N 80-50 E/4
CAP-N 60-35 E/4,5	CAP-N 80-50 E/4,5
CAP-N 60-35 E/5	CAP-N 80-50 E/5
CAP-N 70-40 E/2DM	CAP-N 90-50 E/2
CAP-N 70-40 E/2,5DM	CAP-N 90-50 E/2,5
CAP-N 70-40 E/3DM	CAP-N 90-50 E/3
CAP-N 70-40 E/3,5DM	CAP-N 90-50 E/3,5
CAP-N 70-40 E/4DM	CAP-N 90-50 E/4
CAP-N 70-40 E/4,5DM	CAP-N 90-50 E/4,5
CAP-N 70-40 E/5DM	CAP-N 90-50 E/5

Fire safety
Ventilation equipment

Fire safety dampers

- The dampers prevent the spread of fire and combustion products along air ducts, shafts, ventilation and air conditioning systems' ducts; they are also used in the air-supply and exhaust smoke ventilation systems.
- Certified in compliance with the requirements set forth by Federal Law No. 123-FZ dated 22 July 2008 "Technical regulations for fire safety requirements."
- The dampers should be used according to the requirements set by SP 7.13130.2013 and SP 60.13330.2016.
- The dampers are not subject to installation in the premises of fire and explosion safety categories A and B, in the places engaged in sucking out the explosive and fire hazardous media and systems involving the ventilation thereof.
- Climate version and placement category: UZ according to GOST 15150-69 (environmental air temperature from -20 ºC to +40 ºC, direct impact of atmospheric precipitation is not allowed).
- The damper body is made of galvanised steel. The fire-resistance material is used for the rotary blade. The blade of PPK-1D damper is made of galvanised steel.
- The thermosetting gasket is used along the perimeter of the rotary blade of the dampers, it expands in the case of high temperature, thus ensuring the high air-tightness of the closed damper.
- It is possible to mount the damper in any position in the case of the provision of free access to the drive and servicing hatches. No servicing hatches are provided in the smoke dampers.
- In some cases, it is necessary to provide direct sections of the air-duct upstream and downstream of the damper, the length of these sections should not be less than the blades' span beyond the body's limit.

PPK-2K Fire safety dampers for round ducts

PPK-2K - 90 - 250 - O - M 220 - T - F

- Reference designation of the damper;
- Fire-resistance limit in minutes (60, 90, 120 minutes);
- Rated size (diameter) of the damper cross-section, mm;
- Functional destination (O — normally open, Z — normally closed);
- Drive type (M — electromagnetic, S — electromechanical);
- Drive supply voltage (220 – 220 V, 24 – 24 V);
- Provision of thermal sensor (TD) with electromagnetic drive or electromechanical drive (T — provided, X — not provided);
- Damper connection type (F — flange, N — nipple).

PPK-2 Fire-fighting dampers for rectangular ducts

PPK-2 - 90 - 600x300 - O - M 220 - T

- Reference designation of the damper;
- Fire-resistance limit in minutes (60, 90, 120 minutes);
- Rated size (width and height) of the damper cross-section, mm;
- Functional destination (O — normally open, Z — normally closed);
- Drive type (M — electromagnetic, S — electromechanical);
- Drive supply voltage (220 – 220 V, 24 – 24 V);
- Provision of thermal sensor (TD) with electromagnetic drive or electromechanical drive (T — provided, X — not provided).

PPK-1D Smoke dampers

PPK-1D - 600x400 - M 220 - V - S

- Reference designation of the damper;
- Rated size of damper cross-section (width and height respectively), mm;
- Drive type (M — electromagnetic, S — electromechanical);
- Drive supply voltage (220 – 220 V, 24 – 24 V);
- Damper placement (V — internal, N — external);
- Design version (S — wall-mounted, K — duct).

Smoke exhaust fans

VDNS/VDNV — roof smoke exhaust fans

VDNS

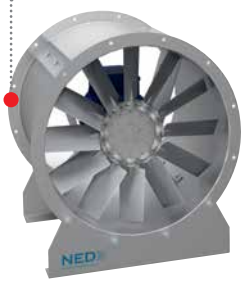
VDNV

Roof fans with air exhaust to the sides/up are designed to move smoke-air mixtures with a temperature of 400ºC or 600ºC for 120 minutes in case of fire.

Available in 12 sizes with a capacity of 1500 m^3/h to 100 000 m^3/h and an available static pressure of up to 2100 Pa.

VOC/VOP — axial pressurisation fan

VOC



VOP

Axial pressurisation fans are used in exhaust smoke ventilation systems (as air pressurisation fans). It is possible to transfer gas-steam-air mixtures with temperatures from –40 ºC to +60 ºC.

The fans are available in 11 standard sizes with a capacity of 1500 m^3/h to 120 000 m^3/h and provide a static pressure of up to 1400 Pa.

VTR — radial fans

VTR radial fans are designed to transfer air-smoke mixtures with a temperature from 400 ºC to 600 ºC in the case of fire during 2 hours.

Radial fans are available in 12 standard sizes with a capacity of 1500 m^3/h to 100 000 m^3/h and provide a static pressure of up to 2100 Pa.

VDNS - DU - 600 - 71 - B - 11 x 15 EX . B - KR U

- Fan type
- Destination (smoke removal)
- Maximum temperature of transported medium
- Impeller diameter, cm
- Aerodynamic power index (A and B)
- Electric motor power, kW
- Motor speed reduced by 100 times, rpm
- Execution type (EX — explosion-proof)
- Explosion protection marking depending on the gas subgroup (B — IIB, C — IIC)
- Special execution type (KR — corrosion-proof, AC — oxidation proof)
- Climate version type (U, UHL and T)

VOC - 63 - 11 x 30

- Fan type (VOC — axial pressurisation; VOP — roof-mounted axial pressurisation)
- Impeller diameter, cm
- Electric motor power, kW
- Motor speed reduced by 100 times, rpm

VTR - DU 600 - 80 A - 11 x 15 EX . B - KR L 0 U

- Fan type
- Destination (smoke removal)
- Maximum temperature of transported medium
- Impeller diameter, cm
- Aerodynamic power index (A and B)
- Electric motor power, kW
- Engine speed reduced by 100 times, rpm
- Execution type (EX — explosion-proof)
- Explosion protection marking depending on the gas subgroup (B — IIB, C — IIC)
- Special execution type (KR — corrosion-proof, AC — oxidation proof)
- Rotation direction of the impeller (R — right, L — left)
- Housing installation angle
- Climate version type (U, UHL and T)

Automatics and Process Control

Automatics

Control of any ventilation and air-conditioning equipment.

A wide range of control units and boards using components provided by leading global manufacturers (Carel, Siemens, ABB, Schneider Electric etc.) ensures high adjustment accuracy, stability, reliability, as well as equipment operation safety.

The cleverly developed design of control units allows automatics and power elements to be allocated in a single body.

A wide range of automatics is offered for all installations, as follows:

- units controlling different types of installations;
- control and safety devices (safety relays, smooth start devices, control pannel for fans, control pannel for air curtains with water and electric heating, remote control devices);
- speed control (electronic, transformer type, frequency transducers);
- temperature gauges, pressure gauges, thermostats, hydrostats, air quality gauges;
- air vents drives;
- mixing units;
- three-way valves and drives for three-way valves;
- circulating pumps;
- the warehouse stock is maintained for all automatics, allowing the necessary equipment to be prepared and shipped immediately.

Process Control Systems

The company NED is an official representative of SIEMENS in Russia and offers the complete range of products for the systems involving management and process control of engineering equipment in the buildings.

Possibilities

- Integrated set of indoor engineering systems involving control of ventilation, cold supply, water supply, heat supply; supervision of illumination switch on and switch off as well as heat and electricity supply.
- Multiuser system controlling parameters inside each of the premises individually.
- Display and control of the parameters in one single control room and (operator's automated work station).
- Centralised power-consumption control.
- Modular structure (full operational capability of each controller in automatic mode).
- Expansion (scalability) of the systems in case of necessity.
- Compatibility and interaction of different typologies and systems of previous generation (previous years of production) protect the investments.
- Simple to learn to work with dispatcher's stations.

- Customisation of control units in accordance with the customer's individual requirements.
- Power consumption and operation cost reduction thanks to optimisation of the equipment's operation.
- Flexible remote control.
- Control of several remote facilities from a single control room.
- Remote diagnostics, identification and processing of alarm signals.
- Transmission of alarm signals, depending on the time, system and priority and the transfer of such signals to various computerised control stations.
- Reception and transmission of data and operation reports is limited to those required by the user.
- Automatic message transmission from the lower-level systems to a computerised control station.

- Possibility to transmit data to mobile phones, pagers, fax machines or e-mails.
- Possibility to create archives.
- Visualisation of the equipment's functional schemes with the possibility to control and supervise the actual or set parameters.
- Plotting the equipment operation.
- Possibility to connect the central computerised global-control station to two or more facilities at the same time.

Local process-control system BOSS

New local process-control system CAREL for medium and large-size systems with built-in Wi-Fi and all mobile device support.

Process-control systems have been greatly developed lately. Automation systems offered by various manufacturers are on the market now. One of the most trusted and reliable manufacturers is the company “Carel”. NED offers products manufactured by this company.

Outstanding features

- The boss system has a built-in Wi-Fi module on all models for the deployment of a local network and provision of access to the process-control system from different devices without the need to create a network infrastructure.
- Full access from all mobile devices, including commissioning and daily maintenance.
- Boss is the first of all CAREL process control systems to support BACnet protocol, considered to be the most popular HVAC process control protocol.

Advantages of the process control system “boss”

Advantages of the process control system “boss”. Optimisation and energy saving. Analysis and comparison algorithms help to optimise energy consumption in a simple and convenient manner.

Secure data transfer and customisable operating system. Support of HTTPS protocol for secure data transfer via network communication between the process control system “boss” and other devices. Customisable operation system for maximum reliability.

Central control. The system “boss” provides the automatic synchronisation of data and alarms with RemotePRO so that all the connected systems can be controlled from one single central location with all the latest information at hand.

User-friendly and customisable interface. Access to any data, including configuration parameters and device control.

Remote service. Browser provides access to the standard operating system’s functions and this is a new feature of the process control systems. In practice, this feature enables authorised technicians to carry out remote maintenance without having to go to the site.

Installation. Absence of a built-in fan and heat transfer through a rugged aluminium housing allows the system “boss” to be installed in virtually any environment, even at the production site where conditions are considered to be the most challenging ones.

Integration

Integration of devices from other manufacturers.
BACnet Master protocol is supported in MS/TP (RS485) and TCP/IP modes along with Modbus RTU and Modbus TCP/IP protocols and is also used by the system "boss". These protocols allow one to connect the process control systems to almost any equipment sold on the climate control and cooling equipment market.

Integration to ACS (Automatic Control Systems).
The system "boss" also supports BACnet protocol; in TCP/IP Slave mode, allowing it to be integrated into a higher-level automatic control system (ACS) for the complete control of all engineering subsystems.

System optimisation functions

- Key performance indicators. The possibility to analyse the thermodynamic model of individual devices connected to the system "boss".
- Control and management of energy consumption.
- Parameters control. Control of changes in the main parameters values of the equipment connected to the process control system.
- Logical devices and logical variables.
- Independent creation of logical algorithms.
- Optimal switching on and off of climate equipment.
- Optimal control of lighting according to the time of day.
- Optimal self-cooling in HVAC systems.

Cloud service for process control — tERA

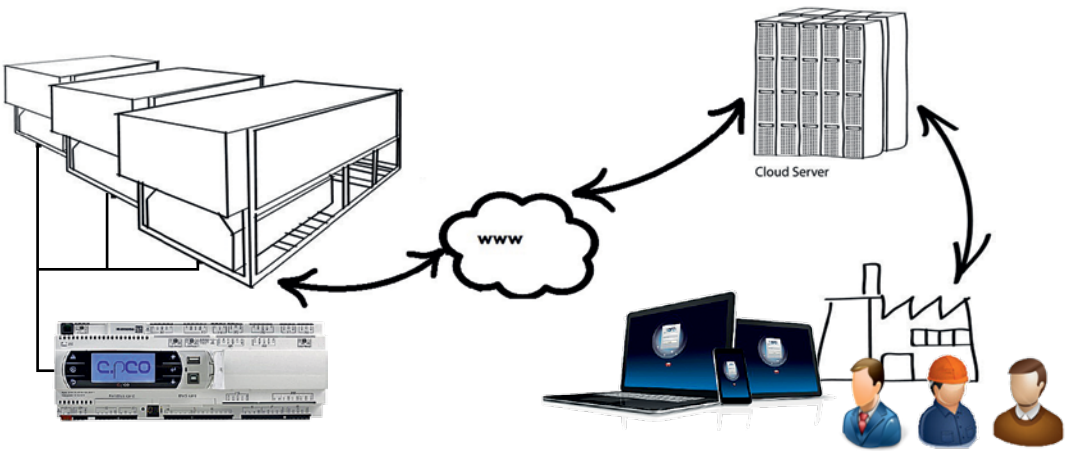
tERA — cloud process control service that provides data exchange with field devices and allows you to interact with them in real time to analyse the collected data.

Communication architecture of tERA is c.pCO mini

Data exchange between tERA portal and c.pCO mini controller is carried out via the Internet and Ethernet connection. The user interface is completely web-based, which makes it possible to use all the possibilities of tERA portal using any web browser. Users can use the system without having to install any additional software on their computers.

Key features

- Key features
- Safe access
- Display management
- Alarm and notification management
- Device availability control
- Reading — recording of variables in real time
- Loading of user interfaces
- Remote connection to the controller interface
- Archived data arrangement
- Data analysis with the help of charts
- Parameter charts in real time
- Data export
- Updating of applications for c.pCO mini controllers



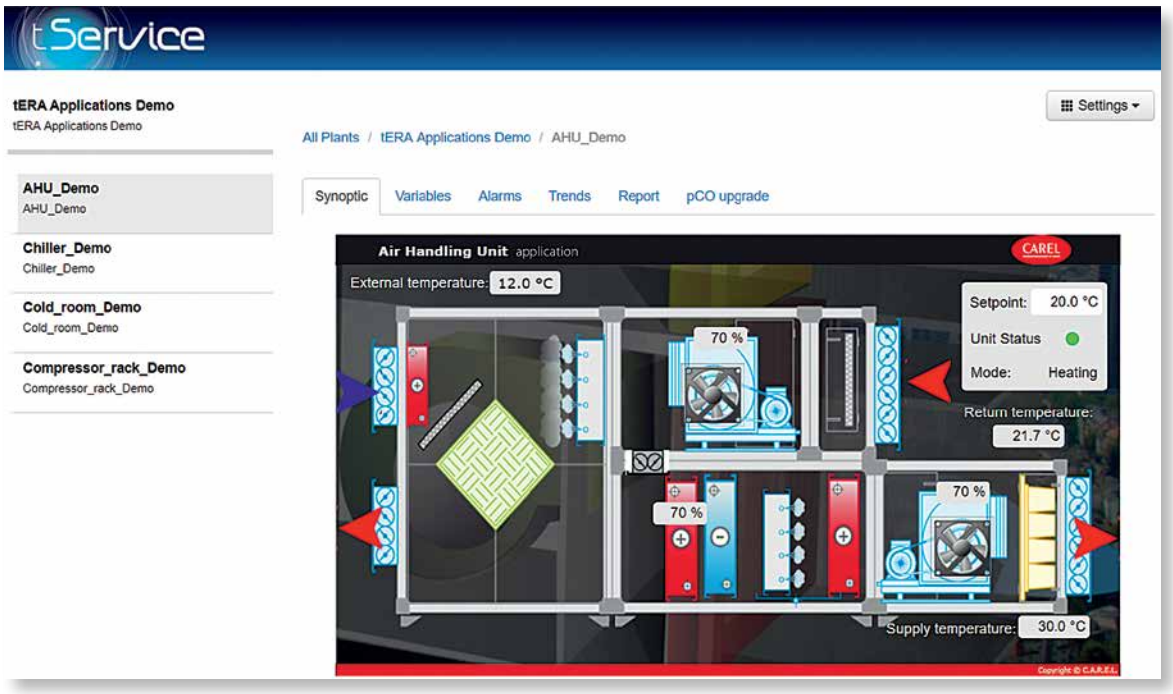
Advantages of tERA

- No need to install any server equipment on site.
- tERA Internet portal can be accessed from any device connected to the global network.
- No special configuration of network equipment is required at the site where the automation systems that are supposed to be controlled are installed.
- The detailed information of the equipment and control possibilities depends on the type of user set up by the local administrator.
- Automatic generation of reports both based on the schedule and upon the occurrence of certain events that require actions of the service personnel.
- Field controller software update support.
- Built-in tools for analysis of equipment behaviour by comparing parameters over time and between different facilities.
- The user interface can be either minimalistic, consisting only of tables and graphs, or customised, designed taking the wishes of a particular customer into account.

Application

tERA service is used for networks of small and medium-sized facilities, where it is impractical to use physical process control servers due to few units of equipment at each of the facilities, and the number of facilities themselves is large, which makes it difficult to provide a direct connection to each of them.

tERA service is also an optimal platform for servicing companies offering their customers periodic maintenance and equipment repair services.



Control units ACW(E) CR1, CR2

ACE - CR1 - 60 - 3 R 1 R - T1

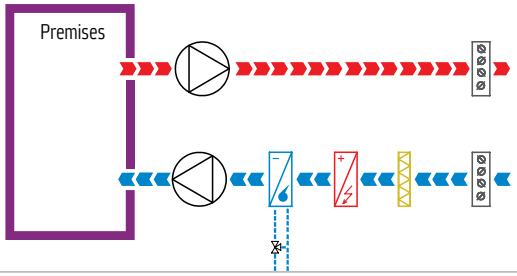
- Type of control unit (ACW — water heating, ACE — electric heating)
- Type of controller used (pCOxc2AO)
- Overall power of electric heaters (9, 15, 22, 30, 45, 60, 75, 90, 120, 150, 180, 240)
- Connection of the first fan/external control device (1 — single-phase, 3 — three-phase)
- Control of the first fan's external device (may be missing)
- Connection of the second fan/external control device (1 — single-phase, 3 — three-phase, 0 — missing)
- Control of the second fan's external device (may be missing)
- Control unit's enhancement — weekly timer (may be missing)

Used for control of the AHUs with suply or suppy-exhaust function with water or electric heating, as well as water or direct expansion cooling.

Designed for operation with heat sensors with NTC 10K.

An expansion module is added to the pCOx2AO controller in the CR2 units.

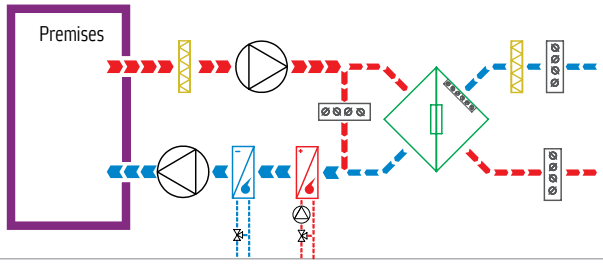
AHU (air handling unit) with electric heating and water cooling



Fan power supply or frequency transducer (R)

AIR SUPPLY	EXHAUST	LABELLING
3~380B	-	30
1~220B	-	10
3~380B	3~380B	33
1~220B	1~220B	11
3~380B	1~220B	31
1~220B	-	1R0
1~220B	1~220B	1R1
1~220B	1~220B	1R1R
1~220B	3~380B	1R3
3~380B	-	3R0
3~380B	1~220B	3R1
3~380B	1~220B	3R1R
3~380B	3~380B	3R3
3~380B	3~380B	3R3R

AHU (air handling unit) with plate heat recovery, smooth recirculation, water heating, and water cooling



Control units ACW(E) CR3, CR4

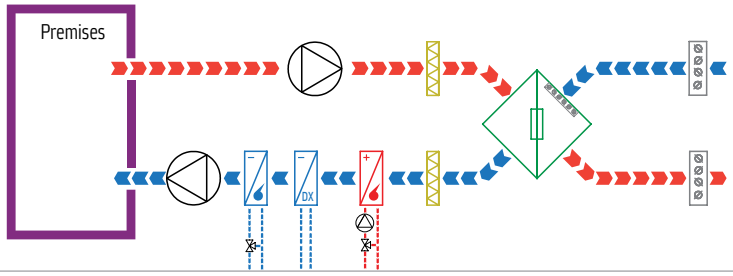
ACE - CR3 - 45 - 3 R 1 R

- Type of control unit (ACW — water heating, ACE — electric heating)
- Type of controller used (c.pCo mini)
- Total power of electric heaters
- Connection of the first fan/external control device (1 — single-phase, 3 — three-phase)
- Control of the first fan's external device (may be missing)
- Connection of the second fan/external control device (1 — single-phase, 3 — three-phase, 0 — missing)
- Control of the second fan's external device (may be missing)

Used for control of the AHUs with suply or suppy-exhaust function with water or electric heating, as well as water or direct expansion cooling, recirculation or air recovery.

An expansion module is added to the c.pCo mini controller in the CR4 units.

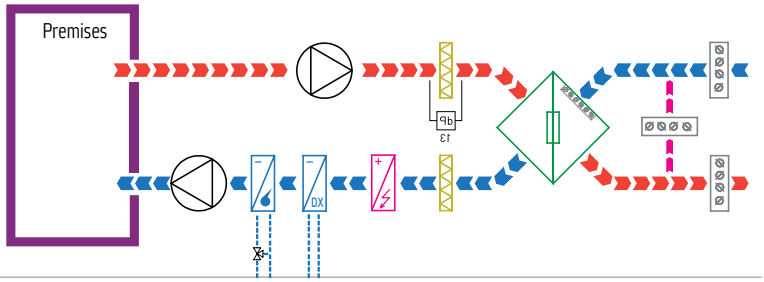
AHU (air handling unit) with plate heat recovery, water heating, water and direct expansion cooling



Fan power supply or frequency transducer (R)

AIR SUPPLY	EXHAUST	LABELLING
3~380B	-	30
1~220B	-	10
3~380B	3~380B	33
1~220B	1~220B	11
3~380B	1~220B	31
1~220B	-	1R0
1~220B	1~220B	1R1
1~220B	1~220B	1R1R
1~220B	3~380B	1R3
3~380B	-	3R0
3~380B	1~220B	3R1
3~380B	1~220B	3R1R
3~380B	3~380B	3R3
3~380B	3~380B	3R3R

AHU (air handling unit) with recirculation, plate heat recovery, electric heating, refrigerant and water cooling



Control units ACW(E) TR1, TR2, TR3 and TR4

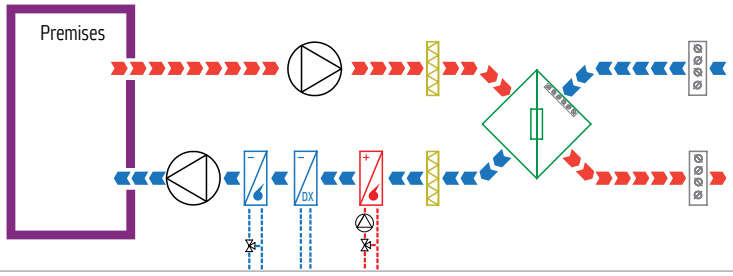
ACE - TR3 - 45 - 3 R 1 R

- Type of control unit (ACW — water heating, ACE — electric heating)
- Type of controller used
- Total power of electric heaters
- Connection of the first fan/external control device (1 — single-phase, 3 — three-phase)
- Control of the first fan's external device (may be missing)
- Connection of the second fan/external control device (1 — single-phase, 3 — three-phase, 0 — missing)
- Control of the second fan's external device (may be missing)

Used for control of the AHUs with suply or suppy-exhaust function with water or electric heating, as well as water or direct expansion cooling, recirculation or air recovery. An expansion module is added to the c.pCo mini controller in the TR2 and TR4 units.

TR units provide Ethernet as well as cloud service connection possibility.

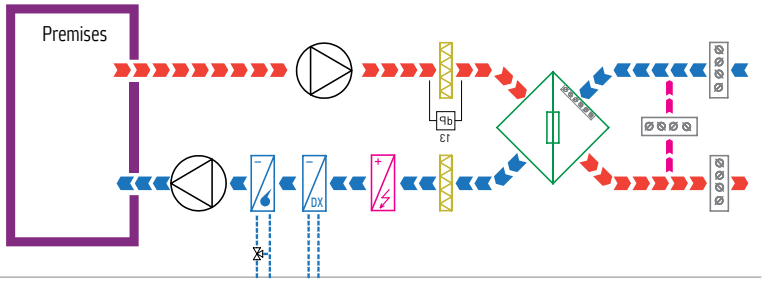
AHU (air handling unit) with plate heat recovery, water heating, water and direct expansion cooling



Fan power supply or frequency transducer (R)

AIR SUPPLY	EXHAUST	LABELLING
3~380B	-	30
1~220B	-	10
3~380B	3~380B	33
1~220B	1~220B	11
3~380B	1~220B	31
1~220B	-	1R0
1~220B	1~220B	1R1
1~220B	1~220B	1R1R
1~220B	3~380B	1R3
3~380B	-	3R0
3~380B	1~220B	3R1
3~380B	1~220B	3R1R
3~380B	3~380B	3R3
3~380B	3~380B	3R3R

AHU (air handling unit) with recirculation, plate heat recovery, electric heating, refrigerant and water cooling



ACET Control units

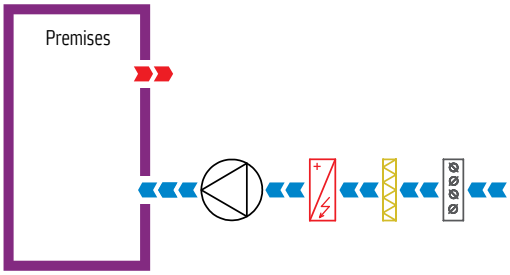
ACET - 22 - 3 R 1 R - T1

- Type of control unit
- Overall power of electric heaters (3, 9, 15, 22, 30, 45, 60, 75, 90, 120, 150, 180, 240)
- Connection of the first fan/external control device (1 — single-phase, 3 — three-phase)
- Control of the first fan's external device (may be missing)
- Connection of the second fan/external control device (1 — single-phase, 3 — three-phase, 0 — missing)
- Control of the second fan's external device (may be missing)
- Control unit's enhancement — weekly timer (may be missing)

Used for control of the AHUs with suply or suppy-exhaust function with electric heating. Adjustment functions are provided by the use of TER-9 programmed thermostat operating in the mode of two-position governor.

Designed for operation with heat sensors with NTC 12 kOm.

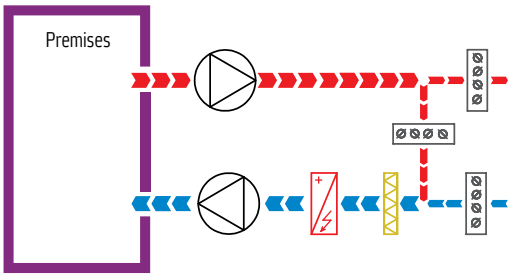
Air-supply plant with electric heating



Fan power supply or frequency transducer (R)

AIR SUPPLY	EXHAUST	LABELLING
3~380B	-	30
1~220B	-	10
3~380B	3~380B	33
1~220B	1~220B	11
3~380B	1~220B	31
1~220B	-	1R0
1~220B	1~220B	1R1
1~220B	1~220B	1R1R
1~220B	3~380B	1R3
3~380B	-	3R0
3~380B	1~220B	3R1
3~380B	1~220B	3R1R
3~380B	3~380B	3R3
3~380B	3~380B	3R3R

AHU (air handling unit) with electric heating and recirculation on/off



ACW(E) 236 Control units

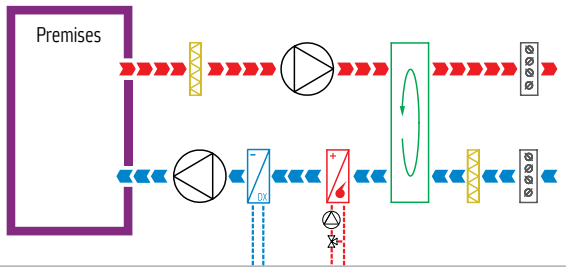
ACE	-	236	-	60	-	3	R	1	R	-	T

- Type of control unit (ACW — water heating, ACE — electric heating)
- Type of controller used (RLU 236)
- Overall power of electric heaters (9, 15, 22, 30, 45, 60, 75, 90, 120, 150, 180, 240)
- Connection of the first fan/external control device (1 — single-phase, 3 — three-phase)
- Control of the first fan's external device (may be missing)
- Connection of the second fan/external control device (1 — single-phase, 3 — three-phase, 0 — missing)
- Control of the second fan's external device (may be missing)
- Control unit's enhancement — weekly timer (may be missing)

Used for control of the AHUs with suply or suppy-exhaust function with water or electric heating, as well as water or refrigerant air cooling. It is possible to smoothly adjust the temperature while using electric heaters thanks to sectional connections (up to 6 stages).

Designed for operation with heat sensors with Ni 1000 TK5000.

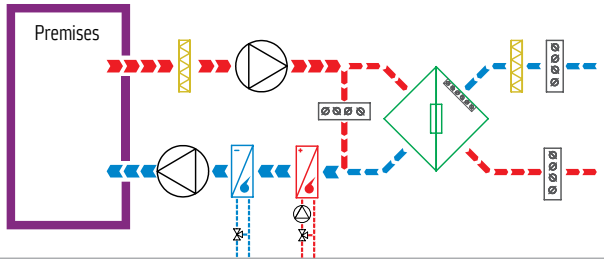
AHU (air handling unit) with heat recovery, water heating and direct expansion cooling



Fan power supply or frequency transducer (R)

AIR SUPPLY	EXHAUST	LABELLING
3~380B	-	30
1~220B	-	10
3~380B	3~380B	33
1~220B	1~220B	11
3~380B	1~220B	31
1~220B	-	1R0
1~220B	1~220B	1R1
1~220B	1~220B	1R1R
1~220B	3~380B	1R3
3~380B	-	3R0
3~380B	1~220B	3R1
3~380B	1~220B	3R1R
3~380B	3~380B	3R3
3~380B	3~380B	3R3R

AHU (air handling unit) with plate heat recovery, smooth recirculation, water heating, and water cooling



Enhancements to Control Units

Enhancement	Functions	Use in control units					
		ACET	ACW(E) 236	ACW(E) CR1	ACW CR2	ACW(E) CR3	ACW(E) CR4
1 (to 1,15 kW)	Additional connection of a single-phase fan (for units with water heating)	+	+	+	+	+	+
3 (to 5 kW)	Additional connection of a three-phase fan (for units with water heating)	+	+	+	+	+	+
A0,63; A1; A1,6; A2,5; A4; A6; A10; A17; A20; A25*	Connecting fans without heat contacts (the number indicates the maximum allowed fan current)	+	+	+	+	+	+
B14; B25*	Connection of fans provided with heat contacts with current from 9 to 14 A; from 15 to 25 A	+	+	+	+	+	+
C*	Connection of fans with thermistors	+	+	+	+	+	+
D	Connection of three-phase circulating pump	-	+	+	+	+	+
EX	Connection of explosion-proof sensors	+	+	+	+	+	+
G	Connection of single-phase circulating pump with remote heat contacts	-	+	+	+	+	+
H25, H32, H50*	Connection of fans' external devices with current from 9 A to 25 A; from 26 A to 32 A; from 33 A to 50 A (for units with R)	+	+	+	+	+	+
JE	Switching off the supply fan in the case of the heat recovery freezing (electric heating)	+	+	+	+	+	+
JW	Switching off the supply fan in the case of the heat recovery freezing (water heating)	-	+	+	+	+	+
K1F14*	Connection of heat insulated damper with single-phase feeding and power up to 3 kW (current to 14 A)	+	+	+	+	+	+
K3F15*	Connection of heat insulated damper with three-phase feeding and power up to 7.5 kW (current to 15 A)	+	+	+	+	+	+
K3F25*	Connection of heat insulated damper with three-phase feeding and power up to 11 kW (current to 25 A)	+	+	+	+	+	+
K3F32*	Connection of heat insulated damper with three-phase feeding and power up to 15 kW (current to 32 A)	+	+	+	+	+	+
K3F40*	Connection of heat insulated damper with three-phase feeding and power up to 22.5 kW (current to 40 A)	+	+	+	+	+	+
L	Electronic speed control of SI-RS11 type	+	+	+	+	+	+
ND	Connection of a three-phase circulation pump of the heat recovery with an intermediate heat medium (current to 5 A)	+	+	+	+	+	+
NA4, NA6, NA10, NA17	Connection of a three-phase circulation pump of the heat recovery with an intermediate heat medium without heat contacts	+	+	+	+	+	+
RU	Stand-by fan control device	+	+	+	+	+	+
S	Remote alarm system for switching on and failures	+	+	+	+	+	+
S1	Connection of a remote device of the type RTF without the possibility of temperature adjustment	+	+	+	+	+	+
SM1	Smooth blending operation in the first sequence	-	-	+	+	-	-
SM2	Smooth blending operation in the second sequence	-	-	+	+	-	-
T	Built-in weekly timer	+	+	+	+	+	+
V	Connection of heat recovery	-	+	+	+	+	+
Q	Connection to tERA cloud service/provision of data transmission to the process control system via Modbus TCP/IP protocol	-	-	-	-	+	+

* Note:

Digit indicating the type of fan requiring enhancement is placed prior to A, B, C, H, K1F14, K3F15, K3F25, K3F32 and K3F40 (1 — air supply, 2 — exhaust, 3 — additional).

For instance, 1A20 enhancement is related to the air-supply fan, in this case the fan's maximum current should be from 17 A to 20 A.

Safety relays

Start and protection of three-phase and single-phase motors with built-in heat contacts. Thermal and electromagnetic protection from short circuit. Connection of several fans to one relay (series connection) provided that the fans' overall current does not exceed the relay's rated current.

TYPE
STDT 16
SET-10B

Digital thermostat

Is used in the units controlling ventilation systems with electric heaters. There are two microprocessors, two temperature inputs and two outputs with a switching contact. Setting parameters and measured values are displayed on the LCD monitor.

TYPE
TER-9 Digital thermostat

th-Tune remote control

Used together with c.pCO mini programmable controllers. The terminal is equipped with a built-in temperature gauge. Concealed and wall-mounted versions are available. The terminal requires a power supply for operation.

TYPE
ATC4001AD0
ATA4001AD0
ATC4001AW0
ATA4001AW0

Soft starters

Soft start of the three-phase motors with power from 4 to 60 kW. Star-delta switching of the motor power diagram to reduce inrush currents.
380/660 V or 400/690 V.

TYPE
UPP-7,5
UPP-11
UPP-15
UPP-22
UPP-30
UPP-37
UPP-45
UPP-60

RTF remote control

Joint operation with ACE, ACW control units. Embedded temperature gauge for premises (Ni 1000 TK 5000).

Functions:

- ventilation unit's remote switching on/off;
- indication of unit's operation mode;
- remote temperature adjustment within the range from +5 ºC to +35 ºC (excluding ACET units);
- change of fan;
- motor speed.

TYPE
RTF remote control unit

Control pannels for the fans

Soft start and protection of three-phase fans from 0.37 to 45 kW, not equipped with thermal contacts or thermistors (built-in UPP device). Overload protection with current-limiting circuit breakers.

TYPE	
ACV-V0,37	ACV-V11-UPP
ACV-V0,55	ACV-V15-UPP
ACV-V0,75-V1,1	ACV-V18,5-UPP
ACV-V1,5	ACV-V22-UPP
ACV-V2,2	ACV-V30-UPP
ACV-V3	ACV-V37-UPP
ACV-V4-UPP	ACV-V45-UPP
ACV-V7,5-UPP	

Air curtain control pannel

Integral control of industrial air-and heat curtains. Control and protection components of the power unit and logic scheme are located in one single body:

- ACC-W — for curtains with a water heater;
- ACC-E — for curtains with an electric heater;
- ACC-TK — or curtains without heating.

TYPE
ACC-W
ACC-E
ACC-TK

Automatic standby activation units

The automatic standby activation unit is used to provide the 1st category of power supply.

TYPE	
ACW-AVR-V2,5	ACW-AVR-V8
ACW-AVR-V4	ACW-AVR-V13
ACW-AVR-V5	ACW-AVR-V21
ACW-AVR-V6	ACW-AVR-V27

ACV-DU Control pannel for smoke exhaust fans

Used to actuate three-phase smoke exhaust fans. Protection from short circuit is provided.
Control pannels include the engine soft start device with power from 15 to 45 kW (UPP- type, star-delta switching). Correspond to GOST 53325-2009 “Fire Safety Equipment. Means of fire automatics. General technical requirements.” There is a separate range of ACV-DU-R control pannel for smoke exhaust fans with the possibility to connect an external variable speed drive.

TYPE
ACV-DU-V0,55
ACV-DU-V2,2
ACV-DU-V3
ACV-DU-V4
ACV-DU-V5
ACV-DU-V7,5
ACV-DU-V11
ACV-DU-V15-UPP
ACV-DU-V18,5-UPP
ACV-DU-V22-UPP
ACV-DU-V30-UPP
ACV-DU-V37-UPP
ACV-DU-V45-UPP

ACW-PPK Control pannel for fire dampers

The control pannel is designed for the manual or automatic opening and closing of fire dampers with electromechanical drive and power 220 VAC, as well as for an indication of the state of such dampers.

TYPE
ACW-PPK-4
ACW-PPK-8
ACW-PPK-12
ACW-PPK-18
ACW-PPK-27
ACW-PPK-4 (24B)
ACW-PPK-8 (24B)
ACW-PPK-12 (24B)
ACW-PPK-18 (24B)
ACW-PPK-27 (24B)

ACV-V-R Control pannel for the fans

Used for control of the fans with a frequency transducer. A standard panel is used to control a stand-by fan with a frequency transducer.

TYPE
ACV-V-1R2,2(-RU2,2)
ACV-V-3R2,2(-RU2,2)
ACV-V-3R5(-RU5)
ACV-V-3R11(-RU11)
ACV-V-3R15(-RU15)
ACV-V-3R18,5(-RU18,5)
ACV-V-3R22(-RU22)
ACV-V-3R30(-RU30)
ACV-V-3R45(-RU45)

Electronic speed controls

Speed control of the single-phase fans equipped with thermal contacts with automatic restart by means of smooth change of the supplied voltage. Wall or concealed mounting.

TYPE
RTY-1,5
RTY-2,5

Electronic speed controls

Designed to control the rotation speed of single-phase motors by means of a smooth change of the supplied voltage. It is possible to set the maximum and minimum speed using internal regulators (resistors).

TYPE
RIDT9-30
RIDT9-60
RIDT9-100

Electric heater control module in the air pressurisation system

The module is designed for starting with power from 4.5 to 60 kW. The electric heater has a built-in thermostat for protection against overheating. It is possible to connect a two-position or three-position air damper actuator with 230 V power supply to the module.

TYPE
4,5 kW
9 kW
15 kW
22,5-30 kW
45 kW
60 kW

Adjusting thermostat

The thermostat is designed to monitor and control the temperature.
It is used together with the electric heater control module in the air pressurisation system.

TYPE
TTH1

Frequency speed controls

Protection and control of three-phase fans' capacity by means of a smooth change of feed current frequency in the electric motor. The frequency transducers are equipped with an LCP panel and NEMA kit (protective plastic casing closing terminal connections). VL-A models are supplied with a built-in LCP panel. Operation on the basis of PID-regulation.

TYPE	
VL-A-0,75/230	NEMA1-M1 kit
VL-A-1,5/230	NEMA1-M2 kit
VL-A-2,2/400	NEMA1-M3 kit
VL-A-3/400	NEMA1-M4 kit
VL-A-4/400	NEMA1-M5 kit
VL-A-5,5/400	NEMA1-H6 kit
VL-A-7,5/400	FC-101 control panel
VL-A-11/400	
VL-A-15/400	
VL-A-18/400	
VL-A-22/400	
FC-101P30K	
FC-101P37K	
FC-101P45K	

Temperature gauge





Measurement of the air temperature (ARK, ARP, ARN) or heat medium (WTP, WTN) in the ventilation, air conditioning, and heating systems. ARK-2 and ARK-2S gauges have NTC 12 kOm; ARK-3, ARK-3S, ARP-3, ARN-3, WTP-3 and WTN-3 gauges — NTC 10 kOm, the other gauge — Ni 1000 TK5000.

TEMPERATURE GAUGES
Duct sensor ARK-1
Duct sensor ARK-1S
Duct sensor ARK-2
Duct sensor ARK-2S
Duct sensor ARK-3
Duct sensor ARK-3S
Room temperature sensor ARP-1
Room temperature sensor ARP-3
Outside temperature sensor ARN-1
Outside temperature sensor ARN-3
Immersion temperature sensor WTP-1
Immersion temperature sensor WTP-3
Attachable temperature sensor WTN-1
Attachable temperature sensor WTN-3

Differential pressure switch

Control of excessive pressure, pressure difference and rarefaction of air in the ventilation and air conditioning systems.

TYPE
DVL-200
DVL-500
DVL-1000

Room thermostat

Designed to control room temperature, as well as to control ventilation, air conditioning and heating systems.

TYPE
KTR40

Capillary thermostats

Control of heat exchangers' temperature for their protection from freezing. Complete set comprises shackles for fixing the capillary tube on the section.

TYPE
KP 61 (060L126666) 1 m
KP 61 (060L126766) 3 m
KP 61 (060L126466) 6 m
KP 61 (060L126566) 11,5 m

Superimposed thermostat

Control of the heat medium temperature in the pipeline. Visual display of values.

TYPE
RAK-TW

Indoor hydrostat

The hydrostat is designed for the adjustment and control of air relative humidity in offices and residential premises.

TYPE
QFA

Air quality gauge

Analysis and supervision of air quality in the premises, as well as quantitative assessment of the saturation degree of air polluting gases.

TYPE
QPA

Air vent drives

Control of air vents in the ventilation and air conditioning systems.

TYPE	
GEB161.1E	GLB341.1E
GEB166.1E	GLB346.1E
GEB141.1E	GDB141.1E
GEB146.1E	GDB146.1E
GEB341.1E	GDB341.1E
GEB346.1E	GDB341.1E/KF
GLB141.1E	GDB346.1E
GLB146.1E	

Mixing units

Adjustment of the water heat exchangers' capacity by means of modifying the temperature of the supplied heat medium with the constant consumption of the latter. Component: three-way valve, drive of the three-way valve, circulating pump, locking ball-plug valves, heating water filter, bypass with check and control valve, stainless steel flexible connection pipes. Direct and inverse models.

TYPE	
SME 40-1,0	SMEX 40-1,0
SME 40-1,6	SMEX 40-1,6
SME 40-2,5	SMEX 40-2,5
SME 40-4,0	SMEX 40-4,0
SME 60-4,0	SMEX 60-4,0
SME 60-6,3	SMEX 60-6,3
SME 80-6,3	SMEX 80-6,3
SME 80-10,0	SMEX 80-10,0
SME 80-16,0	SMEX 80-16,0
SME 110-16,0	SMEX 110-16,0

Three way ball valves

Used as mixing or separating valves for heat exchangers installed in small ventilation and air conditioning systems. External thread. Valve rod travel is 5.5 mm. Complete set does not include fittings.

TYPE
VXP 45.10-0,25
VXP 45.10-0,4

Connection kits

Are used as connecting fittings for three way ball valves of VXP series.

TYPE
ALG 133 kit

Actuators for ball valves

Control of ball valves of VXP series.

TYPE
SSB 61

Three-way rotary valves

Used as mixing or separating valves for heat exchangers installed in ventilation and air conditioning systems. Rotary type valves with threaded (VRG131 series) or flanged (3F series) connection.

TYPE	
VRG 131 15-0,63	VRG 131 32-16
VRG 131 15-1,0	VRG 131 40-25
VRG 131 15-1,63	VRG 131 50-40
VRG 131 15-2,5	3F 50
VRG 131 20-4,0	3F 65
VRG 131 20-6,3	3F 80
VRG 131 25-10	

Actuators for rotary valves

Control of rotary valves: HD type actuators are designed to work with VRG131 and 3F type valves.

TYPE
HD05Y
HD15Y

Circulating pumps

Designed for moving water and non-freezing mixtures with a temperature from -10 ºC to +110 ºC. Maximum possible operation pressure of the heat medium is 1 MPa. Motor shaft should be located strictly horizontally while mounting.

NAME OF THE PUMP	TYPE OF CONNECTION	CONNECTION KIT
VA 35/130	Threaded	Set of nuts DAB 1"
VA 65/130	Threaded	Set of nuts DAB 1"
A 50/180 M	Threaded	Set of nuts DAB 1"
A 56/180 M	Threaded	Set of nuts DAB 1"
A 80/180 M	Threaded	Set of nuts DAB 1"
A 110/180 XM	Threaded	Set of nuts DAB 1¹/4"
BPH 120/250.40M	Flanged	Flange kit DN 40
BPH 60/280.50M	Flanged	Flange kit DN 50
BPH 120/280.50M	Flanged	Flange kit DN 50
BPH 150/280.50T	Flanged	Flange kit DN 50
BPH 180/280.50T	Flanged	Flange kit DN 50
BPH 60/340.65M	Flanged	Flange kit DN 65
BPH 120/340.65T	Flanged	Flange kit DN 65
BPH 150/340.65T	Flanged	Flange kit DN 65
BPH 180/340.65T	Flanged	Flange kit DN 65
BPH 120/360.80T	Flanged	Flange kit DN 80
BPH 150/360.80T	Flanged	Flange kit DN 80

Cooling equipment

NSK and ND-SPL condensing units

Condensing units are designed for the preparation of refrigerant transferred to the heat exchanger of the inner unit or to the section of direct evaporation in the air conditioning system. Non-reversing singe-circuit (NSK and ND-SPL) and twin-circuit compressor-condensing (NSK) with axial fans and rotary/scroll compressors in 27 standard sizes with a capacity from 2 to 255 kW. Outdoor design of the units. Used refrigerant: R410A.

Units are controlled with the help of "dry contacts".

The standard complete set includes vibration-damping springs, phase-control switch, fan speed control sensor, service Schraeder valves, (except for ND-SPL models) and shut-off valves at the output of the compressor-condensing unit. The condensing units of NSK type filled with inert gas are delivered in dried form. The condensing units of ND-SPL type are delivered filled in with refrigerant gas.

KKB model	Cooling capacity[1]	Absorbed power	Length	Width	Height	Shipping weight
	kW	kW	mm	mm	mm	kg
NSK 2	2	0,51	685	265	510	35
NSK 3	2,9	0,75	685	265	510	46
NSK 4	4,3	1,11	755	325	580	52
NSK 5	5,3	1,3	825	325	620	58
ND-SPL 007	6,3	1,9	866	304	535	41
ND-SPL 009	8,2	2,2	930	370	700	56
NSK 10	10,6	2,7	985	355	830	79
NSK 13	13	3,5	985	355	835	96
ND-SPL 016	15,9	4,75	1070	400	995	96
ND-SPL 019	18,4	5,75	911	400	1330	107
NSK 20	21,2	5,1	1250	500	930	170
NSK 25	24,3	5,8	1250	500	930	172
ND-SPL 032	32,2	9,4	980	770	1620	200
NSK 35	35	8,3	1250	500	930	186
NSK 40	39,5	9,7	1655	930	1110	317
NSK 45	45,6	11	1655	930	1110	318
ND-SPL 052	51,8	14,6	1270	770	1620	241
NSK 60	59,2	15,2	1655	930	1110	406
NSK 70D	70	17,3	1655	930	1110	375
NSK 85D	87	22,1	1655	930	2000	507
NSK 100D	104	25,2	1655	930	2000	514
NSK 120D	121	30,4	2000	1150	2000	746
NSK 140D	140	33,2	2000	1150	2000	688
NSK 170D	167	41,1	2860	1150	2005	940
NSK 200D	195	50,4	2860	1150	2005	1090
NSK 230D	227	58	3000	1150	2005	1302
NSK 260D	255	66,2	3000	1150	2005	1317

[1] evaporation temperature is +5 °C, environmental temperature is +32 °C.

Polyvinyl ether oil

Destined for filling the cooling circuit.

TYPE
FV68S oil (1 litre)

Air cooled liquid chillers NKA series mono-block and NKA X series modular chillers

Possible designs:

1A — one low-pressure built-in pump
1B — one medium-pressure built-in pump
1C — one high-pressure built-in pump
2A — two low-pressure built-in pumps (rotation based on the working hours)
2B — two medium-pressure built-in pumps (rotation based on the working hours)
2C — two high-pressure built-in pumps (rotation based on the working hours)

Description

Mono-block chillers are offered in 14 standard sizes and modular chillers are offered in 16 standard sizes with axial fans with a cooling capacity from 43 to 1,470 kW. Design type: only cooling. Refrigerant: R407C. Range of ambient air operating temperatures is from +5 to +44 ºC. Maximum possible glycol content in the refrigerant mixture is up to 40% (for versions with integrated pump).

Design features

Smooth fan speed control. No need to install a storage tank thanks to the numerous control steps. Possibility to select the operation mode based on the inlet or outlet heat medium temperature. Sustainable operation of cooling circuit components in all the operation modes. Uniform accumulated operating time of the compressors and pumps. Possibility to connect to the BMS building process control system: Ethernet, LonWorks, RS 485 (Modbus).

Additional optional equipment:

EC — Ethernet technology serial interface card (Web Server)
MB — RS 485 serial interface card
LS — low-noise design (possible for U0, U1 and U2)
LW — LonWorks platform serial interface card
RS — remote display

STANDARD SIZE NKA	Cooling capacity[1]	absorbed power[1]	Capacity steps	Diameter of hydraulic circuit's fittings	Thread connection according to GOST 6211-81[2]	Length/ Length with LS	Width	Height	Sound-pressure level/ with LS option[3]	Shipping weight[4]
	kW	kW	%	DU	R	mm	mm	mm	dB(A)	kg
45	43	13,4	0-33-66-100	50	2	1655	1150	2060	65/61	684
50	51	15,5		50	2	1655			65/61	715
55	58	18,0		50	2	1655			65/61	730
65	69	20,6	0-25-50-75-100	50	2	1655			65/61	746
80	78	24,0		50	2	1655/2100			65/61	808
90	86	26,9	0-33-50-67-84-100	50	2	2100			69/65	973
100	101	31,1		65	2½	2100			69/65	1009
115	115	36,0		65	2½	2100/3000			69/65	1025
130	126	39,6		65	2½	3000			69/65	1257
150	150	45,7		65	2½	3000			69/65	1302
170	173	52,2		80	3	3000			71/67	1337
190	196	60,0		80	3	3000			71/67	1465
220	224	69,0		80	3	3000/-*			74/-	1492
250	245	77,7		80	3	3000/-*			74/-	1502

[1] — conditions: temperature of the chilled water — from 12 to 7 ºC, ambient temperature — 35 ºC
[2] — flanged connection acc. to GOST 33259-2015, grooved pipe-connection acc. to GOST R 51737-2001, or straight pipe thread acc. to GOST 6357-81 are also available
[3] — noise pressure level is measured in the free sound field at the distance of 1 m from the unit (from the intake side) and 1.5 m from the supporting surface according to DIN 45635
[4] — unit without pumps

STANDARD SIZE NKA X	Coling kit capacity[1]	Number of modular chiller's blocks	Total power consumption[1]
	kW	pcs	kW
2x150	300	2	2x45,7
2x170	346	2	2x52,2
2x190	392	2	2x60,0
2x220	448	2	2x69,0
2x250	490	2	2x77,7
3x170	519	3	3x52,2
3x190	588	3	3x60,0
3x220	672	3	3x69,0
3x250	735	3	3x77,7
4x190	784	4	4x60,0
4x220	896	4	4x69,0
4x250	980	4	4x77,7
5x220	1120	5	5x69,0
5x250	1225	5	5x77,7
6x220	1344	6	6x69,0
6x250	1470	6	6x77,7

NST remote pump stations for modular chillers' kits

Pumping stations are designed for pumping of the liquids (water, inhibited water solutions of ethylene glycol or propylene glycol with low viscosity, etc.) and may be used in the air conditioning systems and various technological processes.

24 possible configurations with available static pressure up to 400 kPa. Complete set includes expansion tanks for different total capacities: from 35 to 150 l.

GBA 270-1100 air-cooled liquid chiller

Description

Design type: only cooling. Refrigerant: R407C. 14 standard sizes with a cooling capacity from 284 to 1,074 kW. Maximum possible glycol content in the refrigerant mixture is 40%.

Design features

No need to install a storage tank thanks to the numerous control steps.
High cooling factor and minimum energy consumption at partial loads.
Optimum volumetric characteristics and minimised refrigerant filling thanks to the use of highly efficient microchannel heat exchangers. Sustainable operation of cooling circuit components in all operation modes. Uniform accumulated operating time of the compressors and pumps. No need for an external hydraulic pump station. Possibility to connect to the BMS building process control system: RS 485 (Modbus).

Possible designs:

1A — one low-pressure built-in pump
1B — one medium-pressure built-in pump
1C — one high-pressure built-in pump
2A — two low-pressure built-in pumps (rotation based on the working hours)
2B — two medium-pressure built-in pumps (rotation based on the working hours)
2C — two high-pressure built-in pumps (rotation based on the working hours)

Additional optional equipment:

ZV — shut-off valves of the cooling circuits
AK — silencing compressors' casings
SC — step-type control of the fan speed (except for GBA 270-310)
PR — smooth fan speed control
MN — high- and low-pressure gauges for refrigerant circuits
RS — remote display (to 500 m)
RI — serial interface (RS-485)
RA — rubber vibration absorbers
SA — spring vibration absorbers
SG — set of protective panels

STANDARD SIZE GBA		270	310	370	430	470	500	550	590	650	740	810	900	980	1100
		COOLING													
Cooling capacity[1]	kW	284	315	371	412	454	489	530	563	623	704	767	860	947	1074
		COMPRESSORS													
Quantity	pcs	6	8	8	10	10	12	12	12	10	12	10	12	10	12
Capacity steps	pcs	5	7	7	9	9	11	11	11	9	11	9	11	9	11
		CONDENSER FAN													
Number of fans	pcs	4	4	6	6	6	6	6	8	8	8	10	10	12	12
Air-flow rate	m^3/s	22,78	22,78	34,33	34,33	34,33	34,33	34,33	45,78	45,78	45,78	57,22	57,22	68,67	68,67
		ELECTRICAL CHARACTERISTICS													
Power supply	V/Hz/ phase	400/50/3+PE													
Full power without pumps[1]	kW	90	101	118	131	145	157	171	180	200	227	246	277	304	346
Max. operating current without pumps	A	215	236	281	314	343	362	383	423	450	503	558	618	687	771
Max. starting current without pumps	A	363	360	439	421	491	474	551	559	601	680	734	830	911	1032
		Water circuit													
Water flow[1]	l/sec	13,56	15,03	17,71	19,68	21,69	23,36	25,32	26,90	29,77	33,64	36,65	41,09	45,25	51,31
Pressure loss in the heat exchanger[1]	kPa	41	58	71	57	80	65	83	70	69	88	45	67	49	69
Total pump available pressure "A"	kPa	215	205	195	200	217	206	205	198	186	195	187	180	233	211
Total pump available pressure "B"	kPa	295	290	270	275	300	296	281	310	334	330	310	300	280	300
Total pump available pressure "C"[4]	kPa	380	365	355	365	380	380	371	367	350	400	360	330	430	400
Min. system volume for operation without an accumulation tank	m^3	0,42	0,40	0,45	0,39	0,49	0,40	0,51	0,52	0,67	0,69	0,88	0,79	1,11	1,03
Volume of expansion tank[2]	l	24	24	24	24	24	24	50	50	50	50	50	50	50	50
		NOISE PERFORMANCE													
Sound-pressure level[3]	dB(A)	76	76	79	79	80	79	80	81	85	86	85	86	86	86
		OVERALL DIMENSIONS AND WEIGHT													
Length	mm	3230	3230	3920	3920	3920	4215	4215	5020	5020	5310	6115	6115	7215	7215
Width	mm	2255	2255	2255	2255	2255	2255	2255	2255	2255	2255	2255	2255	2255	2255
Height	mm	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
Shipping weight[5]	kg	2180	2320	2740	2960	2980	3410	3460	3880	4240	4600	4800	5085	6050	6490

[1] — conditions: temperature of the inlet water — 12 °C, outlet water — 7 °C, ambient temperature — 35 °C
[2] — installed in chillers with built-in pumps, preliminary pressure in the expansion tank is 1.5 ATM
[3] — noise pressure level is measured in the free sound field at a distance of 1 m from the chiller (from the intake side) and 1.5 m from the supporting surface according to DIN 45635
[4] — GBA980 and GBA1100 chillers may be manufactured with only one high-pressure pump
[5] — chiller without pumps

GBA 270-1100 LS Mono-block air cooled liquid chillers, low-noise

Possible designs:

1A — one low-pressure pump
1B — one medium-pressure pump
1C — one high-pressure pump
2A — two low-pressure pumps (rotation based on working hours)
2B — two medium-pressure pumps (rotation based on working hours)
2C — two high-pressure pumps (rotation based on working hours)

Description

Design type: only cooling. Refrigerant: R407C. 14 standard sizes with cooling capacity from 266 to 1,043 kW. Maximum possible glycol content in the refrigerant mixture is 40%.

Design features

Fans. High efficiency fans with reduced speed and special crescent-shaped blades with frequency converters.
Condensers. Heat exchangers with increased heat transfer surface area.
Compressors. Compressors with silencing casings made of sound-insulating materials, providing high-quality noise reduction.

Additional optional equipment:

ZV — shut-off valves of the cooling circuits
MN — high- and low-pressure gauges for refrigerant circuits
RS — remote display (to 500 m)
RI — serial interface (RS-485)
RA — rubber vibration absorbers
SA — spring vibration absorbers

STANDARD SIZE GBA		270	310	370	430	470	500	550	590	650	740	810	900	980	1100
		COOLING													
Cooling capacity[1]	kW	266	315	353	378	445	467	518	545	608	713	749	851	897	1043
		COMPRESSORS													
Quantity	pcs	6	8	8	10	10	12	12	12	10	12	10	12	10	12
Capacity steps	pcs	5	7	7	9	9	11	11	11	9	11	9	11	9	11
		CONDENSER FAN													
Number of fans	pcs	4	6	6	6	8	8	8	10	10	12	12	14	14	16
Air-flow rate	m^3/s	16	23	23	23	31	31	31	39	39	47	47	54	54	62
		ELECTRICAL CHARACTERISTICS													
Power supply	V/Hz/ phase	400/50/3+PE													
Full power without pumps[1]	kW	89	94	113	127	138	146	161	169	190	215	237	260	288	345
Max. operating current without pumps	A	205	231	268	300	333	352	374	408	435	493	538	603	664	782
Max. starting current without pumps	A	354	354	418	407	482	464	542	545	587	669	716	816	888	1013
		WATER CIRCUIT													
Water flow[1]	l/s	13	15	17	18	21	22	25	26	29	34	36	41	43	50
Pressure loss in the heat exchanger[1]	kPa	36	72	64	48	77	59	79	66	65	90	42	65	44	65
Total pump available pressure "A"	kPa	215	205	195	200	217	206	205	198	186	195	187	180	233	211
Total pump available pressure "B"	kPa	295	290	270	275	300	296	281	310	334	330	310	300	280	300
Total pump available pressure "C"[4]	kPa	380	365	355	365	380	380	371	367	350	400	360	330	430	400
Min. system volume for operation without an accumulation tank	m^3	0,42	0,40	0,45	0,39	0,49	0,40	0,51	0,52	0,67	0,69	0,88	0,79	1,11	1,03
Volume of expansion tank[2]	l	24	24	24	24	24	24	50	50	50	50	50	50	50	50
		NOISE PERFORMANCE													
Sound-pressure level[3]	dB(A)	71	71	72	72	73	73	74	74	77	78	80	81	80	81
		OVERALL DIMENSIONS AND WEIGHT													
Length	mm	3230	3915	3915	3915	5310	5310	5310	6110	6110	7200	7200	8300	8300	9430
Width	mm	2260	2260	2260	2260	2265	2265	2265	2260	2260	2260	2260	2260	2260	2260
Height	mm	2450	2450	2450	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460
Shipping weight[5]	kg	2090	2545	2650	3080	3710	3910	3960	4380	4680	5390	5710	6260	6440	7240

[1] — conditions: temperature of the inlet water — 12 ºC, outlet water — 7 ºC, ambient temperature — 35 ºC
[2] — installed in chillers with built-in pumps, preliminary pressure in the expansion tank is 1.5 ATM
[3] — noise pressure level is measured in the free sound field at a distance of 1 m from the chiller (from the intake side) and 1.5 m from the supporting surface according to DIN 45635
[4] — GBA980 and GBA1100 chillers may be manufactured with only one high-pressure pump
[5] — chiller without pumps

GBA 270-1100 free-cooling aircooled liquid chillers

Description

Design type: only cooling. Refrigerant: R407C. 14 standard sizes with cooling capacity from 271 to 1,036 kW. Range of ambient air operating temperatures is from -30 to +43 ºC. Maximum possible glycol content in the refrigerant mixture is up to 40%.

Design features

Availability of "summer" and "winter" modes. "Summer" mode is the standard one, when operating in the "winter" mode, the refrigerant enters the free cooling heat exchangers, where its temperature is lowered due to heat exchange with cold ambient air (Free-Cooling), then enters the evaporator of the cooling circuit, is additionally cooled (in case of necessity), and is directed to the user of refrigeration.

Possible designs:

1A — one low-pressure built-in pump
1B — one medium-pressure built-in pump
1C — one high-pressure built-in pump
2A — two low-pressure built-in pumps (rotation based on the working hours)
2B — two medium-pressure built-in pumps (rotation based on the working hours)
2C — two high-pressure built-in pumps (rotation based on the working hours)

Additional optional equipment:

ZV — shut-off valves of the cooling circuits
AK — silencing compressors' casings
MN — high- and low-pressure gauges for cooling circuits
RI — serial interface (RS-485)
RS — remote display (to 500 m)
RA — rubber vibration absorbers
SA — spring vibration absorbers

STANDARD SIZE GBA-FC		270	310	370	430	470	500	550	590	650	740	810	900	980	1100
		COOLING													
Cooling capacity[1]	kW	271	295	363	399	434	464	521	545	587	695	750	851	922	1036
		COMPRESSORS													
Quantity	pcs	6	8	8	10	10	12	12	12	10	12	10	12	10	12
Capacity steps	pcs	5	7	7	9	9	11	11	11	9	11	9	11	9	11
		CONDENSER FAN													
Number of fans	pcs	4	4	6	6	6	6	8	8	8	10	10	12	12	14
Air-flow rate	m^3/s	20,00	18,89	30,00	30,00	28,33	28,33	40,00	40,00	37,78	50,00	47,22	60,00	56,67	66,11
		ELECTRICAL CHARACTERISTICS													
Power supply	V/Hz/ phase	400 / 50 / 3+PE													
Full power without pumps[1]	kW	90	102	116	131	148	160	163	180	200	222	251	270	309	344
Full power in the "100% Free cooling" mode without pumps[1]	kW	10	10	15	15	15	15	19	19	19	25	25	30	30	36
Max. operating current of the unit without pumps	A	215	236	281	314	342	362	391	422	450	511	558	625	687	779
Max. starting current of the unit without pumps	A	363	360	431	421	491	474	559	559	601	687	734	838	911	1039
		WATER CIRCUIT													
Water flow	l/s	12,94	14,10	17,35	19,05	20,72	22,18	24,90	26,03	28,03	33,22	35,82	40,64	44,04	49,51
Pressure loss in the evaporator	kPa	38	63	68	53	73	59	80	66	61	85	42	65	46	64
Pressure loss in the free cooling heat exchanger	kPa	51	51	57	65	73	55	63	71	73	85	57	67	72	83
Min. system volume for operation without an accumulation tank	m^3	0,42	0,40	0,45	0,39	0,49	0,40	0,51	0,52	0,67	0,69	0,88	0,79	1,11	1,03
		NOISE PERFORMANCE													
Sound-pressure level[2]	dB(A)	76	76	79	79	80	79	81	81	85	86	85	86	86	87
		OVERALL DIMENSIONS AND WEIGHT													
Length	mm	4230	4650	5000	5000	5350	5700	6200	6220	6200	7550	7600	9500	9500	10500
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600
Shipping weight[3]	kg	3350	3520	4400	4850	4900	5100	5850	6050	6450	7500	7900	8700	9500	10150

[1] — temperature of the inlet water — 12 ºC, outlet water — 7 ºC, ambient temperature — 35 ºC
[2] — noise pressure level at a distance of 1 m acc. to DIN45635
[3] — chiller without pumps

NSE 045-250 Chillers for remote condensers

Description

Design type: only cooling. Refrigerant: R407C. 14 standard sizes with cooling capacity from 43 to 245 kW. Range of ambient air operating temperatures is from +15 ºC to +44 ºC. Maximum possible glycol content in the refrigerant mixture is up to 40%.

Design features

No need to install a storage tank thanks to the numerous control steps. Possibility to select the operation mode based on the inlet or outlet heat medium temperature. Sustainable operation of cooling circuit components in all operation modes. Uniform accumulated operating time of the compressors and pumps. Possibility to connect to the BMS building process control system: Ethernet, BACnet/IP, LonWorks,RS 485 (Modbus).

Possible designs:

1A — one low-pressure built-in pump
1B — one medium-pressure built-in pump
1C — one high-pressure built-in pump
2A — two low-pressure built-in pumps
2B — two medium-pressure built-in pumps
2C — two high-pressure built-in pumps

Additional optional equipment:

AK — silencing compressors' casings
EC — Ethernet technology serial interface card (Web Server)
MB — RS 485 serial interface card
LW — LonWorks platform serial interface card
RS — remote control

STANDARD SIZE NSE 045-250		45	50	55	65	80	90	100	115	130	150	170	190	220	250
		COOLING													
Cooling capacity[1]	kW	43	51	58	69	78	86	101	115	126	150	173	196	224	245
		COMPRESSORS													
Quantity	pcs	3	3	3	4	4	6	6	6	6	6	6	6	6	6
Absorbed power[1]	kW	13,2	15,3	17,4	20,4	23,2	26,4	30,7	34,8	38,3	44,1	50,3	57,8	66,5	74,7
Maximum operating current	A	28,8	36,6	42,5	48,8	52	57,6	73,2	78	107	111,6	107,4	128,4	141,6	166
Maximum inrush current	A	101	111	126	123	139	130	148	165	215	218	215	254	276	335
Number of cooling circuits	pcs	1			2										
Capacity stages	pcs	3	3	3	4	4	5	5	5	5	5	5	5	5	5
		WATER CIRCUIT													
Water flow	l/s	2	2,4	2,7	3,3	3,7	4,1	4,8	5,5	5,9	7,1	8,2	9,3	10,7	11,8
Pressure loss in the plate-type heat-exchanger	kPa	20	22	20	21	21	21	22	23	24	25	31	31	33	35
Total pump available pressure "A"	kPa	160	170	180	190	179	180	220	165	173	154	130	153	—	—
Total pump available pressure "B"	kPa	240	250	310	240	232	250	300	290	295	277	258	232	371	345
Total pump available pressure "C"	kPa	385	395	405	332	317	416	380	365	370	443	420	566	546	505
Volume of expansion tank[2]	l	8	8	8	8	12	12	12	12	18	18	18	18	18	18
		REFRIGERANT CIRCUIT'S FITTINGS													
Pressure line	mm	16	16	16	2x16	2x19	2x22	2x22	2x22	2x28	2x28	2x28	2x35	2x35	2x35
Liquid line	mm	19	19	19	2x16	2x16	2x19	2x19	2x19	2x19	2x22	2x22	2x22	2x28	2x28
		WATER CONNECTIONS													
Inside nominal diameter (DU)	mm	50	50	50	50	50	50	65	65	65	65	80	80	80	80
Thread connection according to GOST 6211-81	Inch	2"	2"	2"	2"	2"	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	3"	3"	3"	3"
		NOISE PERFORMANCE													
Sound-pressure level[3]	dB(A)	59	59	59	59	59	61	61	61	61	61	63	63	66	66
		OVERALL DIMENSIONS AND WEIGHT													
Length	mm	1500	1500	1500	1500	1500	1700	1700	1700	1700	1700	1700	2200	2200	2200
Width	mm	770	770	770	770	770	770	770	770	770	770	770	770	770	770
Height	mm	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1800	1800	1800
Shipping weight[4]	kg	520	525	535	555	595	760	765	800	820	990	1015	1040	1100	1150

[1] — conditions: temperature of the chilled water — from 12 to 7 ºC, ambient temperature — 35 ºC
[2] — installed in chillers with built-in pumps, preliminary pressure in the expansion tank is 1.5 atm
[3] — noise pressure level is measured in the free sound field at a distance of 1 m from the unit and 1.5 m from the supporting surface according to DIN 45635
[4] — chiller without pumps

NNS Remote condensers for NSE 045-250 chillers

Description

Design type: only cooling.
Condenser type: with horizontal air discharge (flat) a nd vertical air discharge (V-shaped).
Refrigerant: R410A.

10 standard sizes of NNC chillers that can be used jointly with NSE chillers, as well as other refrigeration units.
For chiller models NSE 045...055 it is recommended to use remote condenser models NNS 064.1...084.1. For chiller models NSE 065...150 it is recommended to use remote condenser models NNS 064.2...194.2. For chiller models NSE 170...250 it is recommended to use remote condenser models NNS 2x102.1...2x194.1 kits, consisting of two identical blocks.

Design features

Smooth fan speed control. Cost-effective and efficient operation in different environmental conditions. Optimum solution with respect to noise level/capacity ratio. Low noise level during operation and reduced power consumption.

NNS		015.1	025.1	033.1	048.1	064.1	084.1	084.2	102.1	102.2	132.1	132.2	163.1	163.2	194.1	194.2
Heat exchanger's inner volume	l	4	8,9	8,9	11,9	17,9	23,8	23,8	36,5	36,5	36,5	36,5	48,3	48,3	48,3	48,3
		FANS														
Number of fans	pcs	1	1	1	1	2	2	2	2	2	3	3	3	3	2	2
Fan's diameter	mm	500	550	630	630	630	630	630	630	630	630	630	630	630	710	710
Supply	V/Hz/ phase	230 / 50 / 1+N+PE							400 / 50 / 3+N+PE							
Power consumption	kW	0,32	0,32	0,5	0,5	1	1	1	1	1	1,5	1,5	1,5	1,5	2,6	2,6
Maximum operating current	A	0,9	0,9	1,4	1,4	2,8	2,8	2,8	2,8	2,8	4,2	4,2	4,2	4,2	5	5
		CONNECTING REFRIGERANT CIRCUIT'S FITTINGS														
Number of cooling circuits	pcs	1	1	1	1	1	1	2	1	2	1	2	1	2	1	2
Pressure line	mm	16	16	16	16	19	28	2x16	28	2x19	28	2x22	28	2x22	35	2x28
	inch	5/8	5/8	5/8	5/8	3/4	1 1/8	2x5/8	1 1/8	2x3/4	1 1/8	2x7/8	1 1/8	2x7/8	1 3/8	2x1 1/8
Liquid line	mm	12	16	16	16	19	22	2x16	22	2x16	22	2x16	28	2x19	28	2x22
	inch	1/2	5/8	5/8	5/8	3/4	7/8	2x5/8	7/8	2x5/8	7/8	2x5/8	1 1/8	2x3/4	1 1/8	2x7/8
		NOISE PERFORMANCE														
Sound-pressure level[1]	дБ(А)	40	40	42	42	44	44	44	44	44	47	47	47	47	51	51
		DIMENSIONS														
Length	mm	800	1200	1200	1200	2680	2680	2680	2600	2600	2600	2600	2600	2600	2600	2600
Width	mm	300	450	450	450	700	700	700	1200	1200	1200	1200	1200	1200	1200	1200
Height	mm	950	950	950	950	950	950	950	1110	1110	1110	1110	1110	1110	1110	1110
		WEIGHT														
Shipping weight	kg	45	75	90	120	220	230	230	330	330	360	360	360	360	360	360

[1] — noise pressure level is measured in the free sound field at a distance of 10 m from the condenser and 1.5 m from the supporting surface according to DIN 45635

Possible chillller - condenser combinations

NSE model	045	050	055	065	080	090	100	115	130	150	170	190	220	250
NNS model	064.1	064.1	084.1	102.2	132.2	132.2	163.2	163.2	2x102.1	2x102.1	2x132.1	2x163.1	2x163.1	2x194.1

GBE 270-1100 Chillers for remote condensers

Description

Design type: only cooling. Refrigerant: R407C. 13 standard sizes with cooling capacity from 276 to 1,054 kW. Maximum possible glycol content in the refrigerant mixture is 50%.

Design features

No need to install a storage tank thanks to the numerous capacity steps. High cooling factor and minimum energy consumption at partial loads. Sustainable operation of cooling circuit components in all the operation modes. Uniform accumulated operating time of the compressors. Possibility to connect to the BMS building process control system: RS 485 (Modbus).

Additional optional equipment:

AK — silencing compressors' casings
MN — high- and low-pressure gauges for refrigerant circuits
RS — remote display (to 500 m)
RI — serial interface RS-485
RA — rubber vibration absorbers
SA — spring vibration absorbers
SK — oil filter

Standard size GBE		270	300	360	410	460	500	560	630	720	780	900	960	1100
Cooling capacity[1]	kW	276	310	357	400	444	479	541	613	701	753	850	927	1054
Number of compressors	pcs	6	8	8	10	10	12	12	10	12	10	12	10	12
Capacity steps	pcs	5	7	7	9	9	11	11	9	11	9	11	9	11
Power supply	V/Hz/ phase	400 / 50 / 3+PE												
Total capacity[1]	kW	80	93	107	116	129	140	158	179	206	220	249	271	310
Maximum operating current	A	180	212	240	265	300	318	360	393	472	482	578	603	724
Maximum inrush current	A	347	370	407	397	467	450	527	569	647	694	790	863	983
		WATER CIRCUIT OF THE EVAPORATOR												
Water flow[1]	l/s	13,20	15,03	17,07	19,12	21,21	22,88	25,83	29,29	33,49	35,99	40,62	44,29	50,34
Pressure loss in the heat exchanger[1]	kPa	39	70	66	47	76	52	65	58	87	44	72	47	72
Min. system volume for operation without an accumulation tank	m^3	0,42	0,40	0,45	0,42	0,46	0,42	0,47	0,64	0,62	0,79	0,75	0,97	0,93
		NOISE PERFORMANCE												
Sound-pressure level[2]	dB(A)	75	72	76	75	77	76	78	84	85	84	85	85	80
		DIMENSIONS WITHOUT SHIPPING SUPPORTS												
Length A	mm	2500	2950	3100	3530	3530	4130	4130	3370	3370	3920	3920	4050	4050
Width B	mm	810	810	810	810	810	810	810	1410	1410	1410	1410	1410	1410
Height C	mm	1920	1920	1950	1950	1950	1950	1950	1970	1970	2100	2100	2100	2100
Weight	kg	1114	1260	1386	1594	1610	1866	1896	2327	2627	2645	2841	3443	3862

[1] — conditions: temperature of the water entering evaporator — 12 °C, leaving the evaporator — 7 °C, condensation temperature — +50 °C.
[2] — noise pressure level is measured in the free sound field at a distance of 1 m from the chiller (from the intake side) and 1.5 m from the supporting surface according to DIN 45635

Remote condensers with GBE 270-1100 chillers

Description

Air-cooled condensers with axial flow fans. Designed for operation with GBE 270-1100 chillers. Flat type structural versions are available with vertical/ horizontal air discharge and V-type vertical air discharge. High heat transfer rates thanks to the optimal combination of the geometry of aluminium fins, diameter of copper pipes with special internal corrugation, high-efficiency fans, and housing design.

Water cooled liquid chillers NBH 039-190

Description

Design type: only cooling. Refrigerant: R407C. 12 standard sizes with a cooling capacity from 47 to 200 kW.

Design features

Many refrigeration capacity adjustment stages.
Evaporator protection from freezing. Possibility to select the operation mode based on the refrigerant temperature at the inlet or outlet from the evaporator.
Sustainable operation of cooling circuit components in all the operation modes.
Uniform accumulated operating time of the compressors. High operational reliability.
The compact design allows chillers to be installed in the standard doorways: the width is only 0.77 m and the maximum height is 1.8 m.
Possibility to connect to the BMS building process control system: Ethernet, BACnet/IP, Lon Works, RS485 (Modbus).

Additional optional equipment:

EC — Ethernet technology serial interface card (web server)
MB — RS485 serial interface card
LW — Lonworks platform serial interface card

Standard size NBH		039	048	054	064	072	079	096	107	128	145	163	190
Cooling capacity[1]	kW	47	54	62	73	83	95	108	120	139	159	183	200
Maximum operating current of the unit	A	31,2	36,9	40,8	49,2	54,4	62,4	73,8	81,6	94,4	105,6	115,6	141,6
Power supply	V/Hz/phase	400/50/3+N+PE											
		COMPRESSORS											
Quantity	pcs	3	3	3	4	4	6	6	6	4	6	6	6
Absorbed power	kW	10,6	12,3	13,7	16,4	18,2	21,2	24,6	27,3	33,9	37,7	41,8	50,9
Maximum operating current	A	31,2	36,9	40,8	49,2	54,4	62,4	73,8	81,6	94,4	105,6	115,6	141,6
Maximum inrush current	A	68,8	90,6	100,2	102,9	113,8	116,8	156,6	173,2	166,8	195,2	230,6	239,2
		WATER CIRCUIT OF THE EVAPORATOR											
Water flow	l/sec	1,99	2,37	2,66	3,17	3,55	3,88	4,86	5,43	6,38	7,00	8,19	8,95
Pressure loss in the plate-type heat-exchanger	kPa	24,9	25,7	24	32,8	26	25,7	34,85	30,62	40,19	38,89	41,05	44,01
Minimum system volume for operation without an accumulation tank	m^3	0,12	0,15	0,17	0,15	0,17	0,12	0,15	0,17	0,29	0,22	0,25	0,29
		WATER CIRCUIT OF THE CONDENSER											
Propylene glycol (40%)	l/sec	2,78	3,4	3,8	4,54	5,08	5,55	6,82	7,62	9,08	10,24	11,52	13,73
Pressure loss in the plate-type heat-exchanger	kPa	33,2	30,7	31,6	32,3	37,1	34,6	41,7	42	34,2	33,2	34,5	41,3
Minimum system volume for operation without an accumulation tank	m^3	0,15	0,19	0,22	0,19	0,22	0,15	0,19	0,22	0,36	0,28	0,31	0,36
		NOISE PERFORMANCE											
Sound-pressure level[2]	dB(A)	58	58	58	60	60	60	60	60	63	63	63	63
		OVERALL DIMENSIONS											
Length	mm	1250					1800			2100			
Width	mm	770					770			770			
Height	mm	1790					1790			1790			
Weight	kg	460	480	500	620	640	760	780	800	970	1150	1170	1200

[1] — water temperature in the evaporator is 12/7 °C, water temperature in the condenser is 30/35 °C
[2] — noise pressure level is measured in the free sound field at a distance of 1 m from the unit and 1.5 m from the supporting surface according to DIN 45635

NVD Dry coolers for NBH 039-190 chillers

Description

Design type: only cooling. Heat medium: water; water glycol alcohol solutions; solutions non-aggressive to the inner surface of heat exchangers. Range of ambient air operating temperatures is from -30 to +44 ºC (in the case of negative temperatures, an appropriate concentration of inhibited solution is required). Dry coolers are stand-alone units.

Design features

There are two structural versions: flat type structural versions available with vertical/horizontal air discharge and V-type vertical air discharge. Optimum solution with respect to noise level/capacity ratio requirements. Low noise level during operation and reduced power consumption.

Additional optional equipment:

H — mounting kit for the installation of NBH 039-054 dry cooler models with vertical air discharge

Standard size		039/039-H	054/054-H	064	072	079	096
Cooling capacity[1]	kW	67	78	91	103	116	131
Number of fans	pcs	4	4	4	4	6	6
Air-flow rate	m^3/sec	8,97	8,56	10,3	10	14,3	13,7
Power supply	V/Hz/ phase	~230/50/1+N+PE					
Maximum absorbed current	A	11,6	11,6	11,6	11,6	17,4	17,4
Total capacity	kW	2,52	2,52	2,52	2,52	3,78	3,78
		WATER CIRCUIT					
Water flow	l/sec	3,6	4,1	4,8	5,4	6,2	7
Pressure loss in the heat-exchanger	kPa	50	43	20	13	32	21
		NOISE PERFORMANCE					
Sound-pressure level[2]	dB(A)	48	48	48	48	51	51
		DIMENSIONS					
Length	mm	2800	2800	2900	2900	2900	2900
Width	mm	1400/1820	1400/1820	1800	1800	1800	1800
Height	mm	1950/1210	1950/1210	1970	1970	1970	1970
		WEIGHT					
Shipping weight	kg	390/395	415/420	700	740	770	800

[1] — cooled heat medium: water, temperature at the inlet to the dry cooler is 50 ºC, temperature of the cooling air is 38 ºC
[2] — noise pressure level is measured in the free sound field at a distance of 10 m from the unit and 1.5 m from the supporting surface according to DIN 4635

NVP remote hydromodules for NBH 039-190 chillers

Description

12 models of remote hydromodules. Maximum possible glycol content in the refrigerant mixture is 40%. The maximum ambient temperature is +40 ºC. The pumping fluid temperature is from 0 ºC to +80 ºC.

Optional equipment:

FS — dry cooler's circuit flow switch
MB — RS485 serial interface card
RC — clock board (real time clock board)

Water cooled liquid chillers GBH 320-1100

Description

Design type: only cooling. Refrigerant: R407C. 11 standard sizes with a cooling capacity from 307 to 1,003 kW. Maximum possible glycol content in the refrigerant mixture is 50%

Design features

No need to install a storage tank thanks to the numerous capacity steps. Optimum volumetric characteristics and minimised refrigerant filling thanks to the use of highly efficient copper-brazed condenser heat exchangers. Sustainable operation of cooling circuit components in all the operation modes. Uniform accumulated operating time of the compressors. Possibility to connected to the BMS building process control system: RS 485 (Modbus).

Additional optional equipment:

ZV — shut-off valves of the cooling circuits
AK — silencing compressors' casings
MN — high- and low-pressure gauges for refrigerant circuits
RS — remote display (to 500 m)
RI — serial interface (RS-485)
RA — rubber vibration absorbers
SA — spring vibration absorbers
FSC — condenser flow switch
TWC — condenser water/heat medium temperature sensor

Standard size GBH		320	380	450	510	560	600	660	760	900	950	1100
Cooling capacity[1]	kW	307	355	406	453	509	553	626	702	804	884	1003
Number of compressors	pcs	6	8	8	10	10	12	12	10	12	10	12
Power supply	V/Hz/ phase	400/50/3+PE										
Maximum operating current of the chiller	A	185	217	245	270	305	323	365	398	477	487	583
Total absorbed power	kW	63	73	84	94	106	115	130	145	166	181	207
Water flow in the condenser[1]	l/sec	17,71	20,44	23,41	26,10	29,42	31,89	36,10	40,45	46,35	50,91	57,82
Pressure loss in the heat-exchanger[1]	kPa	71	82	85	75	97	89	96	79	84	73	92
Water flow in the evaparator[1]	l/sec	14,68	16,97	19,41	21,62	24,34	26,41	29,91	33,54	38,40	42,24	47,92
Pressure loss in the heat-exchanger[1]	kPa	61	70	71	64	72	53	74	55	75	53	77
		NOISE PERFORMANCE										
Sound-pressure level[2]	dB(A)	75	72	76	76	77	76	78	84	85	84	85
		DIMENSIONS										
Length	mm	2500	2930	2930	3530	3530	4130	4130	4660	5250	5250	5250
Width	mm	810	810	810	810	810	810	810	1420	1420	1420	1420
Height	mm	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Weight	kg	1188	1418	1471	1739	1792	2091	2135	2859	3274	3239	3432

[1] — design conditions: temperature of the water entering the evaporator — 12 ºC, leaving the evaporator — 7 ºC, temperature of the water entering the condenser — 30 ºC, leaving the condenser — 35 ºC
[2] — noise pressure level is measured in the free sound field at a distance of 1 m from the chiller (from the intake side) and 1.5 m from the supporting surface according to DIN 45635

Dry coolers for chillers GBH 320-1100

Description

Outdoor dry coolers (dry cooling towers) with axial fans.
Dry coolers are intended for operation with water cooled liquid chillers GBH 320-1100. Design type: only cooling. There are two structural versions: flat type structural versions available with vertical/horizontal air discharge and V-type vertical air discharge.

NDLC Chillers with centrifugal compressors

NDLC-M and **NDLC-H** are single-stage units;
cooling capacity is 1,500÷3,800 kW;

NDLC-ES — are two-stage units;
cooling capacity is 4200÷7,700 kW;

NDLC-VSD are two-stage units with VSD frequency inverter; cooling capacity is 1,500÷4,200 kW. Used refrigerant: R 134a

NDLC Chillers with centrifugal compressors are water cooling machines for HVAC systems with high EER 7 and IPLV 11.6 energy efficiency ratios that are capable of operating in "Free Cooling" mode. Chiller's capacity may be smoothly adjusted within the range from 10% to 100% of the cooling capacity. It is possible to use a high voltage motor from 400 to 10,000 V.

Water cooled liquid chillers with TURBOLINE compressors

GWH 351-3811 are chillers with water cooling of the TURBOLINE compressor, TT/U with TURBOCOR compressors with the cooling capacity 333÷3,696 kW.

GWH 291-1581 are chillers with water cooling of TURBOLINE compressor, TT/U with TURBOCOR compressors with the cooling capacity 280÷1,546 kW. Used refrigerant: R 134a.

TURBOLINE chillers with TURBOCOR compressors are designed for operation as a component of high efficiency cooling systems of the central air conditioning systems.

Design versions:

GWH — only cooling, for cooling tower;

GWH/DR — only cooling, for dry cooler.

Fan coils with centrifugal fans and EC-motor

Fan coils are represented in 14 standard sizes with overall cooling capacity from 1.31 kW to 7.26 kW. High-quality operation parameters and supreme quietness. Minimum power consumption provided by the models with EC-motors. Vast variety of models and broad choice of accessories.

Available at the warehouse.
Made in Italy.

Water cassettes

The product range is represented by 2-pipe (7 standard sizes) and 4-pipe (4 standard sizes) Water cassettes. High-quality operation parameters and supreme quietness. Vast variety of models and broad choice of accessories.

Available at the warehouse.

NHW/EC Wall-mounted fan coils with EC-motor

Fan coils are represented in six standard sizes with an overall cooling capacity from 2.1 kW to 5.4 kW. Minimum power consumption and low noise level is provided thanks to the use of EC-motors. Infrared remote-control unit is included in the standard complete set.

Made in Italy.

Ducted fancoils

Low-pressure (up to 30 Pa) ducted fan coils are represented in six standard sizes with overall cooling capacity from 2.1 kW to 10.8 kW. Middle-pressure and high-pressure ducted fan coils are represented in eleven standard sizes with an overall cooling capacity from 4.2 kW to 42.8 kW.

Close Controls

Description

Close Controls are designed for the accurate maintenance of environment parameters (temperature, relative humidity) in the premises with predominantly obvious heat inflows, as well as with short-term visits of people, while the air conditioner operates with 100% recirculated air without any mixture with fresh air, or with long-term visits of people together with the supply and exhaust ventilation system.

Air handling options:

C — only cooling
E — cooling and heating
U — cooling and humidification
D — cooling, heating, humidification

DE close control for remote condenser (DX coil)

Model		1010	1012	1016	1023	1030	1040	2049	2066	2074	2099	4104	4130
		CAPACITY											
Total cooling capacity[1]	kW	9,5	11,9	15,5	22,4	30,1	39,5	48,7	65,4	76,1	98,3	103	128,6
Actual cooling capacity[1]	kW	9,5	11,1	12,4	19,9	22,9	37,1	40,4	54,9	63,2	84,5	90,6	102,9
Power consumption of the compressors[1]	kW	2,1	2,8	3,9	5,2	7,4	8,7	11,3	14,8	17,5	23,1	22,8	29,6
		SOUND-PRESSURE LEVEL											
Design T (upper exhaust)[2]	dB(A)	60	60	60	71	71	74	74	76	76	78	78	78
Design B (downward exhaust)[2]	dB(A)	55	55	55	66	66	69	69	71	71	73	73	73
		OVERALL DIMENSIONS											
Length	mm	675	675	675	675	675	890	890	890	890	890	890	890
Width	mm	675	675	675	875	875	1350	1350	1750	1750	2225	2625	2625
Height	mm	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980
		WEIGHT											
Design T (upper exhaust)	kg	230	237	246	291	308	489	543	611	669	811	996	1020
Design B (downward exhaust)	kg	248	255	264	309	325	507	560	640	698	841	1031	1056

CE close control with water coil (chiller operation)

Model		0012	0016	0021	0027	0044	0056	0075	0107	0132	0149
		CAPACITY									
Total cooling capacity[1]	kW	11,9	15,8	21,8	26,9	43,5	53,7	72,8	103,0	131,4	149,1
Actual cooling capacity[1]	kW	10,1	12,5	18,3	22,1	36,1	43,0	59,0	83,4	99,9	111,8
Water flow[1]	m3/h	2,00	2,72	3,70	4,60	7,50	9,20	12,50	17,70	22,60	25,60
		SOUND-PRESSURE LEVEL									
Design T (upper exhaust)[2]	dB(A)	60	60	71	71	74	74	76	78	78	78
Design B (downward exhaust)[2]	dB(A)	55	55	66	66	69	69	71	73	73	73
		OVERALL DIMENSIONS									
Length	mm	675	675	675	675	890	890	890	890	890	890
Width	mm	675	675	875	875	1350	1350	1750	2225	2225	2625
Height	mm	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980
		WEIGHT									
Design T (upper exhaust)	kg	199	204	255	260	408	418	491	606	644	767
Design B (downward exhaust)	kg	217	222	273	278	425	435	520	635	673	802

[1] — inlet air temperature is 24 °C; relative humidity is 50%; water temperature is 7/12 °C
[2] — noise pressure level is measured in the free sound field at a distance of 2 m and at a height of 1.5 m

VRF SMARTNED PRO

- SMARTNED is a smart solution for next-generation climate systems.
- EVI technology (Enhanced Vapor Injection) in low temperature conditions, when the system is operating for heating, allows you to achieve constant performance and increase the energy efficiency ratio.
- These are universal air conditioning systems with a smart control system, capable of working for both heating and cooling, maintaining its own microclimate in each of the premises.
- The product range of the SMARTNED series is extremely wide: from compact SMARTNED-mini designed for air conditioning in the residential premises and small offices, to systems with a capacity of up to 360 kW capable of addressing climate control challenges in any high-rise building with a large area.
- SMARTNED is a universal climate system capable of operating in “cooling” mode at a temperature from -10 ºC to +55 ºC, and in “heating” mode at a temperature from -30 ºC to +30 ºC.
- SMARTNED systems have a number of innovative features that make commissioning and operation easier: self-test prior to the first start-up, automatic addressing, etc.
- This innovation will help you to reduce design and installation costs, as well as significantly improve the energy efficiency of building operation.
- Selection of systems according to the program.

SMARTNED-MINI Outdoor units

Model			ND-OH-080B-1	ND-OH-100B-1	ND-OH-125B-1	ND-OH-140B-1	ND-OH-160B-1	ND-OH-180B-3	ND-OH-224B-3A	ND-OH-260B-3A	ND-OH-280M-3A	ND-OH-335M-3A
Power type			220–240 V/1 Ph/50 Hz					380–415 V/3 Ph/50 Hz				
Cooling	Capacity	kW	8	10	12,5	14	16	18	22,4	26	28	33,5
	Power consumption	kW	2,15	2,68	3,38	3,96	4,57	5,18	6,74	7,54	8,32	9,45
	EER		3,72	3,70	3,69	3,52	3,50	3,47	3,32	3,45	3,37	3,54
Heating	Capacity	kW	9	11,5	14	16	18	20	25	28,5	30,5	37,5
	Power consumption	kW	2,28	2,90	3,65	4,3	5,13	5,02	5,85	6,77	7,93	9
	COP		3,95	3,93	3,83	3,72	3,61	3,98	4,27	4,21	3,85	4,17
Sound-pressure level		dB(A)	45-56		45-58		45-58	45-58		45-50	47-60	48-62
Unit dimensions (LxHxW)		mm	935x 702x 353	1032x 810x 400	1100x870x485			900x 1328x 345	1015× 1430× 450	1120x1549x528		
Unit net weight		kg	80	80	89	89	96	94,7	112,7	142	154	154
Refrigerant piping	Gas	mm	ø 15,9					ø 15,9	ø 9.52		ø 12.7	
	Liquid	mm	ø 9,53					ø 9,53	ø 19.05	ø 22.2	ø 28.6	
Max. number of connected int. units		mm	4	5	6	7	8	9	10	12	15	18

to 90 kW
COOLING CAPACITY OF THE SINGLE UNITS

to 100
CONNECTED INDOOR UNITS

to 360 kW
TOTAL COOLING CAPACITY

NEW
MODERN OUTDOOR UNITS DESIGN

SMARTNED PRO
Outdoor units

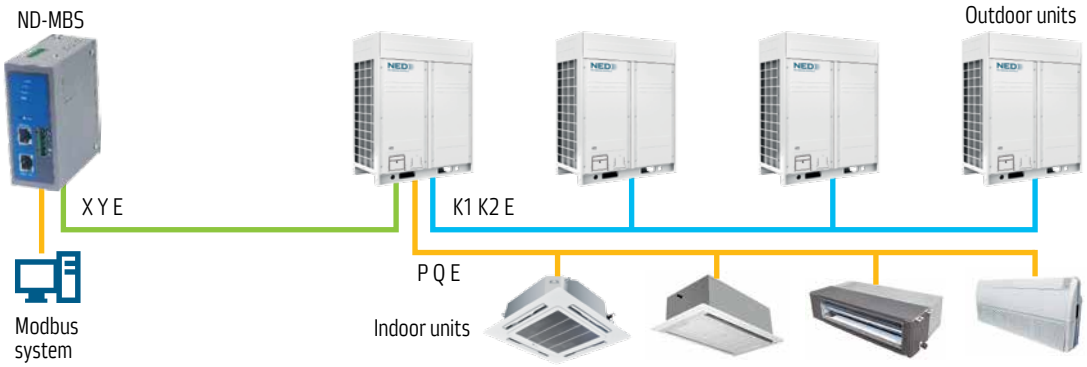
Model			ND-OH-252B-PRO	ND-OH-280B-PRO	ND-OH-335B-PRO	ND-OH-400B-PRO	ND-OH-450B-PRO	ND-OH-500B-PRO	ND-OH-560B-PRO
			8	10	12	14	16	18	20
Power supply			380~415 V-3 Ph-50 Hz						
Number of connected internal blocks			13	16	19	23	26	29	33
Cooling	Capacity	kW	25,2	28	33,5	40	45	50	56
	Current rate	A	9,04	11,30	14,51	18,10	21,60	23,29	26,10
	Power consumption	kW	5,31	6,22	8,35	9,76	11,63	12,22	14,66
	EER		4,75	4,5	4,01	4,1	3,87	4,09	3,82
Heating	Capacity	kW	27,4	31,5	37,5	45	50	56	63
	Current rate	A	8,93	11,25	14,34	18,00	20,25	22,61	25,70
	Power consumption	kW	4,98	5,86	7,35	9,34	10,87	11,89	14,16
	COP		5,5	5,38	5,1	4,82	4,6	4,71	4,45
Maximum current rate		A	23,1	24,7	25,5	30,8	31,7	37,4	41,1
Number of compressors			1	1	1	1	1	1	1
Filling of the unit with refrigerant		kg	9	9	11	14	14	15	16
Dimensions (WxHxD)		mm	990*1740*840			1340*1740*840			
Weight		kg	228	228	230	275	275	285	290
Noise level		dB(A)	58	58	60	60	61	62	63
Refrigerant piping ≤90 m	Liquid	mm	ø 9.52	ø 9.52	ø 12.7		ø 12.7	ø 15.88	ø 15.88
	Gas	mm	ø 19.05	ø 22.2	ø 25.4		ø 28.6	ø 28.6	ø 28.6
Refrigerant piping ≥90 m	Liquid	mm	ø 12.7	ø 12.7	ø 15.88		ø 15.88	ø 19.05	ø 19.05
	Gas	mm	ø 22.2	ø 25.4	ø 28.6		ø 31.8	ø 31.8	ø 31.8

Model			ND-OH-615B-PRO	ND-OH-670B-PRO	ND-OH-730B-PRO	ND-OH-785B-PRO	ND-OH-850B-PRO	ND-OH-900B-PRO
			22	24	26	28	30	32
Power supply			380~415 V-3 Ph-50 Hz					
Number of connected internal blocks			36	39	43	46	50	53
Cooling	Capacity	kW	61,5	67	73	78,5	85	90
	Current rate	A	29,06	29,09	32,59	36,13	40,36	44,73
	Power consumption	kW	16,62	16,71	18,18	20,03	22,37	24,79
	EER		3,70	4,01	4,02	3,92	3,80	3,63
Heating	Capacity	kW	69	75	81,5	87,5	95	100
	Current rate	A	28,40	28,65	30,28	33,38	38,52	43,90
	Power consumption	kW	16,80	14,72	16,78	18,50	21,35	24,33
	COP		4,11	5,10	4,86	4,73	4,45	4,11
Maximum current rate		A	42,1	43,2	51,8	51,8	60,4	63,6
Number of compressors			1	2	2	2	1+1	1+1
Filling of the unit with refrigerant		kg	16	16	20	20	23	23
Dimensions (WxHxD)		mm	1340*1740*840	1990*1740*840				
Weight		kg	297	388	433	433	480	480
Noise level		dB(A)	63	62	63	63	64	64
Refrigerant piping ≤90 m	Liquid	mm	ø 15.88		ø 19.1			
	Gas	mm	ø 28.6		ø 31.8			
Refrigerant piping ≥90 m	Liquid	mm	ø 19.05		ø 22.2			
	Gas	mm	ø 31.8		ø 38.1			

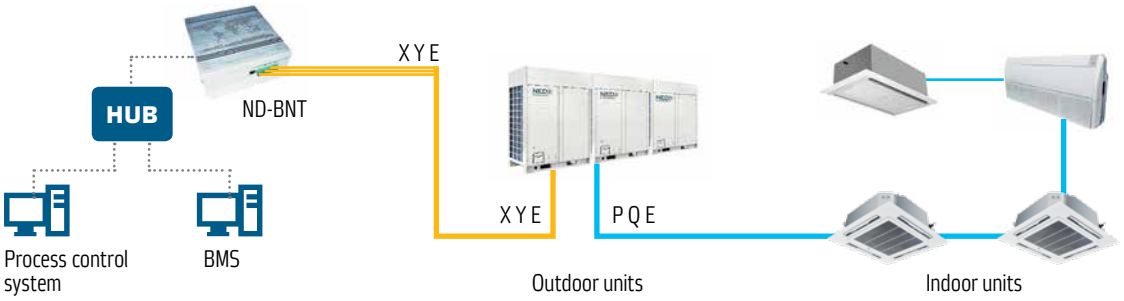
Control systems

Connection to BMS systems of a building

ModBus protocol — ND-MBS gateway. Supports the connection of MAX 256 indoor units or 4 systems.

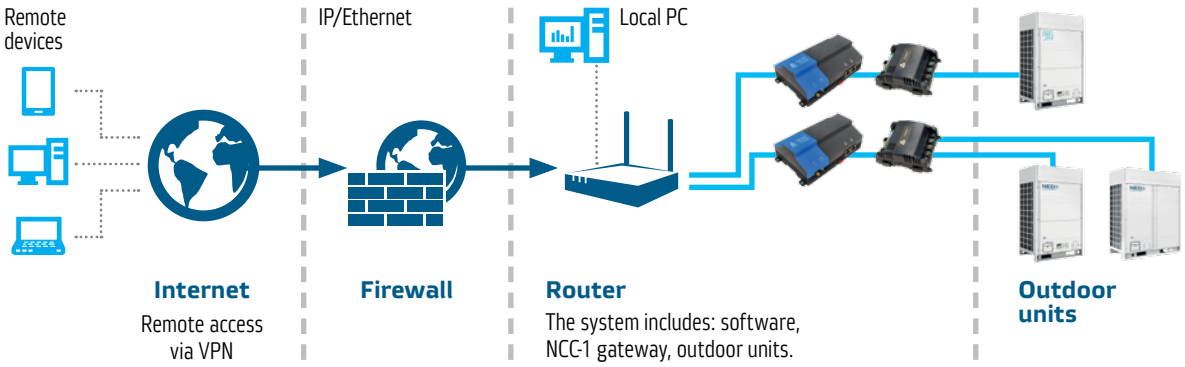


BacNet protocol — ND-BNT gateway. Supports the connection of MAX 128 indoor units or 4 outdoor units.



Central control system

- Energy consumption accounting.
- Preparation of reports on the operation of systems.
- Operation schedule management.
- It is possible to connect up to 1024 indoor units.



SMARTNED Indoor units

Compact cassette

Fits perfectly into Armstrong ceiling. Uniform air distribution in the premises. The built-in drain pump provides a 750 mm condensate increase. Low noise level is 22 dB(A).

Cassette with 360º distribution

360º uniform air distribution. Absence of “dead areas”.
The built-in drain pump provides 750 mm condensate increase.

One way cassette

Cooling capacity is 2.2; 2.8; 3.6 and 4.5 kW. The built-in drain pump provides a 750 mm condensate increase.

Low pressure ducted unit

Cooling capacity is from 2.2 to 7.1 kW,
6 standard sizes. Height is only 210 mm.
Low noise level. Hydraulic head up to 50 Pa.

Duct medium-pressure unit

Cooling capacity is from 7.1 to 15.0 kW,
6 standard sizes. Height is only 260 mm.
Air intake is possible both from the back and from the bottom.

Duct high-pressure unit

Cooling capacity is from 7.1 to 56.0 kW, 11 standard sizes.
Hydraulic head up to 200 Pa

Wall-mounted unit

Cooling capacity is from 2.2 to 7.1 kW,
6 standard sizes. Low noise level.

Floor-ceiling-mounted unit

Cooling capacity is from 4.5 to 16.0 kW, 8 standard sizes. Can be installed on the ceiling or on the wall close to the floor.

AHU kits

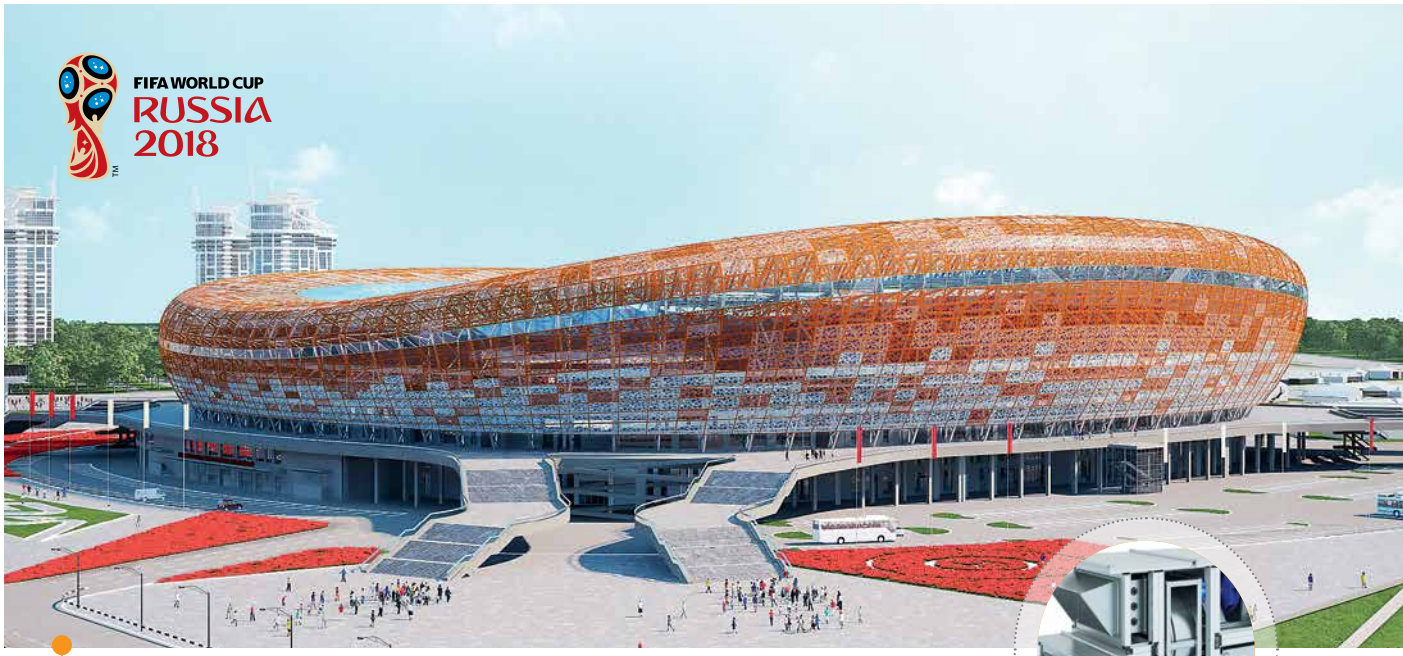
Cooling capacity is from 2.2 to 90 kW. Provides connection of the air supply units to the outdoor units of VRF systems. Replaces a traditional condensing unit thanks to long pipelines. Multiple devices can be connected to one outdoor unit.

PORTFOLIO

VOLGOGRAD ARENA STADIUM

City of Volgograd

- delivered equipment:
  equipment for ventilation systems, Air Handling Units LITENED and AIRNED, SMARTNED VRF SYSTEMS, fan-coils, chillers
- facility's area: 124 000 m^2



MORDOVIA ARENA STADIUM

City of Saransk

- delivered equipment:
  Air Handling Units LITENED and AIRNED
- facility's area: 122 000 m^2

SAMARA ARENA STADIUM

City of Samara

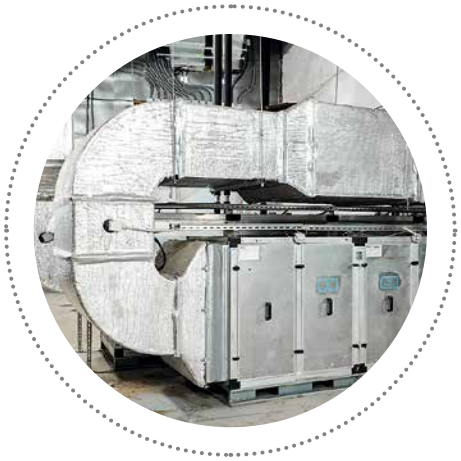
- delivered equipment: equipment for ventilation systems,
  Air Handling Units LITENED and AIRNED
- facility's area: 158 520 м^2

FIFA WORLD CUP
RUSSIA
2018
TM

NIZHNY NOVGOROD STADIUM

City of Nizhny Novgorod

- delivered equipment: **equipment for ventilation systems, SMARTNED VRF SYSTEMS, fancoils, chillers, equipment for air-conditioning systems**
- facility's area: **127 500 m²**



FISHT STADIUM

City of Sochi

- delivered equipment:
  equipment for ventilation systems, Air Handling Units LITENED and AIRNED
- facility's area: 151400 m²

LOKOMOTIV CENTRAL STADIUM

City of Moscow

- delivered equipment: building management systems
- facility's area: 12000 м²

KAZAN ARENA STADIUM

City of Kazan

- delivered equipment: **condensing units**
- facility's area: **135 967 m²**

FC SPARTAK STADIUM

City of Moscow

- delivered equipment: **Air Handling Units LITENED**
- facility's area: **10 000 m²**

LUZHNIKI STADIUM

City of Moscow

- delivered equipment: **ducted ventilation equipment**
- facility's area: **221 000 m²**

YEKATERINBURG ARENA STADIUM

City of Yekaterinburg

- delivered equipment: **equipment for ventilation systems, Air Handling Units LITENED and AIRNED, moke exhaust and pressure fans**
- facility's area: **31 000 m²**

ICE CUBE CURLING CENTER

City of Sochi

- delivered equipment: **ducted ventilation equipment, fire dampers**
- facility's area: **24000 m²**

YEROFEY ARENA INDOOR STADIUM FOR HOCKEY WITH BALL

Khabarovsk city

- delivered equipment:
  Air Handling Units LITENED, ducted ventilation equipment, fire dampers
- facility's area: **32000 m²**

WATER PARK «H2O»

Rostov-on-Don

- delivered equipment:
  ducted ventilation equipment, condensing units
- facility's area:
  24 000 m^2

SPORTS COMPLEX COLOSSEUM

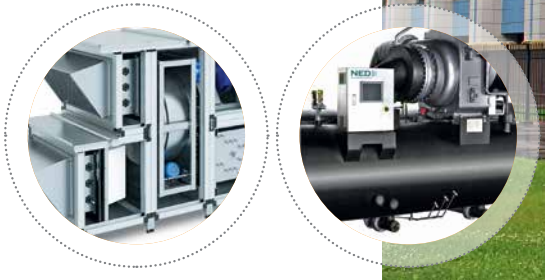
Grozny city

- delivered equipment:
  Air Handling Units LITENED and AIRNED, modular chillers, fancoils
- facility's area:
  8000 m²

WATER-SPORTS COMPLEX "IZHORETS"

City of Saint Petersburg

- delivered equipment:
  Air Handling Units AIRNED, condensing units
- facility's area:
  5000 m²



REGIONAL ICE HOCKEY CENTER

City of Ulan-Ude

- delivered equipment: Air Handling Units for ice arenas AIRNED-LA, automation systems and building management systems
- facility's area: 8000 m²

SPORTS COMPLEX "DATSYUK-ARENA"

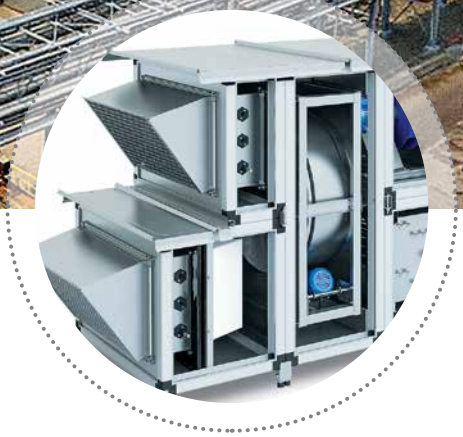
Yekaterinburg city

- delivered equipment:
  Air Handling Units AIRNED, ducted ventilation equipment
- facility's area: 1000 m²

FC KRASNODAR STADIUM

Krasnodar city

- delivered equipment:
  equipment for ventilation systems,
  Air Handling Units LITENED and AIRNED
- facility's area: 127 500 m^2



PLANT FOR THE PRODUCTION OF MINERAL FERTILIZERS OF JSC "NAVOIAZOT"

Republic of Uzbekistan, Navoi

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment, fire safety ventilation equipment, SMARTNED VRF SYSTEMS
- facility's area: 2 850 000 m²

FSUE “ATOMFLOT“

Murmansk city

- delivered equipment: ducted ventilation equipment, automation systems and building management systems, SMARTNED VRF SYSTEMS
- facility’s area: 1 000 m²

LLC “AUGUST-ALABUGA” PLANT FOR THE PRODUCTION OF PESTICIDES

Rep. Tatarstan

- delivered equipment: explosion-proof ventilation equipment
- facility’s area: 700 000 m²

PRODUCTION COMPLEX

City of Moscow

- delivered equipment:
  Air Handling Units AIRNED,
  ducted ventilation equipment
- facility's area: 9000 m²

DHL WAREHOUSE

Pushkino city

- delivered equipment:
  Air Handling Units AIRNED, ducted ventilation equipment
- facility's area: 300 000 m²

RECONSTRUCTION OF SUBSTATION PS-350 CHPP-5 "NEVSKY"

City of Saint Petersburg

- delivered equipment: Air Handling Units LITENED
- facility's area: 5 000 m^2

THE PLANT FOR THE PRODUCTION OF TIRES "CONTINENTAL"

Kaluga city

- delivered equipment: chillers
- facility's area: 85 000 m^2

GROZNY TPP

Chechen Republic, Grozny

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment, fire safety ventilation equipment, automation systems and building management systems, SMARTNED VRF SYSTEMS
- facility's area:
  40 000 m²

VERTOL-EXPO EXHIBITION COMPLEX

Rostov-on-Don

- delivered equipment:
  Air Handling Units LITENED and AIRNED, chillers
- facility's area:
  35 000 m²

PJSC MACHINE-BUILDING PLANT THEM. KALININ

Yekaterinburg city

- delivered equipment:
  Air Handling Units LITENED and AIRNED
- facility's area:
  10 000 m²

NIZHNEKAMSK TIRE PLANT

Nizhnekamsk

- delivered equipment: **Air Handling Units LITENED and AIRNED, ducted ventilation equipment, condensing units, close control**
- facility's area: **5 000 m²**

LENINGRAD METAL PLANT (LMZ)

City of Saint Petersburg

- delivered equipment:
  ducted ventilation equipment, chillers, fancoils
- facility's area: **70 000 m²**

FORD SOLLERS HOLDING (ZMA)

Naberezhnye Chelny

- delivered equipment:
  Air Handling Units AIRNED, chillers
- facility's area: 250 000 m^2

JSC "KRASNOGORSK PLANT NAMED AFTER S. A. ZVEREV" (ZENIT)

Krasnogorsk city

- delivered equipment:
  building management systems
- staff of more than 4,000 employees

SAMSUNG ELECTRONICS FACTORY

Kaluga region, Koryakovo village

- delivered equipment: **Air Handling Units LITENED and AIRNED, ducted ventilation equipment, fire safety ventilation equipment, condensing units**
- facility's area: **460 000 m²**

JSC “ROSTVERTOL“

Rostov-on-Don

- delivered equipment: chiller, fancoils
- facility’s area: 23 000 m^2

VJATICH BREWERY

Kirov city

- delivered equipment: Air Handling Units AIRNED, ducted ventilation equipment, equipment for ventilation systems, condensing units, fire dampers, exhaust dampers
- facility’s area: 2 645 m^2

GALEON SHOPPING CENTER

City of Moscow

- delivered equipment:
  Air Handling Units
  LITENED and AIRNED, chillers
- facility's area:
  40 000 m²

MINUTKA SHOPPING CENTER

Grozny city

- delivered equipment:
  chillers
- facility's area:
  10 000 m²

AQUARELLE SHOPPING CENTER

Tolyatti city

- delivered equipment:
  Air Handling Units LITENED and AIRNED, equipment for ventilation systems, automation systems and building management systems
- facility's area:
  10 000 m²

VOLNA SHOPPING CENTER

City of Barnaul

- delivered equipment:
  Air Handling Units LITENED and AIRNED, equipment for ventilation systems, automation systems and building management systems
- facility's area:
  10 000 m²

ICEBERG SHOPPING CENTER

Stary Oskol

- delivered equipment:
  chiller, fancoils, steam humidifier
- facility's area:
  10 000 m^2

FESTIVAL SHOPPING CENTER

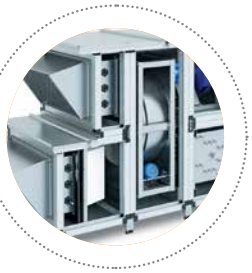
City of Angarsk

- delivered equipment:
  Air Handling Units LITENED and AIRNED,ducted ventilation equipment, fire dampers
- facility's area:
  22 000 m^2

SHOPPING AND BUSINESS CENTER “ALEXANDRIA”

City of Sochi

- delivered equipment:
  ducted ventilation equipment, chillers, fancoils
- facility’s area:
  40 000 m²



ORANGERIE SHOPPING CENTER

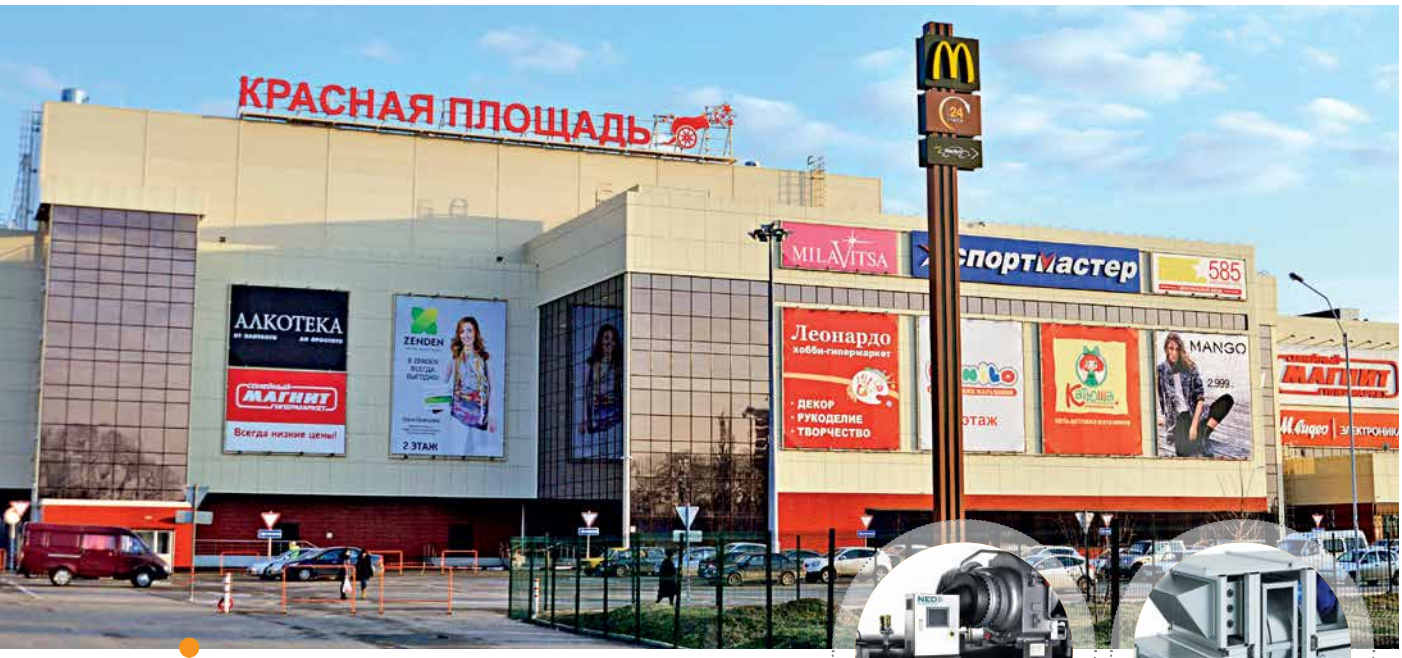
Bataysk city

- delivered equipment:
  Air Handling Units AIRNED, ducted ventilation equipment
- facility’s area:
  10 500 m²

CITY-LEROY MERLIN SHOPPING COMPLEX

City of Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED,
  ducted ventilation equipment
- facility's area: 35 000 m²



RED SQUARE SHOPPING CENTER

Armavir city

- delivered equipment:
  ducted ventilation equipment, chiller
- facility's area:
  40 000 m²

A2LOGISTIC LOGISTICS COMPLEX

City of Krasnodar

- delivered equipment:
  Air Handling Units AIRNED, ducted ventilation equipment
- facility's area: 40 000 m^2

CARNIVAL SHOPPING CENTER

City of Krasnodar

- delivered equipment:
  ducted ventilation equipment, chiller
- facility's area:
  17 000 m^2

JUNE SHOPPING CENTER

Mytishchi city

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment
- facility's area: 25 000 m²

MARMALADE SHOPPING CENTER

Taganrog city

- delivered equipment:
  Air Handling Units LITENED and AIRNED,
  ducted ventilation equipment
- facility's area: 52 000 m²

REPAIR WORLD OF HDM-SOUTH

Rostov-on-Don

- delivered equipment: **Air Handling Units LITENED, ducted ventilation equipment**
- facility's area: **24 000 m²**

UNIMALL SHOPPING CENTER

Moscow region

- delivered equipment: **Air Handling Units AIRNED, ducted ventilation equipment**
- facility's area: **300 000 m²**

GKB NO. 1
NAMED AFTER N.I. PIROGOV

City of Moscow

- delivered equipment:
  Air Handling Units AIRNED,
  ducted ventilation equipment
- facility's area:
  4000 m^2

RESEARCH INSTITUTE OF PHTHISIOPULMANOLOGY MMA THEM. I.M.SECHENOV

City of Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment
- facility's area:
  24000 m²

KGBUZ REGIONAL CLINICAL HOSPITAL

City of Barnaul

- delivered equipment:
  Air Handling Units LITENED and AIRNED, steam humidifier, control and measuring equipment and automatics, ducted ventilation equipment, chiller
- facility's area:
  14000 m²

FEDERAL STATE BUDGETARY INSTITUTION NATIONAL MEDICAL CENTER OF ENDOCRINOLOGY OF THE MINISTRY OF HEALTH OF THE RUSSIAN FEDERATION

City of Moscow

- delivered equipment: **Air Handling Units LITENED, fire safety ventilation equipment**
- facility's area: **15 000 m²**

MULTIDISCIPLINARY CLINICAL HOSPITAL WITH MATERNITY HOSPITAL

New Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment, control and measuring equipment and automatics, building management systems
- facility's area:
  100 000 m^2

GKB THEM. S.P. BOTKIN

City of Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED
- facility's area: 7 000 m^2

POLYCLINIC FOR 550 VISITS PER SHIFT

New Moscow

- delivered equipment:
  Air Handling Units LITENED, chiler
- facility's area: 5 500 m^2

PERINATAL CENTER "MOTHER AND CHILD"

City of Tyumen

- delivered equipment: Air Handling Units
  LITENED and AIRNED, ducted ventilation equipment
- facility's area: 55 000 m^2

PERINATAL CENTER

Tambov city

- delivered equipment: Air Handling Units LITENED and AIRNED, control and measuring equipment and automatics, steam humidifier, fire safety ventilation equipment
- facility's area: 1 000 m^2

KAMA CHILDREN'S MEDICAL CENTER

Naberezhnye Chelny

- delivered equipment: Air Handling Units LITENED, condensing units, ducted ventilation equipment, building management systems
- facility's area: 71 630 m^2

MEDSI CHILDREN'S POLYCLINIC

City of Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment
- facility's area:
  5 000 m^2

TUSHINSKAYA DGKB

City of Moscow

- delivered equipment:
  Air Handling Units AIRNED, ducted ventilation equipment
- facility's area:
  35 000 m²

MONIKA STATE UNIVERSITY NAMED AFTER M. F VLADIMIR'S

City of Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED
- facility's area:
  5 500 m²

MEDSI CLINIC

City of Moscow

- delivered equipment:
  SMARTNED VRF SYSTEMS
- facility's area:
  3720 m²

PERINATAL CENTER

City of Nalchik

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment
- facility's area:
  32000 m²

HOUSE ON KOTELNICHESKAYA EMBANKMENT

City of Moscow

- delivered equipment:
  fire safety ventilation equipment
- facility's area:
  2300 m^2

ADMIRAL HOTEL

Saransk city

- delivered equipment:
  Air Handling Units LITENED, chiller
- facility's area:
  1 500 m^2

TRKG "KORSTON"

City of Kazan

- delivered equipment:
  Air Handling Units AIRNED, smoke exhaust fans, fire dampers
- facility's area:
  70 000 m^2

RESIDENTIAL COMPLEX “PETER ALEKSEEV”

City of Moscow

- delivered equipment:
  chillers
- facility's area:
  80 000 m^2

RESIDENTIAL COMPLEX “PEHRA”

Balashikha city

- delivered equipment: **Air Handling Units LITENED, fire safety ventilation equipment, fire dampers, building management systems**
- facility’s area: **30 000 m²**

"DA VINCI" RESIDENTIAL COMPLEX

City of Moscow

- delivered equipment:
  Air Handling Units AIRNED, smoke exhaust fans
- facility's area:
  90 000 m²

TERLETSKY BOARDING HOUSE

Gorki, Krasnaya Polyana

- delivered equipment:
  Air Handling Units AIRNED, smoke exhaust fans
- facility's area:
  the boarding house consists of 24 residential, administrative and economic buildings

RESIDENTIAL COMPLEX "SEREBRYANY BOR"

City of Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED, Ducted ventilation equipment, building management systems
- facility's area:
  23000 m^2

RESIDENTIAL COMPLEX "BEREGOVOY"

City of Moscow

- delivered equipment:
  equipment for ventilation systems, fire safety ventilation equipment
- facility's area: 320 000 m^2

RESIDENTIAL COMPLEX “DMITROVSKY PARK”

city of Sochi

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment, automation systems and building management systems
- facility’s area: 185 000 м^2

BUSINESS CENTER “ANCHOR”

City of Moscow

- delivered equipment:
  equipment for ventilation systems, chiller
- facility’s area:
  30 000 m²

BUSINESS CENTER “ZUBOVSKY BOULEVARD, 17 C1”

City of Moscow

- delivered equipment:
  SMARTNED VRF SYSTEMS
- facility’s area:
  10 413 m²

HILTON HOTEL

Vladikavkaz city

- delivered equipment:
  SMARTNED VRF SYSTEMS
- facility's area:
  15 000 m²

SOYUZMULTFILM FILM STUDIO

City of Moscow

- delivered equipment:
  SMARTNED VRF SYSTEMS, Air Handling Units LITENED and AIRNED, ducted ventilation equipment,
- facility's area:
  5 000 m²

KOREAN BUSINESS CENTER

City of Moscow

- delivered equipment:
  Air Handling Units AIRNED, fire dampers, smoke exhaust systems
- facility's area:
  50 000 m²

INFINITI CAR DEALERSHIP

city of Kazan

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment
- facility's area:
  1 600 m²

HONDA DEALERSHIP

Aksai city

- delivered equipment:
  ducted ventilation equipment, control and measuring equipment and automatics
- facility's area:
  2 500 m²

TATNEFT ADMINISTRATIVE BUILDING

Almetyevsk city

- delivered equipment:
  fire safety ventilation equipment, SMARTNED VRF SYSTEMS
- facility's area: 10 000 m^2

BUSINESS CENTER "BALANCE"

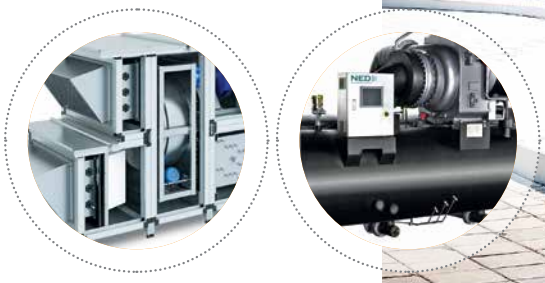
City of Krasnoyarsk

- delivered equipment:
  Air Handling Units LITENED and AIRNED, SMARTNED VRF SYSTEMS
- facility's area:
  70 000 m²

RUSSIAN PEOPLES ' FRIENDSHIP UNIVERSITY (RUDN)

City of Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED, chiller
- facility's area:
  10 000 m²



MBOU “SCHOOL NO. 35”

City of Kazan

- delivered equipment:
  Air Handling Units AIRNED, ducted ventilation equipment, fire dampers
- facility’s area: 2500 m^2

KINDERGARTEN

New Moscow

- delivered equipment:
  equipment for ventilation systems, smoke exhaust system, equipment for air-conditioning systems
- facility’s area:
  2500 m^2

CITY COURT BUILDING

Saint Petersburg

- delivered equipment:
  fancoils
- facility's area:
  5 000 м^2

FSB ACADEMY

City of Moscow

- delivered equipment:
  equipment for ventilation systems
- facility's area:
  100 000 м^2

NATIONAL STANDARD BANK

City of Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment, building management systems, chiller, fancoils, fire dumpers
- facility's area:
  60 000 m^2

TOYOTA CENTER EAST

Aksai city

- delivered equipment:
  Air Handling Units LITENED and AIRNED
- facility's area:
  5000 m²

MULTIFUNCTIONAL CAR CENTER "RUS-TRADE", KIA

Podolsk city

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment, condensing units
- facility's area:
  2500 m²

SARATOV ART MUSEUM NAMED AFTER A. N. RADISHCHEV

City of Saratov

- delivered equipment:
  Air Handling Units LITENED, ducted ventilation equipment, building management systems
- facility's area:
  1 700 м^2

SARATOV REGIONAL PHILHARMONIC NAMED AFTER A. SCHNITTKE

City of Saratov

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment, smoke exhaus systems
- facility's area:
  5 000 м^2

DHL WAREHOUSE

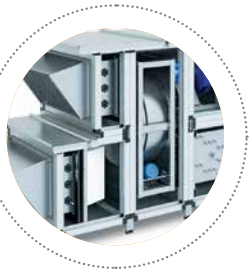
Pushkino city

- delivered equipment:
  Air Handling Units AIRNED, ducted ventilation equipment
- facility's area:
  300 000 м^2

MUSEUM OF THE FIRST PRESIDENT OF KAZAKHSTAN

Astana city

- delivered equipment:
  Air Handling Units AIRNED, ducted ventilation equipment, chiller
- facility's area:
  5 000 м^2



NORTHERN RIVER STATION

City of Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment, fire safety ventilation equipmen, SMARTNED VRF SYSTEMS
- facility's area: 6000 м^2

ДИПЛОМ

«МОСКОВСКАЯ РЕСТАВРАЦИЯ – 2020»

НАГРАЖДАЕТСЯ

VGIK NAMED AFTER GERASIMOV

City of Moscow

- delivered equipment:
  Air Handling Units LITENED and AIRNED, ducted ventilation equipment
- facility's area:
  5 000 м^2

KRASNODAR HIGHER MILITARY SCHOOL

City of Krasnodar

- delivered equipment:
  ducted ventilation equipment
- facility's area:
  10 000 м^2

GEOGRAPHY OF SALES

4

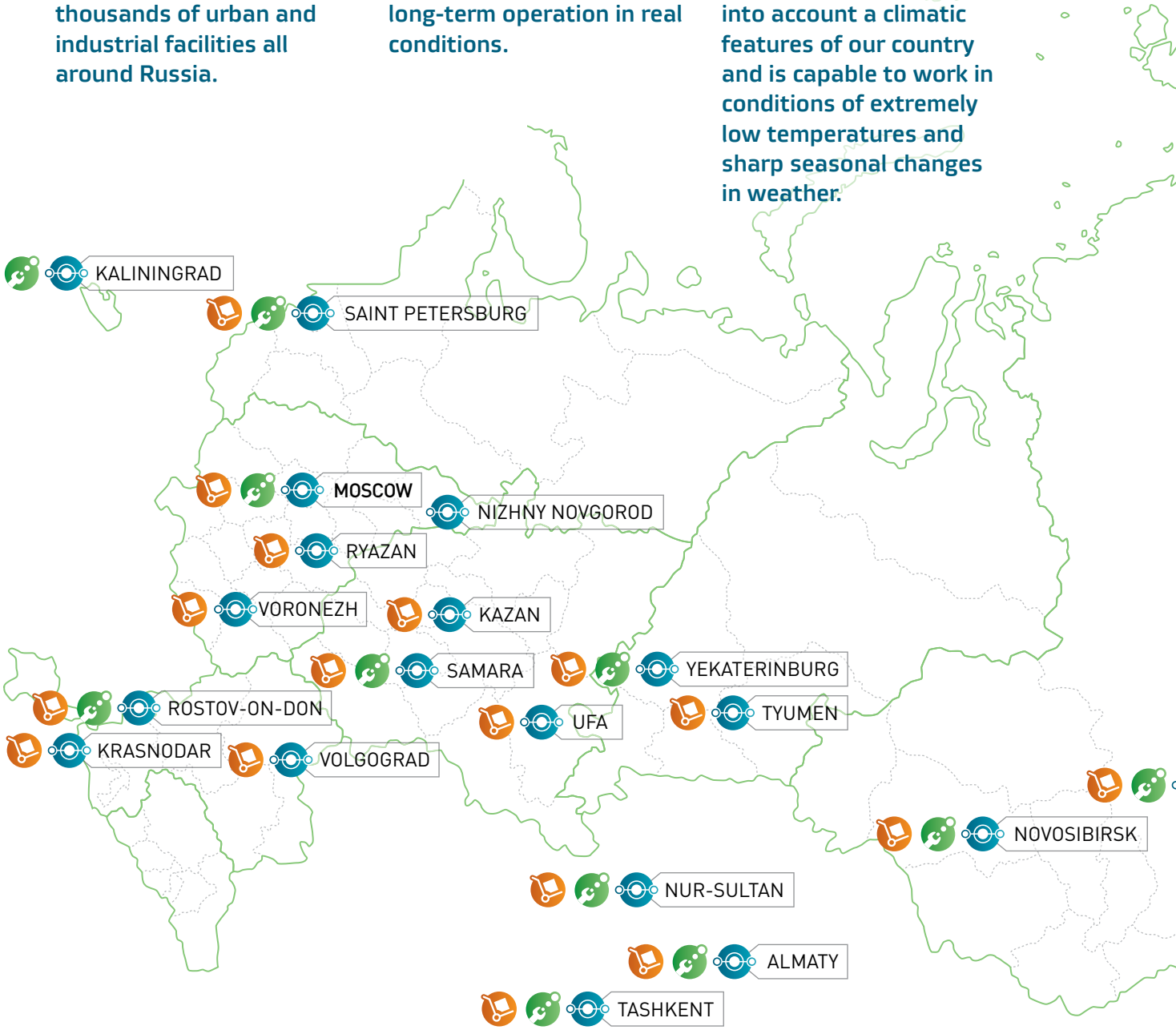
Geography of sales

WHERE DOES OUR EQUIPMENT WORK?

NED climatic systems are installed on tens of thousands of urban and industrial facilities all around Russia.

The reliability of our equipment is confirmed by long-term operation in real conditions.

NED technology is designed and produced with taking into account a climatic features of our country and is capable to work in conditions of extremely low temperatures and sharp seasonal changes in weather.



LEGEND:

- OFFICE
- SERVICE CENTER
- WAREHOUSE

REPRESENTATIVE OFFICES:

- Volgograd
- Voronezh
- Yekaterinburg
- Kazan
- Kaliningrad
- Krasnodar
- Krasnoyarsk
- Moscow
- Nizhny Novgorod
- Novosibirsk
- Rostov-on-Don
- Samara
- St. Petersburg
- Tyumen
- Ufa
- Khabarovsk
- Yuzhno-Sakhalinsk

- Kazakhstan, Almaty
- Uzbekistan, Tashkent

CONTACTS

5

Contacts

Offices in Moscow

Central office:
Address: 11, bld.1, Shchipok str.,
Moscow, Russia, 115054
Phone: +7 (800) 555 8448 (multi-channel)
e-mail: ned@air-ned.com
www.air-ned.com

Warehouse:
Address: bld.1, Energetikov st.,
Dzerzhinsky, Moscow region

Representative offices

Volgograd
Tel.: +7 (8442) 26-04-28/29
10 Grushevskaya str.,
Volgograd, 400074
e-mail: volgograd@air-ned.com

Voronezh
Tel.: +7 (473) 220-50-09,
Office 609,
130 Moskovsky Prospekt str.,
Voronezh, 394053
e-mail: voronezh@air-ned.com

Yekaterinburg
Tel.: +7 (343) 270-22-12
Office 310, building 2,
12 Sibirsky trakt str.,
Yekaterinburg, 620100
e-mail: ekat@air-ned.com

Kazan
Tel.: +7 (843) 524-70-53
Office 506, 58 Ibragimova ave.,
(BC «On Ibragimova»)
Kazan, Rep. Tatarstan, 420066
e-mail: kazan@air-ned.com

Kaliningrad
Tel.: +7 (905) 223-18-40
Office 208.2, 117 Kalinina ave.,
Kaliningrad, 236039
e-mail: kaliningrad@air-ned.com

Krasnodar
Tel.: +7 (861) 211-20-92
+7 (861) 211-20-36/37
Office 5, 3/5 Vishnyakova str.,
Krasnodar, 350001
e-mail: krasnodar@air-ned.com

Красноярск
Tel.: +7 (391) 200-10-82
Office 10-21, 10 floor,
88 Karaulnaya str.,
Krasnoyarsk, 660020
e-mail: krasnoyarsk@air-ned.com

Nizhny Novgorod
Tel.: +7 (831) 411-15-58
+7 (831) 411-15-59
Office 307,
77 Kommunisticheskaya str.,
Nizhny Novgorod, 603002
e-mail: nnov@air-ned.com

Novosibirsk
Tel.: +7 (383) 319-12-13
Office 509, 26 Krylova str.,
Novosibirsk, 630091
e-mail: novosib@air-ned.com

Rostov-on-Don

Tel.: +7 (863) 203-72-70
+7 (863) 203-72-71
Office 413, BC «POISK»,
1/52 50-letiya Rostselmash str.,
Rostov-on-Don, 344065
e-mail: rostov@air-ned.com

Ryazan

Tel.: +7 (4912) 30-02-03
Pom. N2, office 307,
38 Pravo-Lybedskaya str.,
Ryazan, 90000
e-mail: ryazan@air-ned.com

Samara

Tel.: +7 (846) 207-18-08
+7 (846) 207-18-98
+7 (846) 207-19-98
Letter BB1, office 7,
27, Stara Zagora str.,
Samara, 443081,
e-mail: samara@air-ned.com

St. Petersburg

Tel.: +7 (812) 655-52-20,
Office 415, 8 Melnichnaya str.,
St. Petersburg, 192019
e-mail: spb@air-ned.com

Tyumen

Tel.: +7 (3452) 62-53-04
Office 209, floor 2,
4 Malaya Borovskaya str.,
Tyumen, 625008
e-mail: tmn@air-ned.com

Ufa

Tel.: +7 (347) 246-98-46
Office 402, 134/4 Mendeleev str.,
Ufa, 450022
e-mail: ufa@air-ned.com

Khabarovsk

Tel.: +7 (909) 850-37-06
e-mail: ned_dv@mail.ru

Yuzhno-Sakhalinsk

Tel.: +7 (962) 120-10-36
e-mail: ysakhalinsk@air-ned.com

Uzbekistan, Tashkent

Tel.: +998 71 2362066
Apartment 13, house 24, C-2,
Yunusabad district, Tashkent,
Republic of Uzbekistan,100000
e-mail: info@air-ned.uz
www.air-ned.uz

Kazakhstan, Almaty

NED (NED) Kazakhstan LLP
Tel.: +7 (727) 220 73 03
+7 (727) 220 73 01
+7 (727) 220 71 49
+7 (727) 220 73 04
Office 205, 55 Karasai batyr str.,
Almaty, Kazakhstan, 050000
e-mail: almaty@air-ned.com

Kazakhstan, Nur-Sultan

Tel: +7-7172-980020
Office №608, BC «The SQUARE»,
46/1 Turan Ave, Nur-Sultan,
Kazakhstan, 010000
e-mail: rustam.kanatov@air-ned.com

Distributors

Chelyabinsk

IntelKlimat LLC
Tel.: +7 (351) 778-52-43
+7 (351) 778-52-44
9 Sverdlovsk tract,
Chelyabinsk, 454008
e-mail: air-ned@inbox.ru

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