

www.koja-russia.ru
+7 (495) 204-30-01
8 (800) 775-42-13
E-mail: info@koja-russia.ru



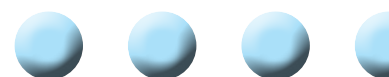
Air Handling Unit Future

Future – versatile air handling

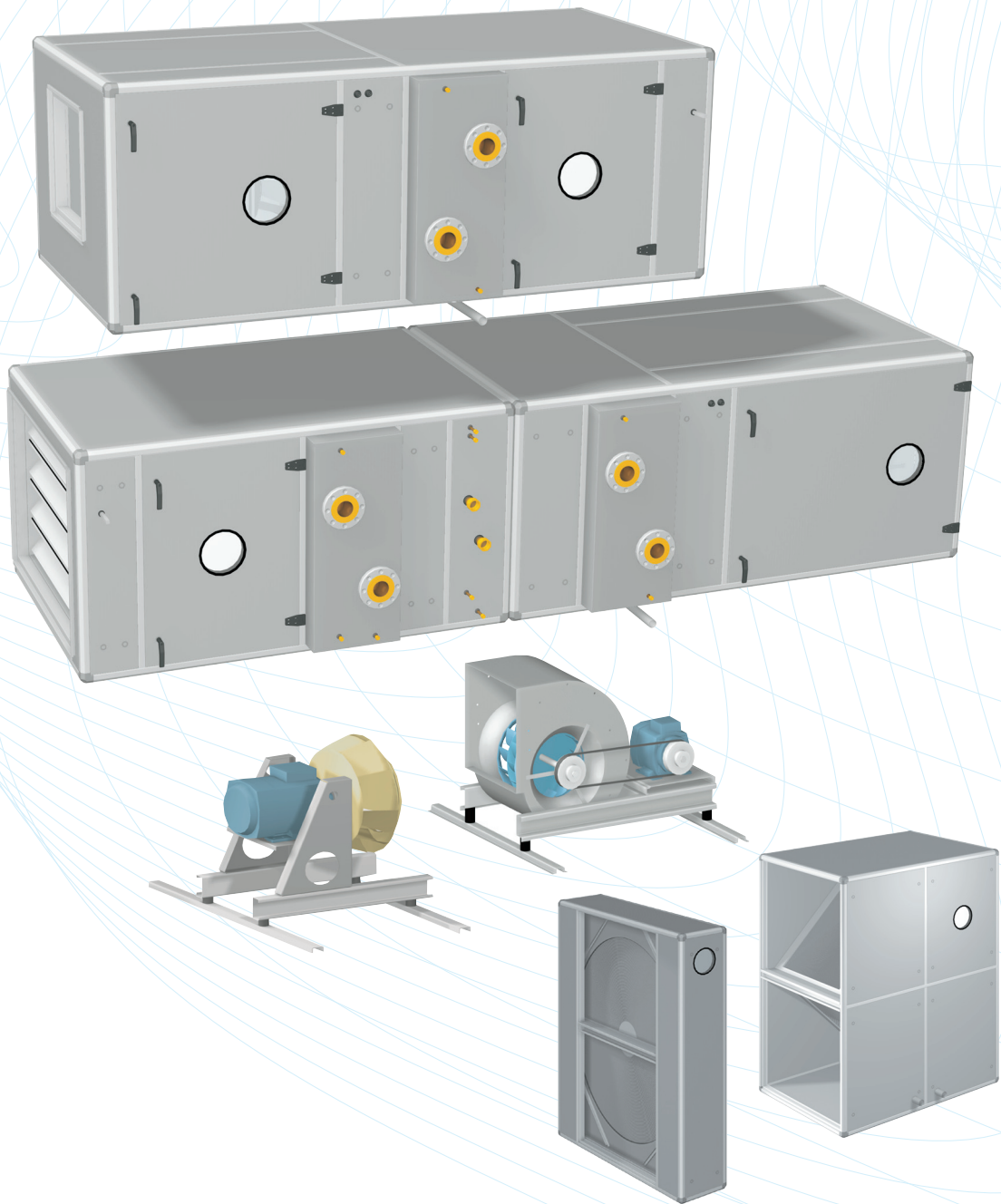
The air handling unit Future is the answer to the tough requirements set by the market and authorities. This high-quality product is the result of a careful design, consistent quality assurance and state-of-the-art manufacturing techniques.

The most important feature of Future is that it is suitable for practically any air handling purpose. The wide selection includes an air handling unit with a suitable size, flow rate capacity and component combination for every application.

KOJA  **FUTURE**



Future - the largest selection of air handling units on the market



The Koja Group has contributed significantly to the branch's development by participating in different R&D projects. The results of these projects, including the knowledge and experience gained, were all put to use in the design of the air handling unit Future.

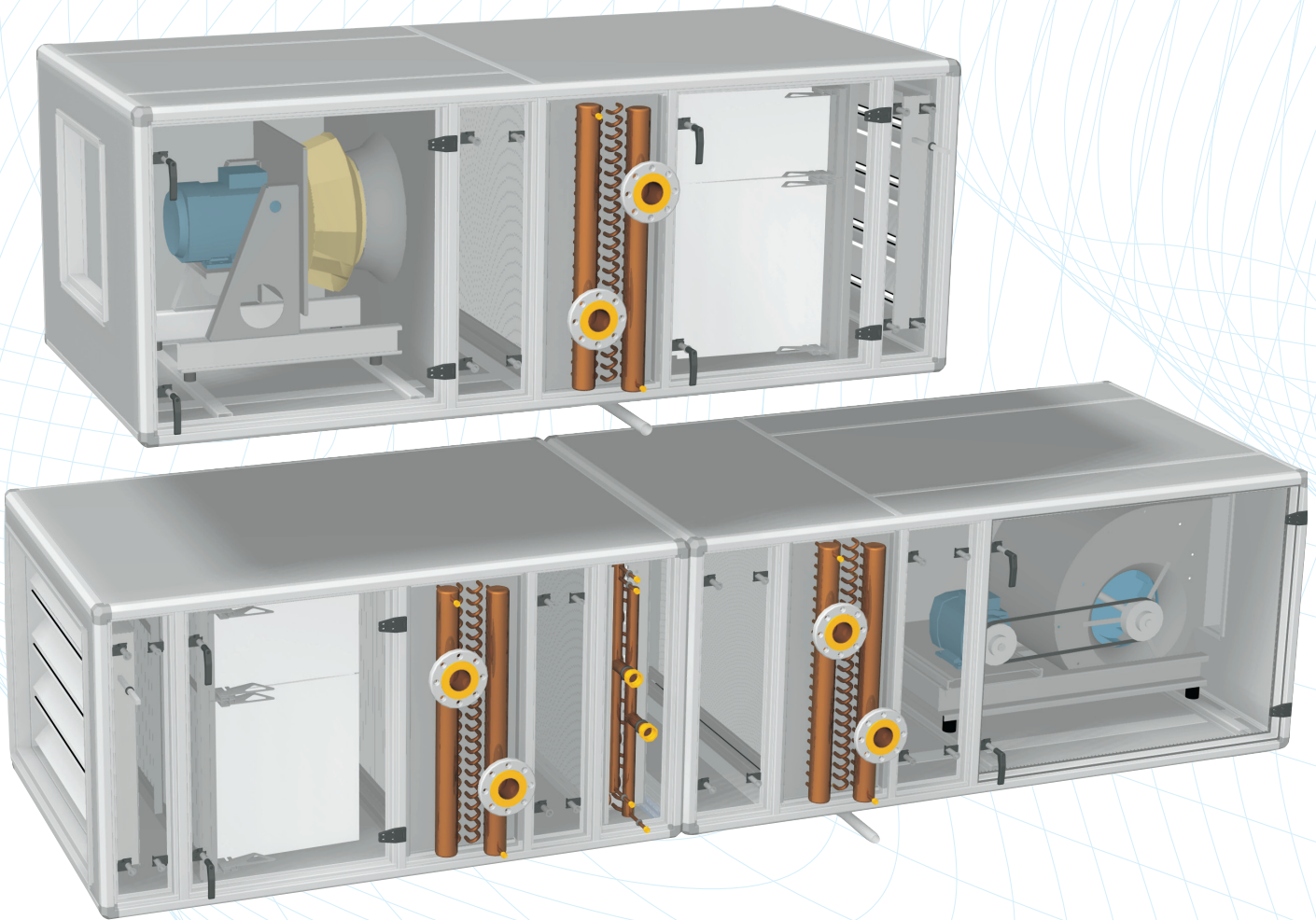
Carefully selected components, incomparable mechanical, thermal and flow performance, and conformity with the design and tightness requirements of CEN standards are a guarantee that Future comes up even to the highest customer expectations.

Unit size	Width mm	Height mm	Face area m ²	Filter modules	Flow rate capacity m ³ /s													
					0.2	0.3	0.4	0.5	0.6	0.8	1	2	3	4	5	6	7	8
0603	790	470	0,21	□	1 1,5 2 2,5 3 3,5 4 m/s													
0605	790	670	0,34	□	1 1,5 2 2,5 3 3,5 4 m/s													
0606	790	790	0,42	□	1 1,5 2 2,5 3 3,5 4 m/s													
0906	1070	790	0,60	□	1 1,5 2 2,5 3 3,5 4 m/s													
0909	1070	1070	0,86	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1206	1350	790	0,78	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1208	1350	990	1,02	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1209	1350	1070	1,12	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1210	1350	1190	1,27	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1212	1350	1350	1,46	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1506	1670	790	0,99	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1509	1670	1070	1,42	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1512	1670	1350	1,85	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1515	1670	1670	2,34	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1809	1990	1070	1,71	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1810	1990	1190	1,93	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1812	1990	1350	2,23	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1815	1990	1670	2,83	▢	1 1,5 2 2,5 3 3,5 4 m/s													
1818	1990	1990	3,42	▢	1 1,5 2 2,5 3 3,5 4 m/s													
2409	2550	1070	2,23	▢	1 1,5 2 2,5 3 3,5 4 m/s													
2412	2550	1350	2,90	▢	1 1,5 2 2,5 3 3,5 4 m/s													
2415	2550	1670	3,68	▢	1 1,5 2 2,5 3 3,5 4 m/s													
2418	2550	1990	4,45	▢	1 1,5 2 2,5 3 3,5 4 m/s													
2421	2550	2310	5,23	▢	1 1,5 2 2,5 3 3,5 4 m/s													
2424	2550	2550	5,81	▢	1 1,5 2 2,5 3 3,5 4 m/s													
3015	3190	1670	4,65	▢	1 1,5 2 2,5 3 3,5 4 m/s													
3018	3190	1990	5,63	▢	1 1,5 2 2,5 3 3,5 4 m/s													
3021	3190	2310	6,61	▢	1 1,5 2 2,5 3 3,5 4 m/s													
3024	3190	2550	7,34	▢	1 1,5 2 2,5 3 3,5 4 m/s													
3624	3790	2550	8,78	▢	1 1,5 2 2,5 3 3,5 4 m/s													
3627	3790	2870	9,96	▢	1 1,5 2 2,5 3 3,5 4 m/s													
3630	3790	3190	11,13	▢	1 1,5 2 2,5 3 3,5 4 m/s													

The recommended maximum flow rates for functional sections

Damper and control sections	4 m ³ /s	Heating section, water	4 m ³ /s
Filter section	4 m ³ /s	Heating section, electricity	4 m ³ /s (min. 2 m ³ /s)
Heat recovery section, coil	3,5 m ³ /s	Cooling section	2,5 m ³ /s (with drop separator 3,5 m ³ /s)
Heat recovery section, rotor	3,5 m ³ /s	Fan section	4 m ³ /s
Heat recovery section, plate	3,5 m ³ /s	Humidifier section	3 m ³ /s
		Sound attenuator section	4 m ³ /s

High-quality indoor air with air handling unit Future



Tight construction is an important factor in good indoor air quality

A successful HEPAC project requires expertise not only in the design and implementation but also in the selection of required equipment. Equally important are instructions for service to ensure good indoor air quality at all times during the operation of the equipment.

The air handling unit Future was designed with a great emphasis on indoor air quality factors such as a tight casing and a tight seal between the filter and frame.

High-standard casing design

The casing frame consists of closed, hot-galvanized steel profiles and corner fittings made of aluminium.

The covering plates and access doors have double construction. They are made of hot-galvanized steel plate and insulated with non-flammable mineral wool.

The casing is put together by means of adhesive or screws, so it can be dismantled and assembled again without the solidness or tightness being affected.

The construction of the corner profiles of access doors makes possible even the tightness class A1 where extremely tough requirements are set for tightness, energy economy and noise level.

High hygiene level

The hygiene model, Future Clean, is the solution when the air needs to be cleaner than clean.

The casing of Future is made of washable and disinfectable material, and it is absolutely tight inside.

The cleaning of functional sections is made easy by large access doors fixed, if necessary, on hinges, and pull-out components. Moreover, Future can be mounted in a declination of 1...2% so that the cleaning water flows out through section-specific water outlets.

The fan section can be equipped with a mixed-flow fan with direct drive or a centrifugal fan with belt drive.

Sound attenuator lamellas are finished with dry or wet cleanable material. The lamellas can be removed for cleaning through an access door.

Cornerstone of economy management: optimization of life-cycle costs

The life-cycle costs of an air-conditioning system consist of investment, operation, maintenance and disposal. Most of the operational costs are caused by the thermal energy needed for heating, cooling and humidifying air, and fan and pump motors' consumption of electricity.

The air handling unit Future features several different functions to recover heat, and the most economical fan for every application is to be found from the wide Future selection of fans of several types and sizes.

Short delivery times and efficient quality control

Development of company activities in conformance with the ISO 9001 quality system requirements, harmonization of procedures, assurance of performances and establishment of follow-up procedures have made it possible to further increase the quality of products and activities and shorten delivery times.

Measurements and inspections are carried out at every stage of the production process all the way from the receiving of materials and components to the final testing of the finished product according to a predetermined sampling plan.

State-of-the-art production technology and modern production plants

Modern, accurate and partly automated production equipment and techniques in Jalasjärvi production plant guarantee the continuing high quality of Future air handling units produced. Well-thought-out production plans, efficient logistics, and the modular construction and standardized components of Future make the large selection of functions and sizes and prompt deliveries possible.

Delivery in comprehensive assemblies - easy to install

The frame made of steel profiles makes the air handling unit Future extremely solid. If delivered ready assembled and fixed on the base frame, the installation of a Future unit very simple. If this kind of delivery is not possible, the unit can be delivered in blocks or functional modules.

The product are packed in durable, tight material for transportation and storage at the construction site.

Every Future delivery includes instructions for transport, storage, installation, operation and service.

Service and maintenance - essential elements of economy

The air handling unit Future is designed considering the easy of service, maintenance and cleaning for instance by reserving enough space. There are no holes or corners gather dirt inside the casings. The fastenings of components open downwards and are so constructed that they cannot gather any water. The components can be pulled out or the space required for service and maintenance is arranged in another way. If necessary, to get more space or to be able to carry out all the required service or maintenance work, the covering plates can be removed.

Access doors have latches with detachable handles. They can also be hinged, especially large doors, to make them easier to handle. The seals of an access door are attached to the door to protect them from getting damaged during service and maintenance.

Special Future functions - a guarantee for a long life cycle

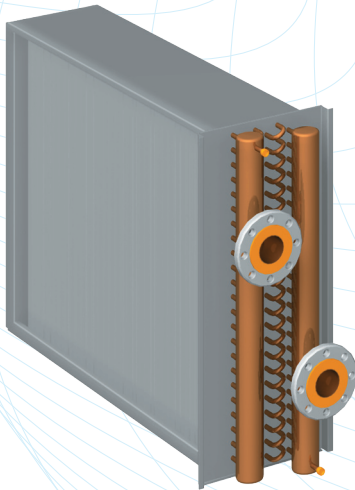
Dampers

In the design dampers, special attention was paid to tightness, thermal insulation, and energy economy. The dampers have opposed, heat-insulated blades with sealings of silicon rubber in between.

Filters

The selection of filters for Future is large, offering numerous options. The level of filtration can be selected according to the set requirements, taking into consideration the effect of filtering on the life-cycle costs. There are several filters of different filter classes, materials and filtering areas to choose from. Filter casings come in three lengths.

Particle filters are made of synthetic material or fibreglass. Chemical filtration is carried out by means of activated carbon.



Heat exchangers

The coil exchangers used in Future air handling units are manufactured by Koja. This means that the face area, lamella profile, lamella thickness, and lamella spacing can be easily varied according to the exchanger application to optimize the heat effect and pressure drop.

Heat recovery, heating and cooling

There are three different types of heat exchangers available for recovering heat from exhaust air. Fluid exchanger and plate exchanger transfer heat; rotating exchanger transfers both heat and humidity. The heat exchanger is selected according to the application, available space, and exhaust air quality.

For heating the air, an exchanger with water circulation or an electric exchanger can be used. For cooling, there are fluid exchanger and direct-evaporation exchanger to choose from.

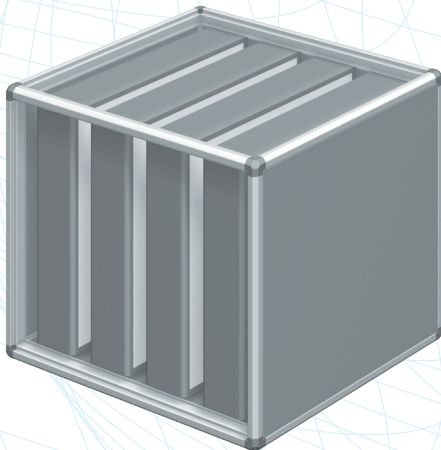
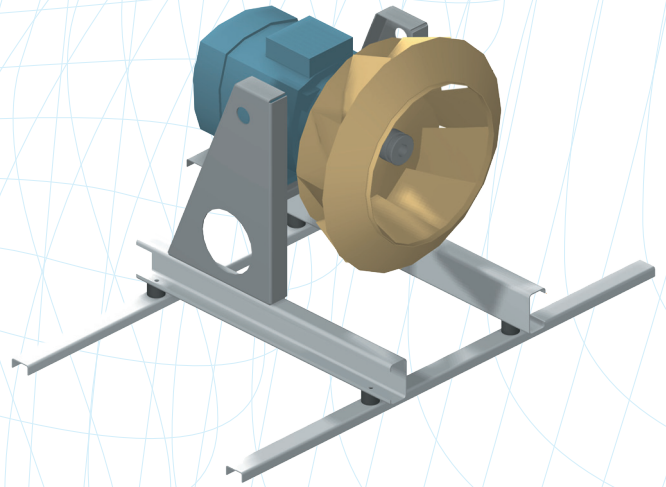


Fans

Future air handling units can be equipped with different kinds of fans, depending on the prevailing conditions. The fan selection includes a centrifugal fan of very high efficiency. For small and medium air flow volumes, the most suitable options are the practically service-free mixed-flow fan with direct drive controlled by a frequency transformer. This offers an excellent efficiency, and is capable of regulating air flow and pressure within a wide range.

There are as many as three different fan sizes available for one Future unit size to make sure that the efficiency can be maximized and the operating/maintenance costs minimized in all conditions, .

The fan can be equipped with a volume flow meter to control the air flow during the installation of an air-conditioning plant and, later, to achieve the desired air flow rate in the most economical way.



Sound attenuators

The wide selection of sound attenuators includes straight attenuators of different lengths and highly efficient angular attenuators with lamellas or with the inside covered with sound absorbing material. Sound attenuator lamellas are finished with dry or wet cleanable material. The lamellas can be removed for cleaning through an access door.

Humidifiers

Air is humidified with a cellular humidifier operated by once-through or circulating water. The degree of humidity can be set at 65%, 85% or 95%. The available control methods are on-off control, step control and dew-point control.

The casing of the humidifier section also features an extra connection to connect steam pipes if desired.

Free section

This largest selection of air handling unit sizes and sections on the market, has been further extended by one more option, the so-called free section. The casing of this section is heat-insulated and is available in many lengths. Inside the casing, several different parts and components for handling air, controlling the air flow, or monitoring the unit operation can be installed.

The components of the free section can be adapted to the dimensioning of the air handling unit and the state of the air handled. In addition, there is a large number of accessories available for this section.

Flexible design with Future dimensioning program and CAD software

Koja Future Dimensioning program Version 2010.10 Page 1

Object: Vakokokoopano 19
Customer: Customer

Unit card

Object: Vakokokoopano 19
Author: Matti Huvinen
Unit description: 1206/

Performance figures:
- Air flow
- Pressure rise, static

Motor:
Manufacturer: Koja Oy
Type: Future
Power: 4.0 kW
Current: 7.88 A
Voltage: 400 V
Frequency (nominal): 50 Hz
Speed (nominal): 2850 1/min

Fan section:
Rotation speed: 2850 1/min
Max. rotation speed: 3000 1/min
Filter section, long L: 1500 mm
Filter case: 1500 mm
Nominal size of filter: 1500 mm
Number of filters: 1

EXHAUST UNIT
Devices:
Type: Future
Performance figures:
- Air flow
- Pressure rise, static

Motor:
Manufacturer: Koja Oy
Type: Future
Power: 4.0 kW
Current: 7.88 A
Voltage: 400 V
Frequency (nominal): 50 Hz
Speed (nominal): 2850 1/min

Fan section:
Rotation speed: 2850 1/min
Max. rotation speed: 3000 1/min
Filter section, long L: 1500 mm
Filter case: 1500 mm
Nominal size of filter: 1500 mm
Number of filters: 1

Koja Future Dimensioning program Version 2010.10 Page 1

Registered user: Koja Oy

Object: Vakokokoopano 19
Author: Matti Huvinen
Unit description: 1206/

Supply unit:
Unit size: 1206
Unit type: 1206
Air flow: 1.90 m³/s
Air flow: 1.90 m³/s
Face velocity: 2.5 m/s
Face velocity: 2.5 m/s
Pressure drop of the ductwork, pst: 300 Pa
Pressure drop of the ductwork, pst: 300 Pa
SFPv: 2.48 kW/(m³/s)
Unit weight (incl. motor): 1562 kg
Sound power level to supply air duct: 61 dB(A)
Motor: 3 - 400 V
Power: 4.0 kW
Current: 7.88 A
Voltage: 400 V
Frequency (nominal): 50 Hz
Speed (nominal): 2850 1/min

Exhaust unit:
Unit size: 1206
Unit type: 1206
Air flow: 1.90 m³/s
Air flow: 1.90 m³/s
Face velocity: 2.5 m/s
Face velocity: 2.5 m/s
Pressure drop of the ductwork, pst: 300 Pa
Pressure drop of the ductwork, pst: 300 Pa
SFPv: 2.48 kW/(m³/s)
Unit weight (incl. motor): 1562 kg
Sound power level to exhaust air duct: 51 dB(A)
Motor: 3 - 400 V
Power: 4.0 kW
Current: 7.88 A
Voltage: 400 V
Frequency (nominal): 50 Hz
Speed (nominal): 2850 1/min

Sections:
T_a (°C) T_r (°C) q_v (l/s) ΔP_f (Pa) ΔP_a (Pa) Et (%) P (kW)

Damp section: 15
Filter section, long L: 1500
Heat recovery section, rotary: 327/110
Inspection section: 11/20
Heating section, fluid: 60.0/140.0
Inspection section: 37/16 7.9/12.0
Fan section, mixed-flow: 15
Sound attenuator: Dry-wiped
Sound attenuator: Dry-wiped
Filter section, long L: 1500
Heat recovery section, rotary: 327/110
Fan section, mixed-flow: 15
Damp section: 15

Max length / width / height (mm): 6000 / 1670 / 1900

Koja Future Dimensioning program Version 2010.10 Page 1

Registered user: Koja Oy

FAN CHARACTERISTIC

Object: Vakokokoopano 19
Unit description: 1206
Fan section, mixed-flow: FFTS-1206-R-2-SB-1-1-2-1-3-S-3

Fan: OPEB-1040
Air flow: 1.90 m³/s
Pressure rise, static: 240 Pa
Efficiency, st: 69.0 %
Rotation speed: 2950 1/min
Max. rotation speed: 3328 1/min
Shaft power: 2.04 kW
Noise level, A-weighted value k-factor / differential pressure: 0.0454 / 11750 Pa
Air density (20 °C, 0 m): 1.20 kg/m³

Motor: APAL-2-0040-2-3-4
Power (nominal): 4.00 kW
Speed (nominal): 2850 1/min
Current (nominal): 7.88 A
Efficiency (nominal): 84.2 %
Voltage: 3 - 400 V
Frequency (nominal): 50 Hz
Frequency min / operational point max: 10 / 45 54 Hz

Graph: Pressure drop (Pa) vs. Air flow (m³/s) for various efficiency levels (30% to 85%).

Dimensions: 600, 450, 2000, 1350, 790, 150, 5700, 1000, 450, 1150, 1750, 1350, 790, 150, 1830, 790, 150

Interior light
Air flow measuring section
Water connection
Water trap
Window
Maintenance switch
Frequency converter

Project:	Vakokokoopano 19
Item:	1206/
Weight:	1551 kg
Supply unit:	Future 1206 1.9 m³/s
Exhaust unit:	Future 1206 1.9 m³/s

Koja Oy
Matti Huvinen
PL 351
33101 Tampere
03 2825229

Dimensioning program - a tool for total project management

The dimensioning program for the air handling unit Future is a valuable tool for unit selection, economical unit design, and data transfer at all stages of every individual project.

Energy economy - the connecting thread of a design process

The dimensioning program helps to find the most suitable air handling unit with the most suitable combination of sections from the largest selection on the market and this way to maximize the efficiency and minimize the operating/maintenance costs. The program features a function for comparing the SFP values of different unit sizes at the beginning of the design process, which facilitates the selection of the most economical unit for every application.

Right units to right conditions

The dimensioning program contains data on the design input, design requirements, components, and accessories of some typical air handling units. This data can be adapted to varying requirements and stored in a project-specific directory for future reference.

Documents up to date

Printed technical data produced by the dimensioning program can be included in the project documentation without further processing. Dimensional drawings can be printed out to any desired scale to facilitate the design of the Future unit's duct connections, and to speed up the installation.

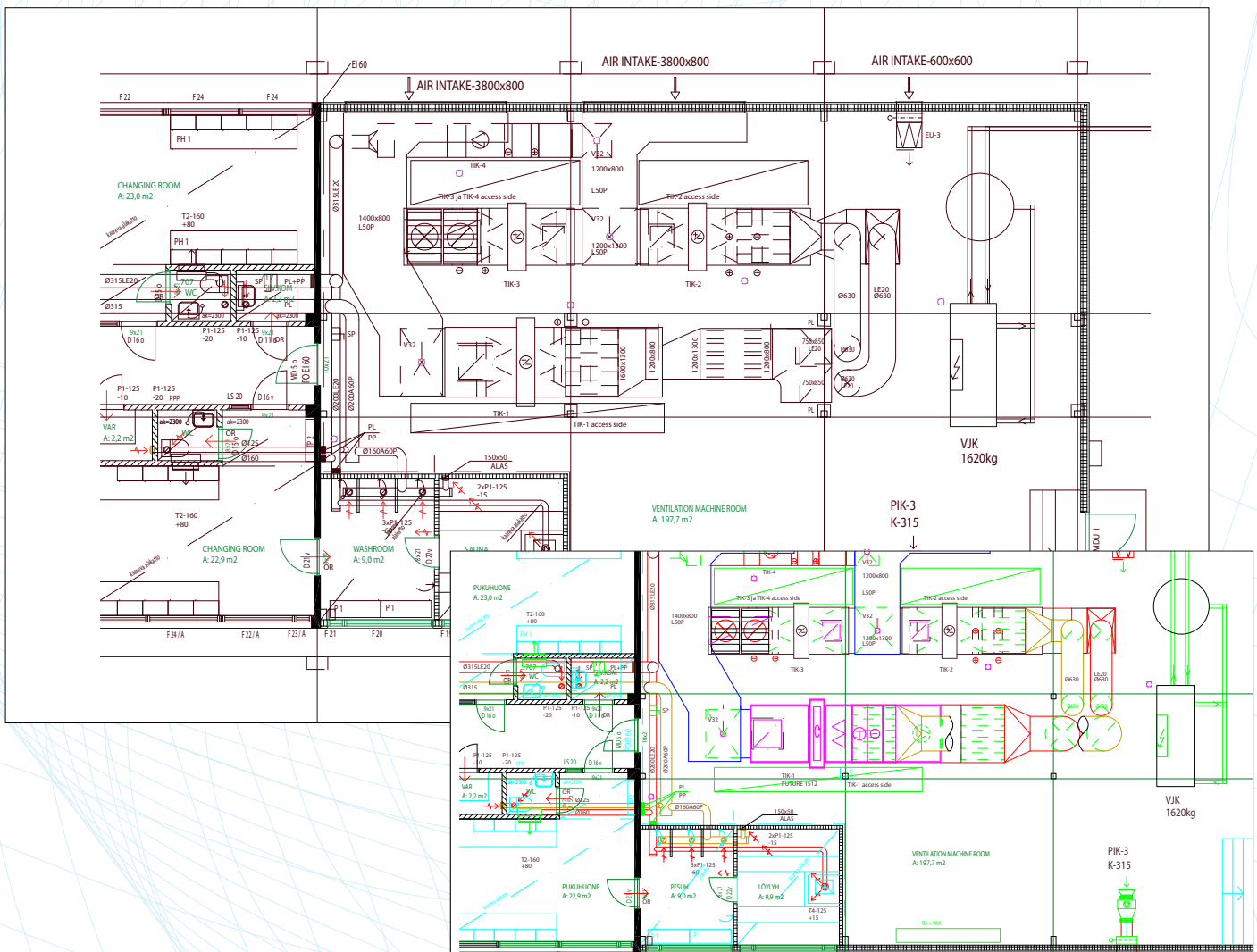




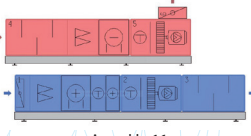
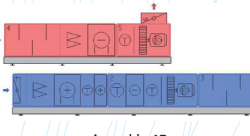
Image files from Future design program directly to CAD program

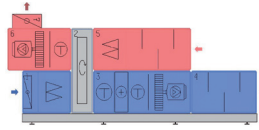

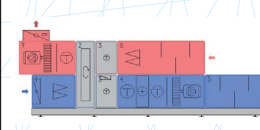
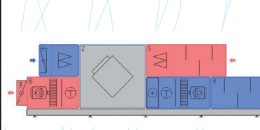
From the Future design program, the drawing of an air handling unit can be transferred to a CAD program. The drawing contains symbols and other details generally used by HEPAC designers, and it can be transferred as a 2D drawing or 3D model. The dimensioning program has a CAD application for AutoCad R14 and AutoCad 2000, which can be used to open drawings from Future project files as AutoCad blocks. The Future design program also features a DXF translator for translating Future project files into dxf-files, which can be read in different CAD applications, e.g. Auto-CAD LT.

Clear impression of space requirements

An image file of the Future dimensioning program can be transferred to a CAD system as a 2D drawing or 3D model. In the case of a 2D drawing, there are 6 different projections available. To facilitate the further processing of image files, modules / functional sections and symbols are displayed on different levels. The space required by the air handling unit can be easily determined when the unit is drawn in the right place and precisely to scale.

Main dimensions and weights of standard assemblies

Length (mm) Weight (kg)						
Size	B (mm)	H (mm)	Assembly 2	Assembly 3	Assembly 16	Assembly 17
0603	790	470	3700 283	4550 346	3800 364	3800 428
0605	790	670	3950 361	4800 437	3950 462	3950 538
0606	790	790	3950 396	4800 481	3950 507	3950 595
0906	1070	790	3950 511	4800 619	3950 648	3950 755
0909	1070	1070	4000 614	4850 746	4000 792	4000 924
1206	1350	790	3950 610	4800 738	3950 774	3950 902
1208	1350	990	4200 727	5050 876	4200 919	4200 1068
1209	1350	1070	4200 754	5050 912	4200 957	4200 1125
1210	1350	1190	4200 810	5050 993	4200 1046	4200 1215
1212	1350	1350	4300 914	5150 1099	4300 1177	4300 1361
1506	1670	790	3950 706	4800 859	3950 901	3950 1054
1509	1670	1070	4200 904	5050 1090	4200 1148	4200 1348
1512	1670	1350	4400 1118	5250 1330	4400 1401	4400 1619
1515	1670	1670	4500 1357	5350 1615	4500 1699	4500 1956
1809	1990	1070	4300 1074	5150 1300	4300 1365	4300 1590
1810	1990	1190	4300 1137	5150 1377	4300 1453	4300 1722
1812	1990	1350	4500 1359	5350 1619	4500 1704	4500 1962
1815	1990	1670	4550 1524	5400 1826	4500 1933	4500 2235
1818	1990	1990	4800 1869	5650 2212	4750 2352	4750 2694
2409	2550	1070	4350 1281	5200 1601	4300 1637	4300 1957
2412	2550	1350	4550 1586	5400 1966	4500 2015	4500 2394
2415	2550	1670	4700 1964	5550 2409	4650 2465	4650 2910
2418	2550	1990	4800 2267	5650 2826	4750 2889	4750 3400
2421	2550	2310	5050 2797	5900 3293	5000 3481	5000 4009
2424	2550	2550	5050 2993	5900 3561	5000 3770	5000 4270
3015	3190	1670	4800 2539	5650 2978	4750 3143	4750 3583
3018	3190	1990	5050 3059	5900 3556	5000 3824	5000 4322
3021	3190	2310	5050 3307	5900 3861	5000 4095	5000 4649
3024	3190	2550	5100 3501	5950 4098	5050 4356	5050 4954
3624	3790	2550	5100 3977	5950 4666	5050 5119	5050 5808
3627	3790	2870	6650 5271	7500 6026	5950 6482	5950 7237
3630	3790	3190	6950 5814	7800 6330	6250 7122	6250 7942

Length (mm) Weight(kg)						
Size	B (mm)	H (mm)	Assembly 18	Assembly 19	Assembly 20	Assembly 22
0603	790	940	4700 679	5600 757	5100 773	5050 632
0605	790	1340	5100 889	6000 982	5600 1019	5750 837
0606	790	1580	5100 969	6000 1073	5600 1115	6150 956
0906	1070	1580	5100 1227	6000 1356	5600 1399	6150 1202
0909	1070	2140	5200 1472	6100 1628	5800 1704	6850 1600
1206	1350	1580	5100 1399	6000 1551	5600 1592	6150 1411
1208	1350	1980	5600 1717	6500 1891	6200 1961	6950 1721
1209	1350	2140	5600 1781	6500 1975	6300 2058	7250 1878
1210	1350	2380	5600 1933	6500 2130	6300 2233	7250 2038
1212	1350	2700	5800 2129	6700 2343	6600 2483	7850 2340
1506	1670	1580	5150 1606	6000 1759	5650 1821	6200 1667
1509	1670	2140	5650 2145	6500 2346	6250 2437	7300 2299
1512	1670	2700	6050 2590	6900 2809	6850 2984	8100 2879
1515	1670	3340	6250 3103	7100 3360	7250 3622	8300 3429
1809	1990	2140	5850 2440	6700 2664	6450 2770	7500 2660
1810	1990	2380	5850 2599	6700 2868	6650 2999	7500 2834
1812	1990	2700	6250 3109	7100 3367	7050 3550	8300 3393
1815	1990	3340	6300 3459	7150 3764	7300 4036	8350 3792
1818	1990	3980	6800 4230	7650 4573	7800 4895	
2409	2550	2140	5900 2813	6750 3163	6500 3192	7500 3069
2412	2550	2700	6300 3457	7150 3836	7100 3961	8300 3868
2415	2550	3340	6600 4573	7450 5017	7600 5224	8600 4681
2418	2550	2980	6800 5311	7650 5822	7800 6099	
2421	2550	4620	7280 6541	8130 7069		
2424	2550	5100	7280 7095	8130 7595		
3015	3190	3340	6800 5682	7650 6165	7800 6407	
3018	3190	3980	7300 7068	8150 7565	8300 7989	
3021	3190	4620	7280 7419	8130 7973		
3024	3190	5100	7380 7910	8230 8540		
3624	3790	5100	7380 9248	8230 9936		
3627	3790	5740	9830 11784	10680 12644		
3630	3790	6380	10430 12944	11280 13765		

Koja Group at your service

Diversified and progressive Koja Group offers the customers top-quality products and services in the field of air handling since 1935.

KojaLtd.

Koja designs and manufactures high-quality and reliable air-handling equipment with low lifecycle costs. The products are manufactured in Tampere and Jalasjärvi by applying modern production technologies to benefit our customers in terms of flexible and customised solutions and precise deliveries.

Koja's good indoor air-production equipment can be used in business, office, public and industrial buildings.

Koja Marine specialises in the design and supply of maritime air-conditioning systems.



ECOFAN® process fans are at the heart of the industrial process. Energy-saving process fans operate in numerous locations around the world and are installed in power plant boilers and wood-processing industry processes, for example.



Tampere



Jalasjärvi