FläktGroup

DENCO HAPPEL SEMCO FLÄKT WOODS DELBAG ILOXAIR

AIRTREND Ltd
Predstavništvo u Beogradu
Kumanovska 14, 11000 Beograd
Tel: 011/3836886, 3085740
Faks: 011/3444113
e-mail: gobrid@eunet.rs
web: www.airtrend.rs

AIR DIFFUSION

CHILLED BEAMS

WEGA II/NOVA II *with* Pi

» PRESSURE INDEPENDENT DCV FUNCTION FOR CHILLED BEAMS
– EXCELLENT COMFORT AND SIMPLE INSTALLATION

Energy efficiency – the essence of our solutions

All our research, development and testing activities are singularly focused to provide our customers with the best and most efficient solutions possible to their ventilation and indoor climate challenges.

From new and innovative concepts, smart material choices and manufacturing processes to advanced controls, minimised running cost and easy maintenance, FläktGroup always strive to deliver the best for your long-term economy and our environment.

ENERGY EFFICIENCY WITH IMPROVED COMFORT IS SIMPLE WITH PRESSURE INDEPENDENT WEGA II IN DEMAND CONTROL VENTILATION

The target of ZERO Carbon emissions by 2050 has lead us to automatic lights that switch on when we enter a space and off when we leave it. Why not do the same with our ventilation? It makes sense to only deliver costly treated air when we need it and, where we need it. But cost saving must not be at the expense of comfort, as comfort affects the well-being and efficiency of occupants.

Demand Control Ventilation is the future but, traditionally comprise a VAV system with large ductwork and AHU's, which will be expensive to install and increase whole-life cost.

Wega II/Nova II with P**i** functionality has been developed for demand control ventilation. This solution saves energy when spaces are unoccupied and uses the high energy efficiency of air and water chilled beam system. It provides superior comfort levels by ventilating when needed. These benefits have been coupled with the self balancing simplicity of the Pressure Independent function to provide a solution that will future proof your investment

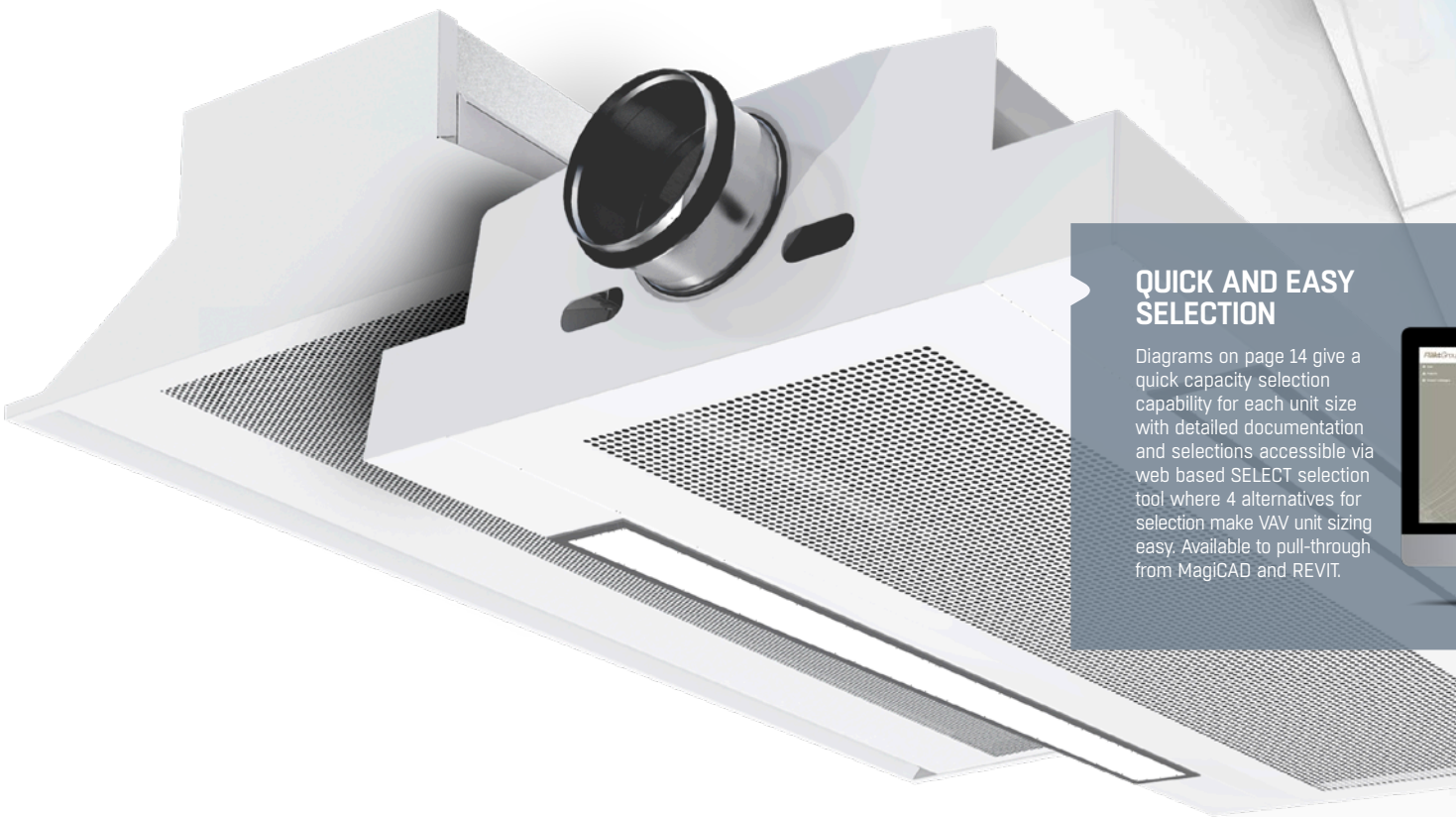
Improved well-being means higher productivity

Today we spend over 90% of our time indoors. In order to reduce energy consumption, buildings are becoming more airtight. This means planned ventilation and indoor air quality is more important than ever before. Not just for comfort reasons, but also to enable us to perform to our best. To learn more at school, to get well sooner in hospital and to be more productive at work.

FINALLY A VAV CHILLED BEAM THAT **DELIVERS FLEXIBILITY AND FITS ANY DUCTWORK SYSTEM**

Wega II / Nova II has been developed for the high demands of the modern dynamic office where the ability to adapt the room comfort system to layout change is equally as important as adopting the latest energy saving solution.

The enhanced design features variable geometry nozzles, to offer the widest choice of airflow settings. Nozzle change can be actuated to automatically adjust ventilation flow rates to occupancy levels regardless of pressure changes in the ductwork system. With the P**i** function, variable air volume with chilled beams need no longer be restricted to larger Pressure Regain ductwork systems. Energy efficiencies and high comfort levels of chilled beams operating in Demand control, is now available to refurbishment projects where space is often restricted.



QUICK AND EASY SELECTION

Diagrams on page 14 give a quick capacity selection capability for each unit size with detailed documentation and selections accessible via web based SELECT selection tool where 4 alternatives for selection make VAV unit sizing easy. Available to pull-through from MagiCAD and REVIT.

LOWER ENERGY CONSUMPTION

- **Water Cooling:** Chilled beams are energy efficient, with around 75% of cooling handled by higher capacity water rather than by having the full load handled by air.
- **Higher Operating Temperature:** Chilled water temperatures in chilled beams operate at higher water temperatures than fan coil systems. Chiller energy consumption for chilled beam systems is therefore lower with around 35% energy savings.
- **Free Cooling:** When outside ambient air conditions are sufficiently dry and cooler than the return water temperature, energy can be saved in the chiller and primary air supply by using the freely available cooler outdoor air.
- **VAV with Pi function:** Varying chilled beam air flow to match occupancy levels reduces energy consumption when compared to traditionally operated constant air volume chilled beams system because energy is not wasted on cooling air that is not needed and boosting air flow in higher occupancy areas. This improves comfort and raises air quality levels. DCV system with Wega II / Nova II VAV chilled beams with **Pi** functionality gives energy savings of more than 50% when compared to a CAV system.

ULTIMATE COMFORT AND FLEXIBILITY

- **Full flexibility:** The combined flow pattern control and variable induction features of the Wega II / Nova II provides full flexibility; making it possible to change office layout without having to move or install new chilled beams. It requires only a simple adjustment of the FPC vanes and the variable position nozzles to accommodate a new layout.
- **Pi Function:** Ideally factory fitted but with built in flexibility of retrofit advantage, DCV functionality can be added later or factory supplied and limited just to the high variable occupancy rooms then move with the rooms when they change location. ensuring comfort is managed easily.

EASY INSTALLATION AND COMMISSIONING – FITS ANY DUCTWORK SYSTEM

- Wega II / Nova II **Pi airflow control can be installed in 3 easy steps** and is self-balancing making commissioning simpler.
- Site installation time can be reduced as parameter **setting of the PI airflow controller can be carried out off-site.**
- **Pi** functionality of Wega II / Nova II will **maintain air flow levels regardless of changes in static pressure;** this eliminates the traditional limitation of VAV chilled beams working only with Pressure Regain ductwork systems.
- Wega II/Nova II with enhanced self-balancing air flow functionality **will work equally well with traditional duct work systems** where changes in flow rates in one room cause a change in ductwork pressure and therefore would have traditionally affected air flow rates in other rooms.

More air for comfort *and* 60% energy savings using DCV chilled beams

VAV chilled beams working in demand control can save up to 60% energy when compared to traditional devices by matching demand to occupancy levels. It makes sense to deliver fresh air only when needed and not to over ventilate with constant air supply systems. Increasing fresh air supply improves indoor air quality and positively affects productivity.

- Increasing fresh air rates from 12 l/s to 24 l/s has been shown to reduce short term sick leave by 35%.
- Doubling the outdoor air supply rate in classrooms (in a range from 3 to 9,5l/s per person) would improve the performance speed by 8–14%
- Average occupancy levels of rooms can vary between 35% and 65% during normal office hours

The science of delivering comfort

Saving energy is increasingly more import but as people are a company's biggest asset, keeping occupants comfortable is therefore equally as important. With airtightness of buildings improving, providing ventilation and adequate air change rates is important to avoid 'sick building' syndrome, often caused by emission of VOC's from building materials and furniture. A healthy environment is a productive environment and the main parameters to delivering indoor climate with the highest comfort are...

TEMPERATURE GRADIENT

Chilled beams are induction engines and diffuse air into the room in a mixed airflow pattern. The mixing effect evens out temperatures in the room so the temperature difference between head and foot is comfortably low.

SILENT

Chilled beam systems do not use fans that emit sound so there should be no distractions from the ventilation system. At normal airflows, sound levels will be below 30 dB which is lower than ambient levels in a quiet office. **Pi Function** – Even at high flow rates diffusion is optimised so sound levels are low.

AIR QUALITY

To keep the air quality level high, more than the minimum air exchange rates are required for dilution of VOC's and CO_2. In a DCV system, the CO_2 level is used as the parameter to determine fresh air supply so ventilation is matched to occupancy levels. **Pi Function** – Operates by moving the nozzles to change airflow rates in response to change in occupancy levels. Actual supply air flow output is available for exhaust balancing – a useful function for controlling room air change rates and to achieving even better air quality levels

FRESH AIR WHERE AND WHEN IT'S NEEDED

Wega II / Nova II with **Pi function** working in DCV is a smart way to direct enough fresh air only where it's needed; preventing over ventilated areas being uncomfortably cold or under ventilated areas being uncomfortably stuffy and unhealthy.

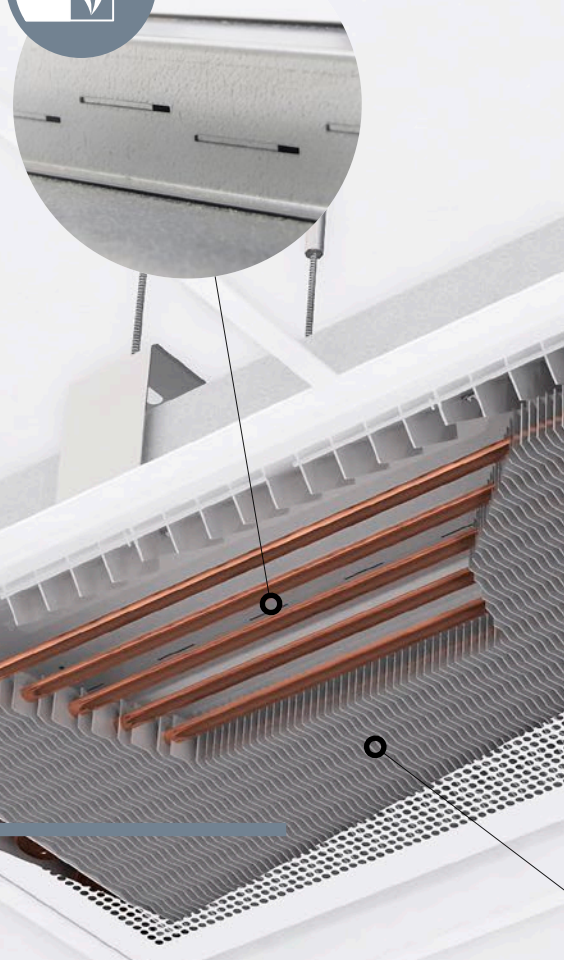
LOW VELOCITIES

Wega II/Nova II chilled beams use the Coanda effect to direct diffused air at ceiling level so velocities are low when it reaches the occupied space and can be selected to ensure there are no draughts in the occupied space. **Pi Function** – With Pi function, air flow rate through the full VAV range is controlled so the Coanda effect is always maintained for comfort.

HUMIDITY

Humidity levels are managed within chilled beam systems and generally limited below 50%. For optimal health and comfort, humidity levels should be managed between 40% and 60%.

ENERGY CONTROL *(patent pending)*
Rail mounted variable geometry nozzles with 36 position airflow setting for more flexibility. Easily adjustable to provide the widest choice of air flow settings for symmetrical or asymmetrical throw.



HYGIENE VERSION
Wega II is also available in a Hygiene version, ideally suited to hospitals and other sensitive applications. The coils are coated for a very smooth finish, which help avoid dust buildup. The Hygiene version also has a clever quick-release system that makes it possible to drop down the coil pack from either side to allow easy access for cleaning.

INNOVATIVE FEATURES
FOR SUPERIOR COMFORT AND EASY INSTALLATION

Wega II and Nova II chilled beams have been developed to simplify demand controlled ventilation and improve its adaptability to change. The energy saving and high indoor air quality benefits of chilled beams are ensured with the Pressure Independent functionality where airflow is matched to demand regardless of changes in other rooms. Featuring several easy-install features the P**i** functionality can be retro-fitted to move with requirements when change happens or, to enable Demand Control ventilation to be gradually phased in. **Wega II / Nova II – enhanced to provide simplicity and flexibility at all levels!**

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

EASY TO INSTALL AND COMMISSION

• Clip-in brackets that make installation quick, safe and easy. Install the rods and brackets and then clip in the beam at second fix stage – when the room is clean.
• Exact location of the pressure tap-off point provided for commissioning – no guess work required.

Pi AIRFLOW CONTROL WITH AIRFLOW OUTPUT – FITS ALL DUCTWORK

For added energy saving, nozzle change can be actuated to match airflow to occupancy level and kept at set values regardless of pressure changes in ductwork. Simply link to presence or CO_2 detection devices. Airflow information is directly available for exhaust damper.

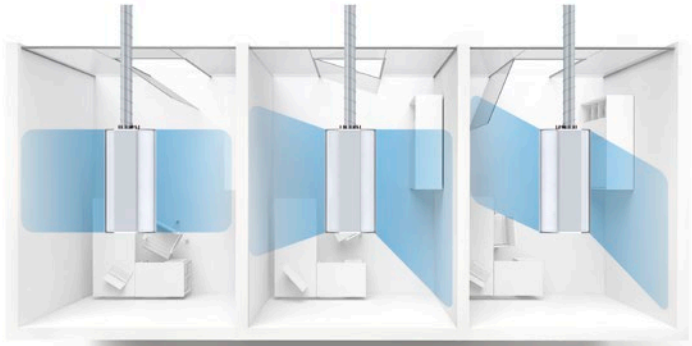
Linear airflow control provides optimal coanda control preventing dumping through the widest airflow range and thus maintaining comfort. Actual flow output is easily linked to exhaust for balancing ventilation.

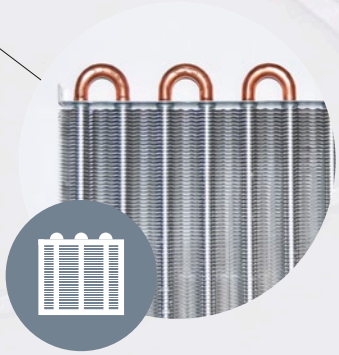
The Pi-function is available as an option and can be retro fitted.

FPC – FLOW PATTERN CONTROL

The adjustable plastic vanes enable optimized air diffusion. By a combination of different angles on each side, it is possible to adapt the flow pattern to always maintain optimal comfort in the room with the following benefits:

• Vary throw direction • No tools required • Accessible from room





COIL VARIATIONS

Available for cooling only or cooling and heating in 2 size options:
• 8 tube for normal capacity
• 10 tube for higher capacity

Demand controlled ventilation, as easy as Pi

Ventilate according to occupancy levels and save 60%

Demand Controlled Ventilation (DCV) is a variable air volume system with automatic control based supply air to match occupancy levels. DCV with VAV Chilled Beams delivers ultimate comfort and 60% energy savings by ventilating to room occupancy levels. DCV increases indoor air quality and saves energy normally wasted in ventilating unoccupied spaces or by over cooling unoccupied space.

Studies have shown average occupancy levels vary between 65% to 35% during normal office hours therefore when ventilation systems are designed for peak loads, there is a potential savings of up to 65% in energy consumption compared to Constant air volume systems.

Optimal coanda control at all airflows

Variable geometry nozzles with PI airflow control provides optimal coanda control from the highest to the lowest and back to the highest airflow without loss of coanda for maximum comfort that damper controlled VAV chilled beam systems cannot equal.

Components for a perfectly balanced system

Chilled beam systems are designed to run dry hence humidity has to be controlled at the central unit. Our eQ Master air handling unit with Twin wheel energy recovery produces advanced cooling and humidity control at highest level of energy saving. Common to VAV systems, chilled beam air flows are controlled on a constant ductwork static pressure, the EMPA/D damper will provide the required pressure control. As the **Pi** Airflow controller also provides airflow information, it can be linked directly to exhaust damper for zone balancing. A flow measuring device will not be required for the chilled beam supply line.

IPSUM
System Optimiser

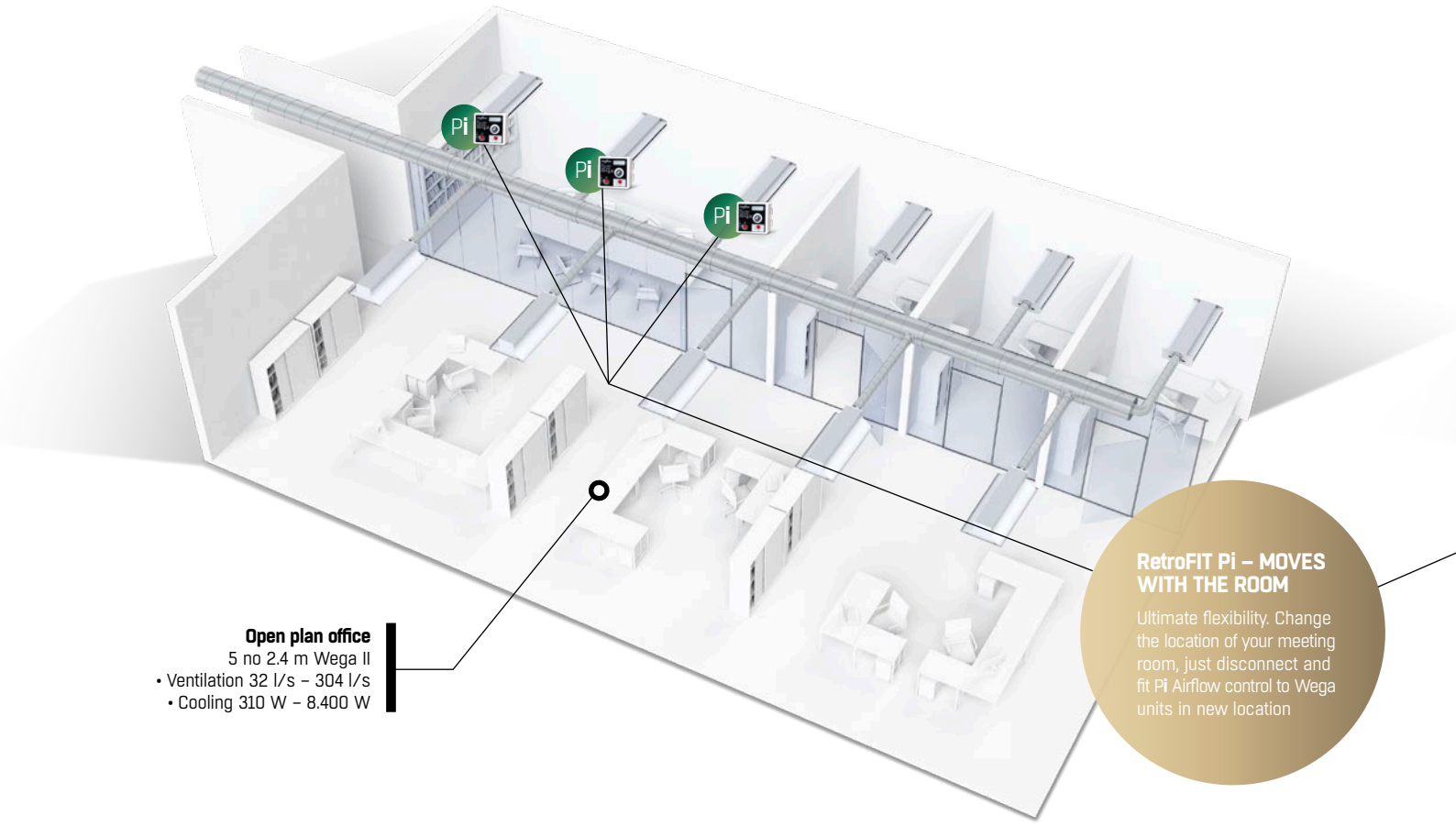
eQ Master
with Twin Wheel

EMPA/D
Pressure Controller

WEGA II / NOVA II
Chilled Beams

STRA
Room Controller

Flexible ventilation that facilitates the changing needs of your building



Office – 100%

Airflow	2 l/s/m²
Cooling	24°C+-1
Heating	21°C
Occupancy	Mo–Fr 08–16
Heat loads	
– people	1 person/10 m²
– lighting	12,5 W/m²
– equipment	15,0 W/m²

Office – 0%
Energy Saving

Airflow	0,6 l/s/m²
Cooling	24°C+-1
Heating	21°C
Occupancy	Mo–Fr 08–16
Heat loads	
– people	0 person/10 m²
– lighting	0 W/m²
– equipment	0 W/m²

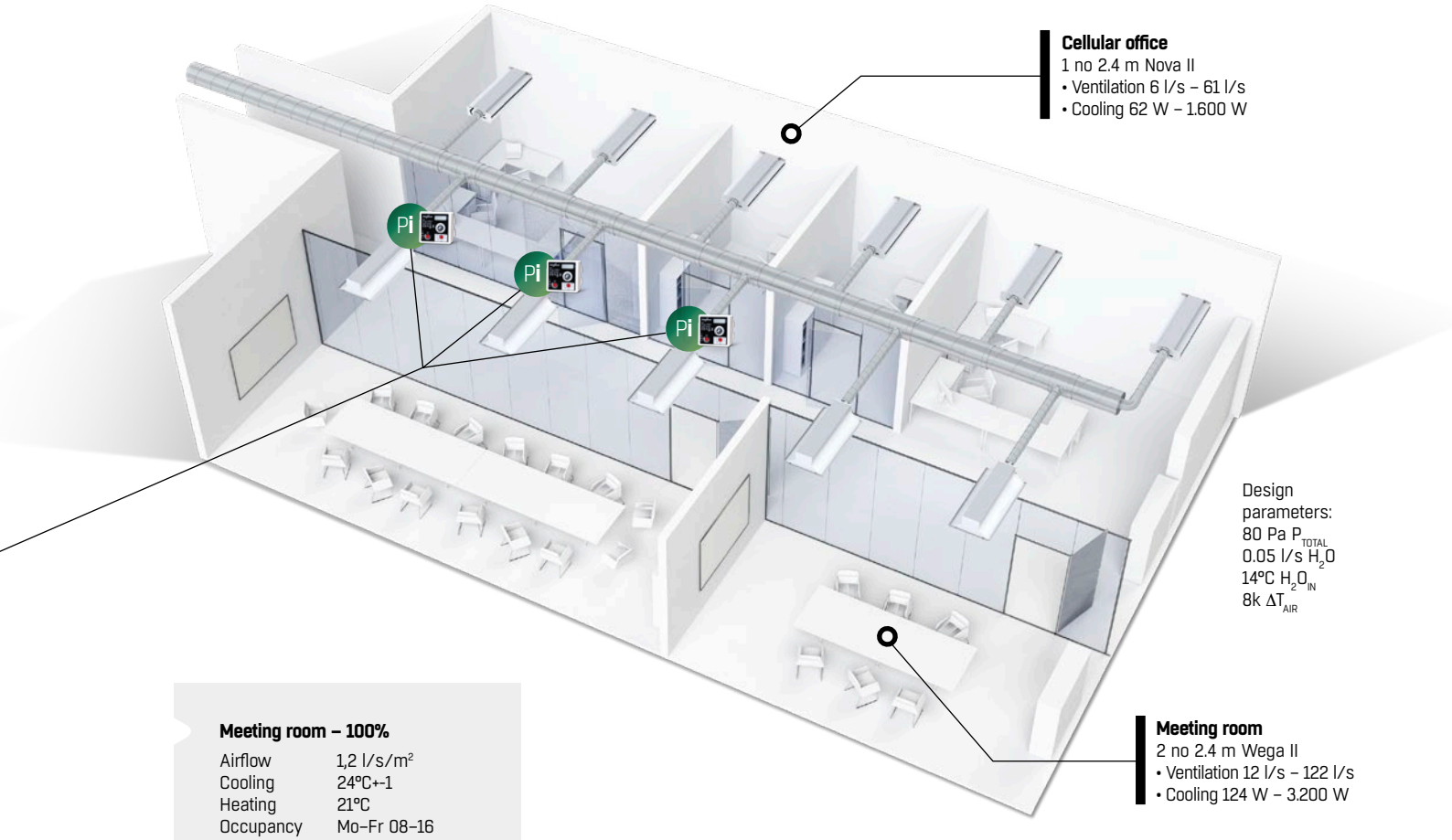
Keep up with change with Wega II / Nova II

Change is the only constant in modern business. Adapting quickly is a necessity, not an advantage. Flexibility to change is therefore a "must have" for modern offices. When a business changes, the layout has to adapt. Walls, people and furniture moves when an organisation restructures. Room functions and occupancy levels will change with the layout. The ventilation system also has to adapt with the minimum effort and lead time.

With Wega II / Nova II VAV chilled beams, all you need to do is re-configure. Flexibility is built in with our Flow Pattern and Energy Control functions. Even the **Pi** functionality is designed for change. It can be easily moved with the high occupancy rooms, just disconnect, re-connect and re-set values.

Retrofit Pi
DCV in stages

Not ready for the full DCV system? With the retro fit feature of the **Pi** function, you have the advantage of starting with operating the chilled beams in fixed nozzles positions then installing the VAV functionality later.



Cellular office
1 no 2.4 m Nova II
• Ventilation 6 l/s – 61 l/s
• Cooling 62 W – 1.600 W

Design parameters:
80 Pa P_{TOTAL}
0.05 l/s H_2O
14°C H_2O_{IN}
8k ΔT_{AIR}

Meeting room
2 no 2.4 m Wega II
• Ventilation 12 l/s – 122 l/s
• Cooling 124 W – 3.200 W

Meeting room – 100%

Airflow	1,2 l/s/m²
Cooling	24°C+-1
Heating	21°C
Occupancy	Mo–Fr 08–16
Heat loads	
– people	1 person/10 m²
– lighting	12,5 W/m²
– equipment	15,0 W/m²

Meeting room – 0%
Energy Saving

Airflow	0,6 l/s/m²
Cooling	24°C+-1
Heating	21°C
Occupancy	Mo–Fr 08–16
Heat loads	
– people	0 person/10 m²
– lighting	0 W/m²
– equipment	0 W/m²

Meeting room – 150%
Boost

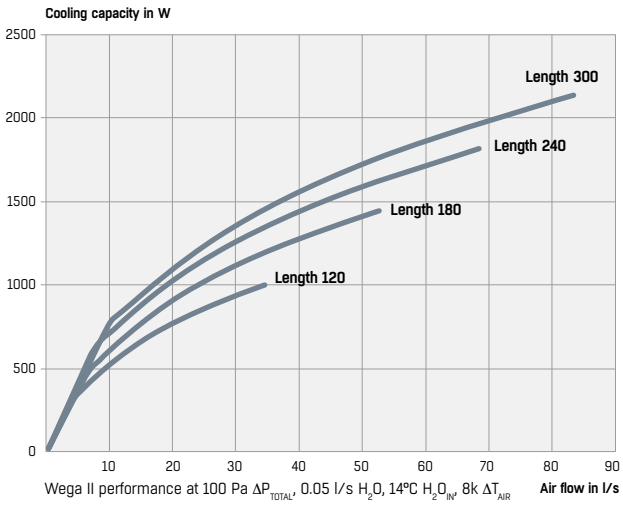
Airflow	1,8 l/s/m²
Cooling	24°C+-1
Heating	21°C
Occupancy	Mo–Fr 08–16
Heat loads	
– people	1 person/3 m²
– lighting	12,5 W/m²
– equipment	15,0 W/m²

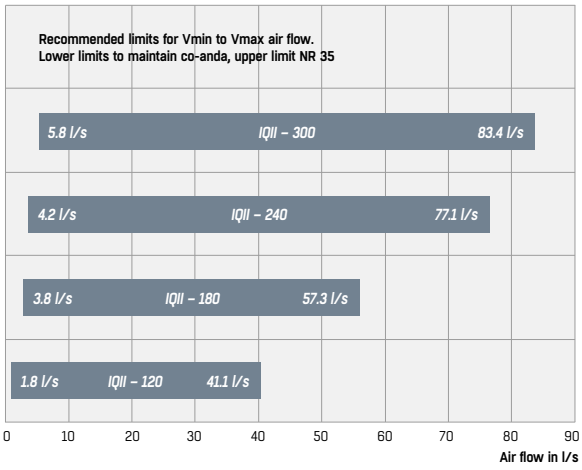
Adjustment in 3 easy steps

Setting up and adjusting the chilled beam to deliver maximum comfort and savings couldn't be easier, thanks to our smart **Pi** Airflow Control.

1. Connect power supply
2. Set parameters: V0 • Vmin • Vmax
3. Connect to the chilled beam

Airflow data – performance for all applications





SELECT – for quick and easy selection

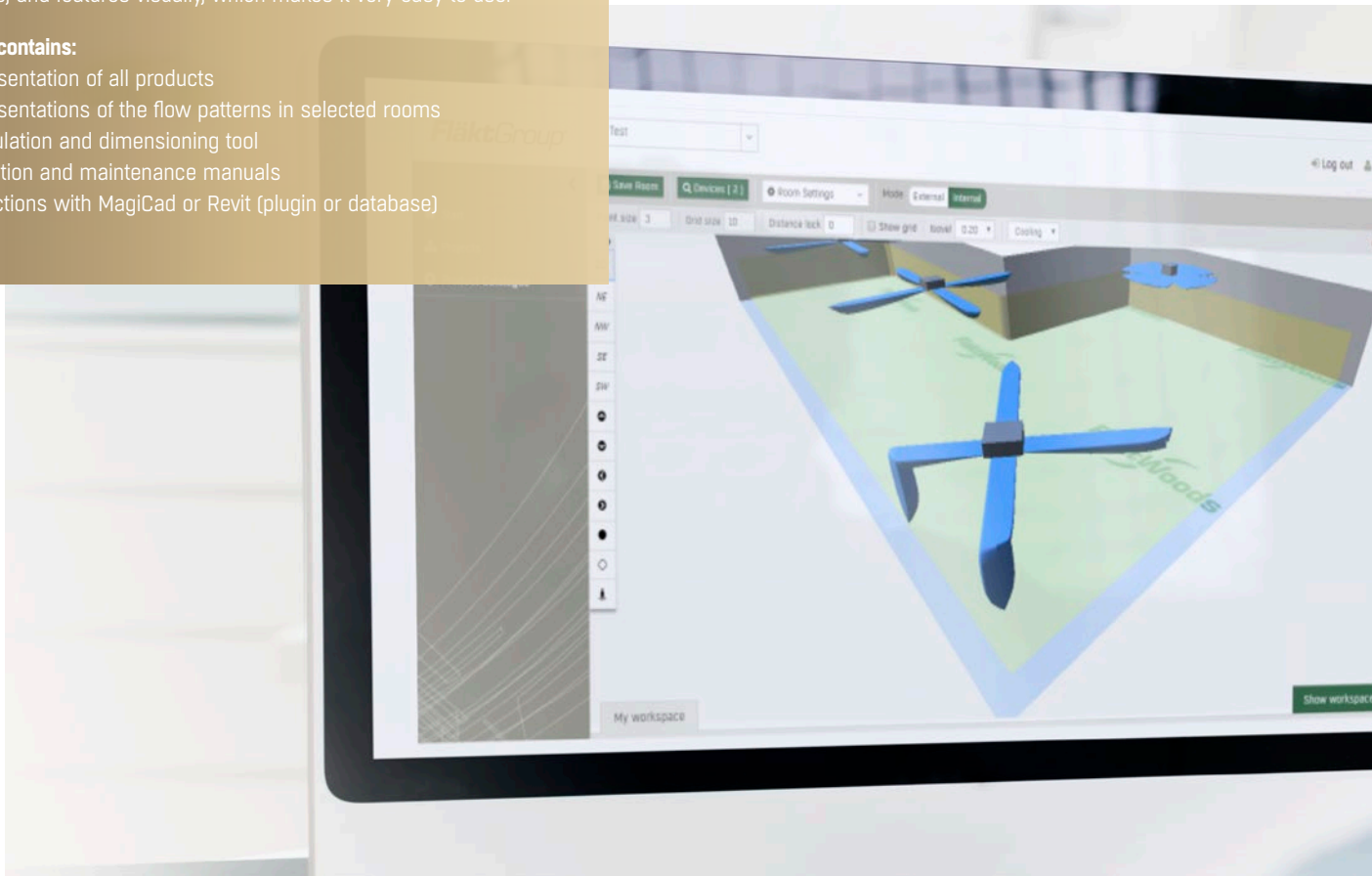
SELECT is FläktGroup's web based product selection tool for calculation and documentation of air terminal diffusers. The tool shows all products, functions, and features visually, which makes it very easy to use.

SELECT contains:

- 3D presentation of all products
- 3D presentations of the flow patterns in selected rooms
- A calculation and dimensioning tool
- Installation and maintenance manuals
- Connections with MagiCad or Revit (plugin or database)

ADVANCED LAB FACILITIES

FläktGroup has developed some of the most advanced lab facilities in the world. The ability to test not only individual products, but entire systems gives us a unique advantage to deliver the greatest possible energy savings to our customers around the world.



Clear and simple benefits from a simple solution

END USER/BUILDING OWNER

- Really flexible ventilation system adaptable to future building layout modification
- Comfortable environment with high Indoor Air Quality
- Minimum energy consumption and maintenance

CONSULTANT

- High Indoor Air Quality with monitoring option
- Demand Control Ventilation ready
- Easy to design and readily suited to any ductwork system

CONTRACTOR

- Quick and easy installation thanks to clip in bracketry
- Quick and flexible Commissioning
- Easy to design and readily suited to any ductwork system

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EXCELLENCE IN SOLUTIONS

FläktGroup is the European market leader for smart and energy efficient Indoor Air and Critical Air solutions to support every application area. We offer our customers innovative technologies, high quality and outstanding performance supported by more than a century of accumulated industry experience. The widest product range in the market, and strong market presence in 65 countries worldwide, guarantee that we are always by your side, ready to deliver Excellence in Solutions.

PRODUCT FUNCTIONS BY FLÄKTGROUP

Air Treatment | Air Movement | Air Diffusion
Air Distribution | Air Filtration | Air Management & ATD's
Air Conditioning & Heating | Controls | Service

*» Learn more on **www.flaktgroup.com** or contact one of our offices*