EXCELLENCE
IN SOLUTIONS



FläktGroup

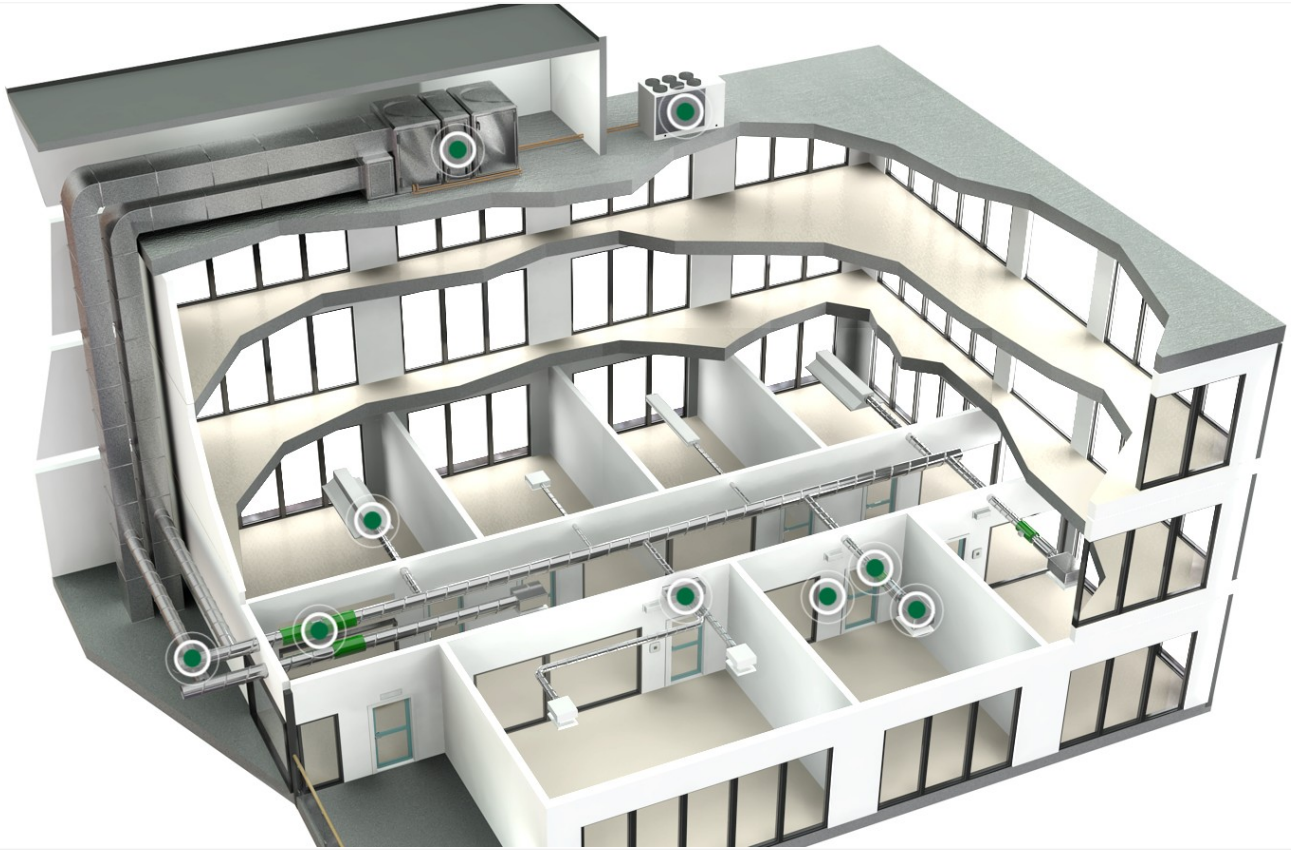
DENCO HAPPEL SEMCO FLÄKT WOODS DELBAG ILOXAIR

FläktGroup Eesti
Paindlikud lahendused

Heikki Jürilo, EKVÜ 2019.03.21

Uue hoone puhul perspektiiv - kindel on see, et midagi kindlat ei ole

FläktGroup



BREEAM®





LEED, EPBD

EXCELLENCE IN SOLUTIONS

DencoHappel®

FläktWoods

VAHESEINA JAHUTUSPALGID





OPTIMIX RAPB VAV või L_{02} funktsiooniga õhujaotajad





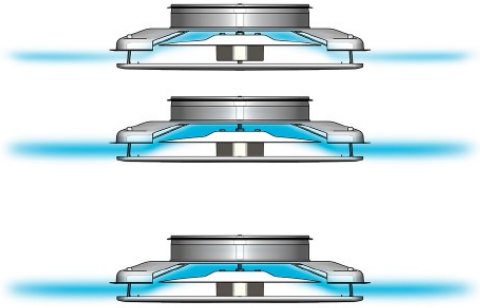


Figure 1: A vertically adjustable, motorised regulation plate is used for controlling the fl ow rate so that constant throw is automatically maintained.



EXCELLENCE IN SOLUTIONS

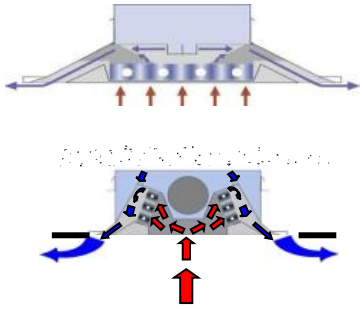
Why chilled beams? Comfort

FläktGroup

EXCELLENCE IN SOLUTIONS

Low temperature gradient

Good air mixing (<0.5°C/m)



Low Velocity (Draught-free)



(V<0.2 m/s)

Chilled Beams System Provides:

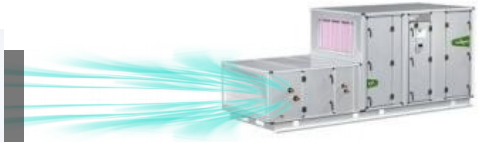
High level of Comfort



Comfort

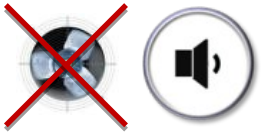
Fresh Air

Primary air input from AHU



Low noise level

Fan-less System(~30 dB(A))



Comfort cannot be compared with money!

DencoHappel

FläktWoods

Why chilled beams? Low LCC

FläktGroup

No fans	→ No consumption from the unit
Higher operating temperatures in water circuit	→ Lower energy consumption by chiller
Free cooling capability	→ Chiller load reduction
Lower airflow	→ Smaller AHU



Investment & Operating costs reduction

EXCELLENCE IN SOLUTIONS

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FläktWoods

Why chilled beams? Low LCC

FläktGroup

- No Fans
- No Filters
- No condensation (no drain)

→ **Less maintenance is required**

↓

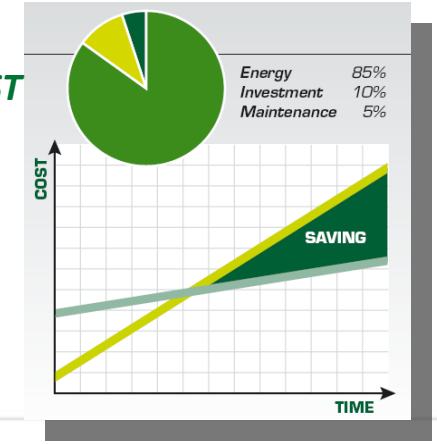
Maintenance cost reduction

Lower energy consumption + ***Lower Maintenance*** = ***Low LIFE CYCLE COST***









EXCELLENCE IN SOLUTIONS

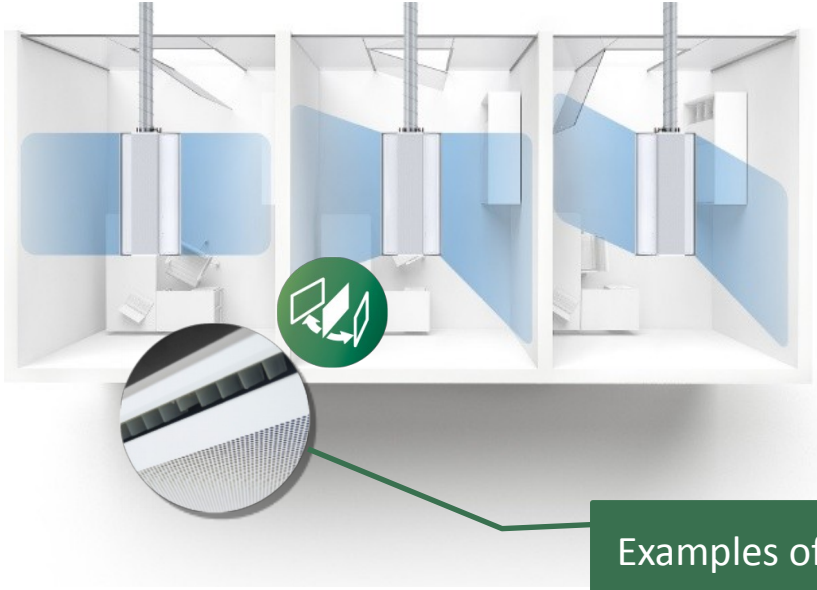
DencoHappel

FläktWoods

Flexibility

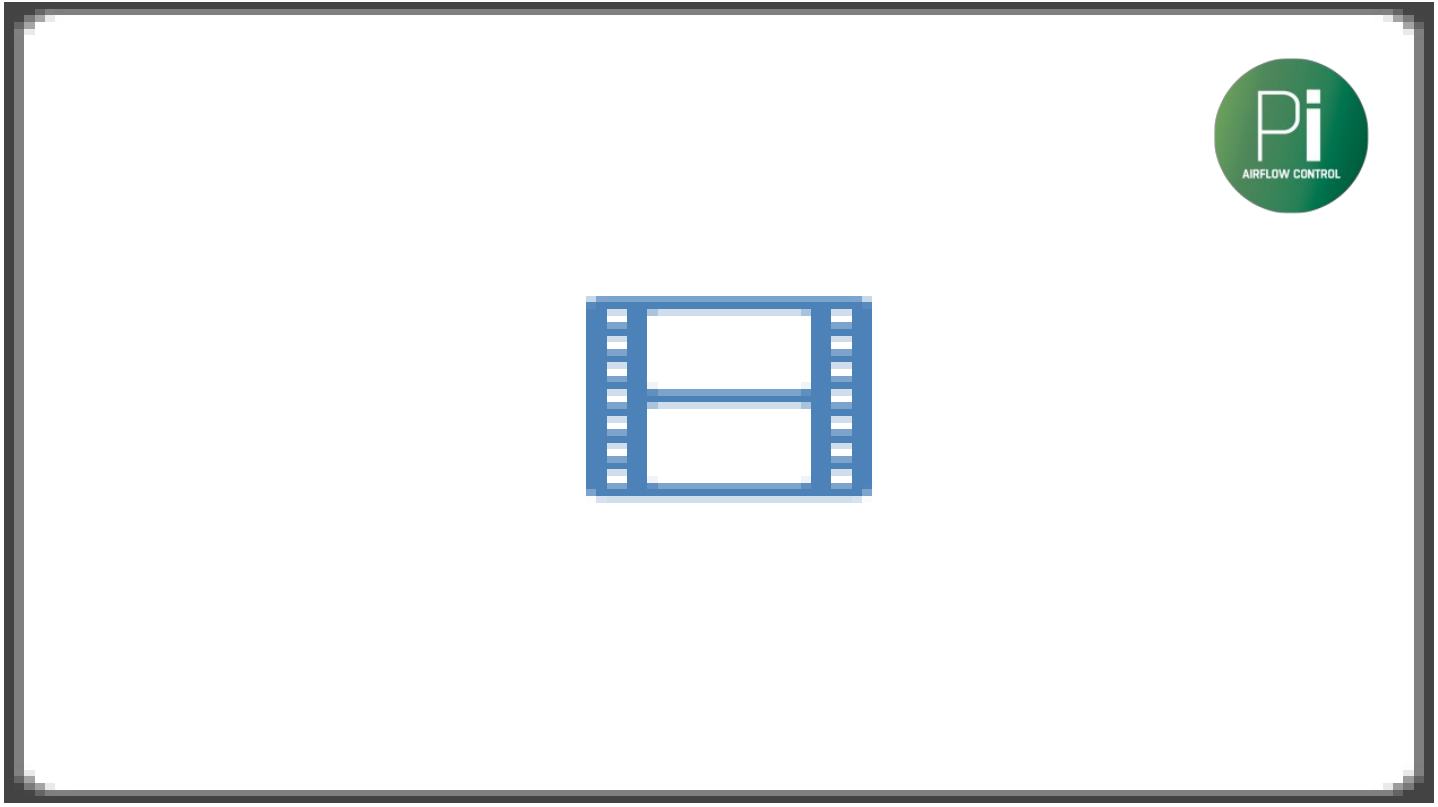
FläktGroup

FLEXIBILITY…….



Examples of different airflow shapes

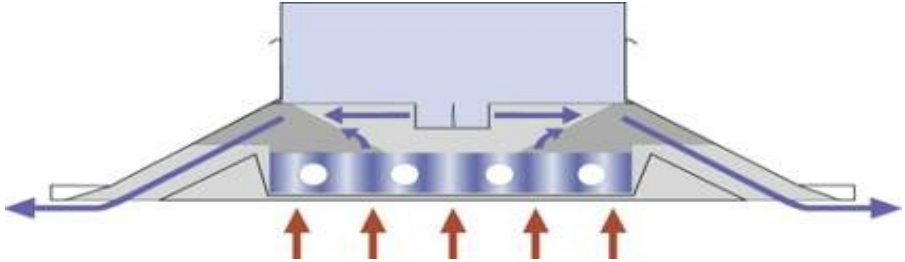
EXCELLENCE IN SOLUTIONS


Pi
AIRFLOW CONTROL

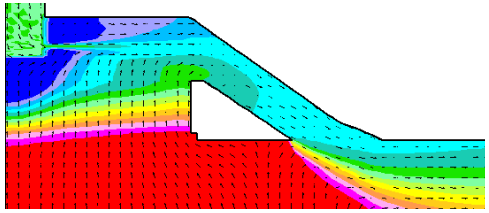
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EXCELLENCE IN SOLUTIONS

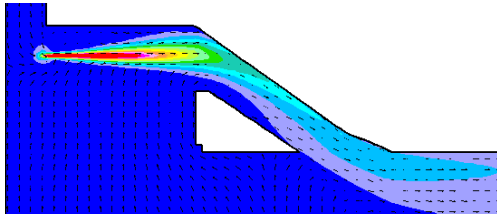
THE FUNCTION OF AN ACTIVE CHILLED BEAM



Temperature profile



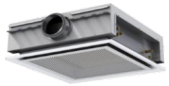
Velocity profile



Chilled beam Application

FläktGroup

Product Portfolio Chilled beams

Recessed			Exposed			Bulkhead	Passive
							
Wega II	IQID	Lyra /Lyra II		Nova II	Stella	Silencia	QPVA / QPBA
Recessed installation Installation in false ceiling			**Exposed installation** Without false ceiling			**Bulkhead** Installation in hotel room	**Passive** Without fresh air

Application: Offices, Hotels, Schools hospitals, Shopping malls

Main functions: Ventilation, Cooling and Heating

PATENT PATENTED APPROVED

EUROVENT CERTIFIED PERFORMANCE ENERGY EFFICIENCY

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EXCELLENCE
IN SOLUTIONS



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DENCO HAPPEL SEMCO FLÄKT WOODS DELBAG ILOXAIR

VAV chilled beams -

Wega II, Nova II & LYRA II with PI

– THE ONLY CHILLED BEAMS YOU NEED!

Chilled Beam with Pi – pressure independent VAV function

- More flexible than before
- Low Life Cycle Cost
- Optimal comfort
- Suitable for any ductwork



WEGA II by FLÄKT WOODS

LYRA II by FLÄKT WOODS

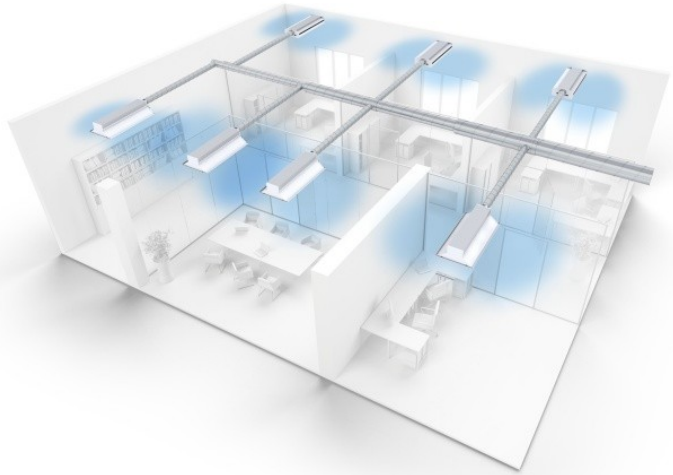
NOVA II by FLÄKT WOODS

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TYPICAL CHILLED BEAM SYSTEM

FläktGroup

- CAV ventilation system
- Vary water flow to control temperature
- System designed for peak conditions (100% occupancy)



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OCCUPANCY IN ROOMS



EXCELLENCE IN SOLUTIONS

TYPICAL OCCUPANCY LEVEL

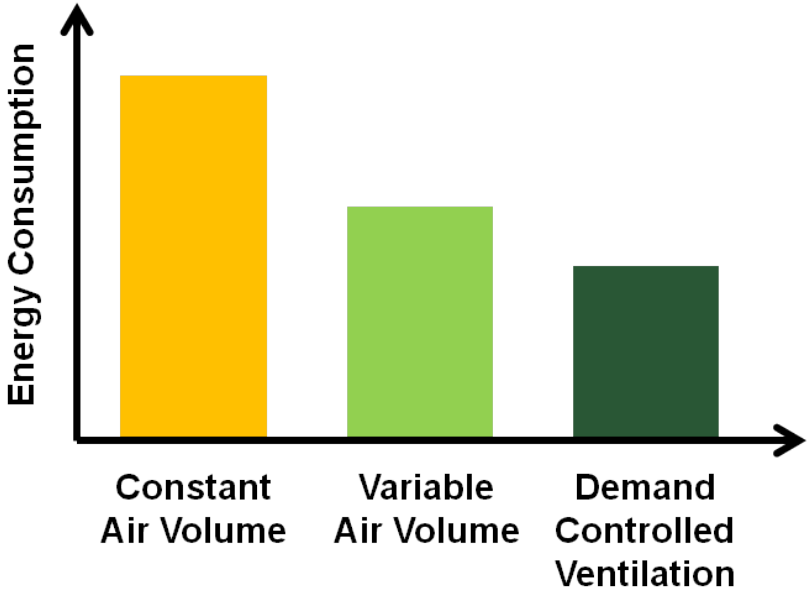


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Right amount of fresh air at the right temperature at the right time!

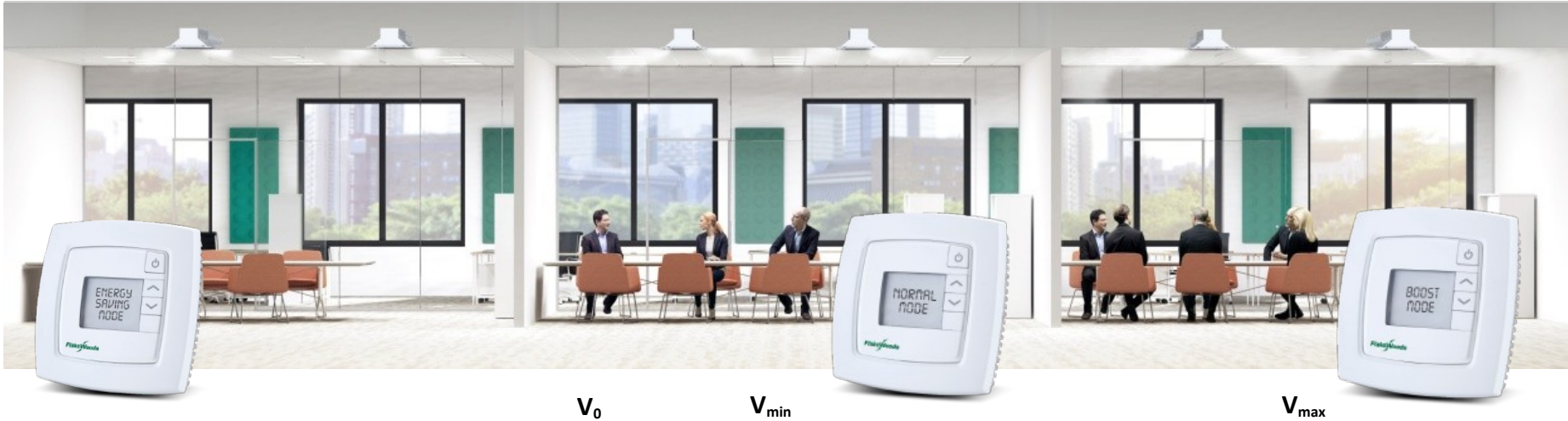
- Comfortable indoor air climate
- Optimum energy consumption





EXCELLENCE IN SOLUTIONS

Pi function – WEGA II, NOVA II & LYRA II



	V_0	V_{min}	V_{max}
AIR QUALITY, CO_2	6 l/s	15 l/s	60l/s
TEMPERATURE	6 l/s	15 l/s	60l/s
FREE-COOLING	6 l/s	15 l/s	60l/s

EXCELLENCE IN SOLUTIONS

DENCO HAPPEL SEMCO FLÄKT WOODS DELBAG ILOXAIR


WEGA II
NOVA II
by FLÄKT WOODS
e3
0-60 (l/s) in 2.4 m

Manual adjustable nozzles – WEGA II & NOVA II



EXCELLENCE IN SOLUTIONS

Manual adjustable nozzles – LYRA II

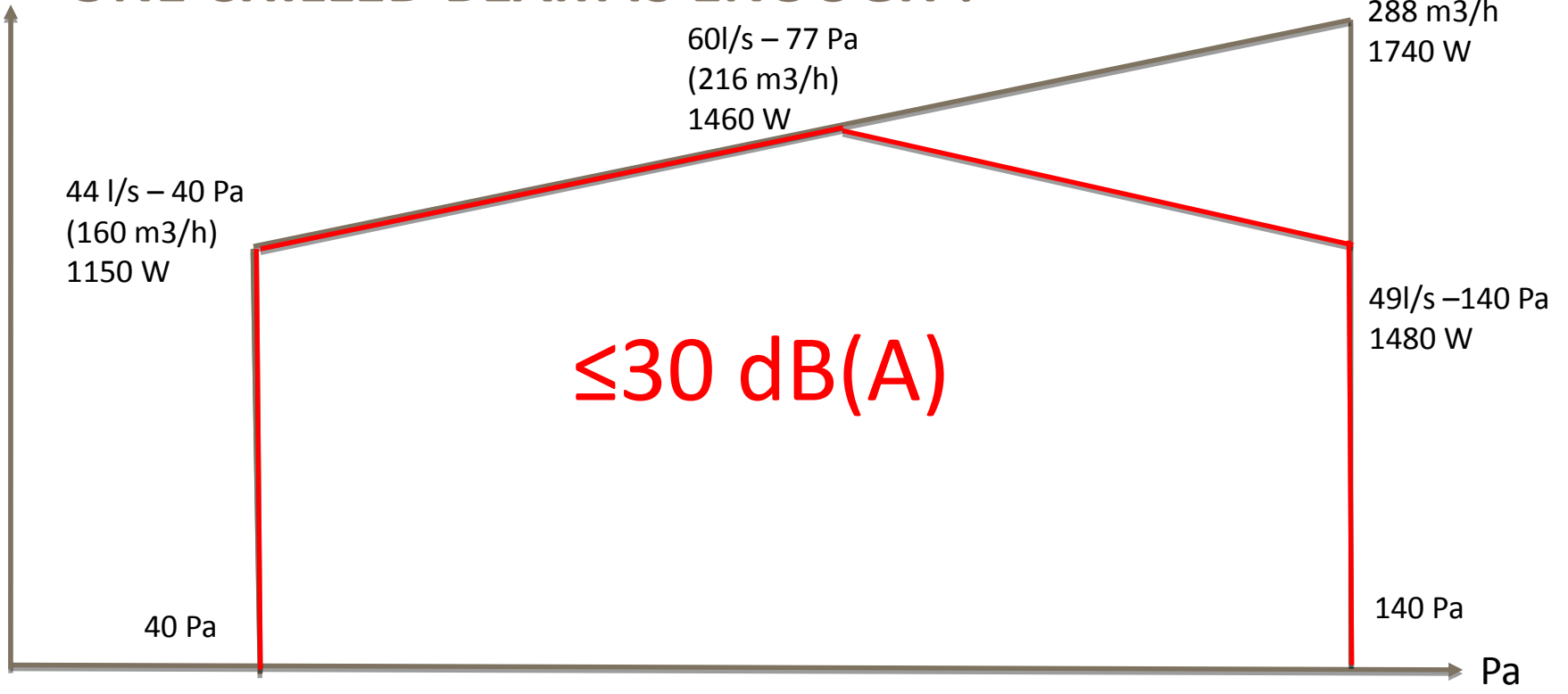


EXCELLENCE IN SOLUTIONS

AIRFLOW range with WEGA 240, 10 rows cooling

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ONE CHILLED BEAM IS ENOUGH !



EXCELLENCE IN SOLUTIONS

DencoHappel

FläktWoods

Õhuhulga seadistamine ilma lisaklapita

- If available pressure is between 40-140 Pa, commissioning damper can be avoided and airflow is commissioned with the EC-nozzles

=>

- Less components to install
- Less pressure drop in ductwork
- Less product to purchase for customer

STEPLESS ADJUSTABLE NOZZLES

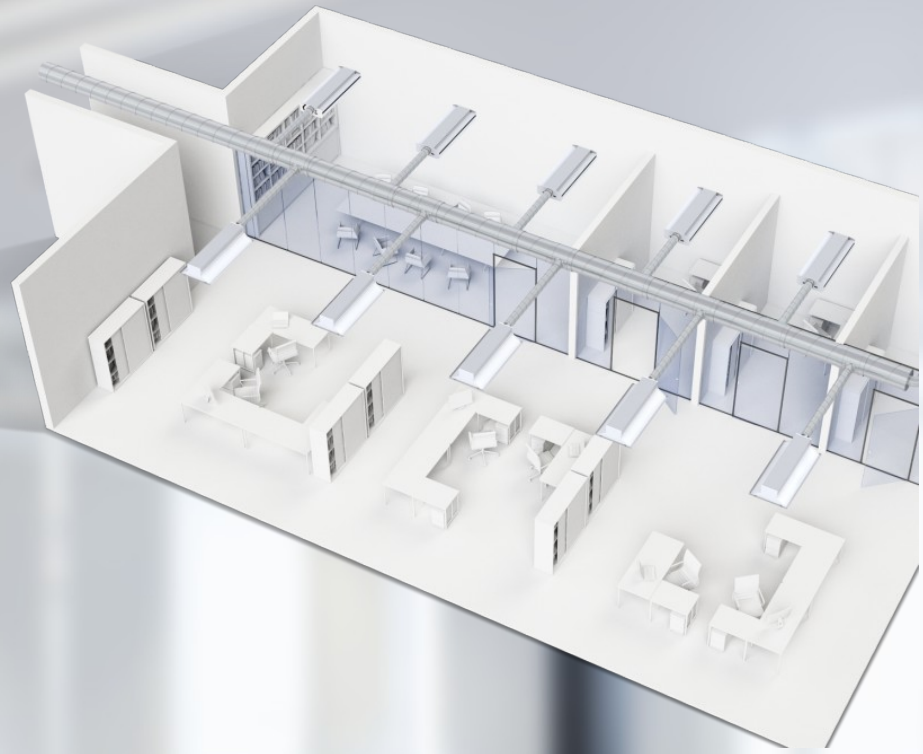


EXCELLENCE IN SOLUTIONS

Paindlikkus – WEGA II, NOVA II & LYRA II

FULL FLEXIBILITY
WEGA II & NOVA II
is the perfect solution for:

- Tenants
- Renovation projects
- Layout changes

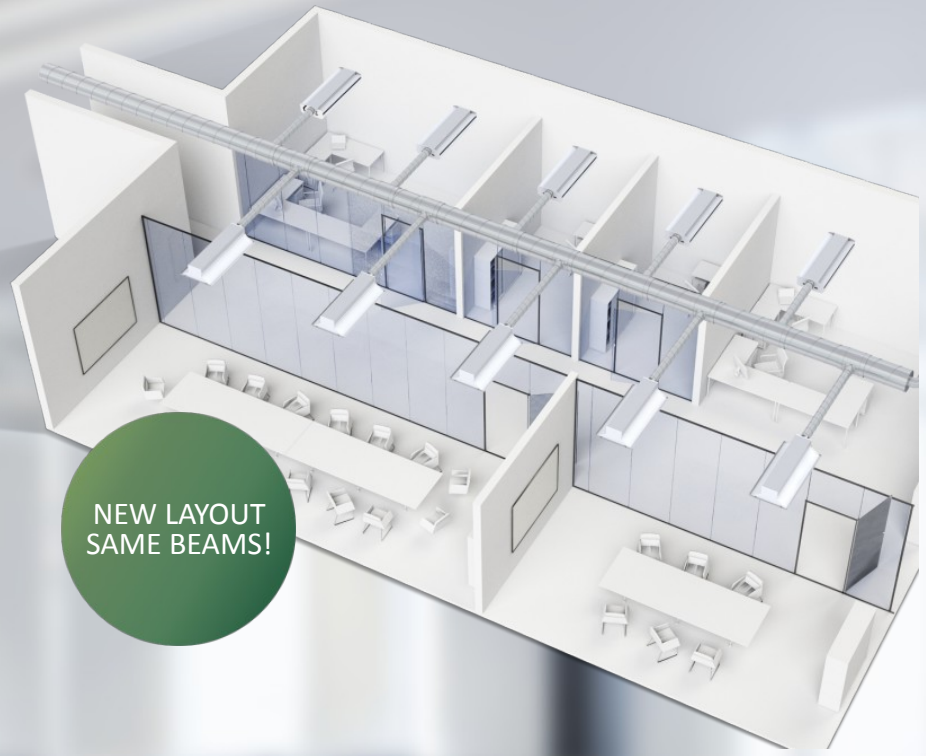


EXCELLENCE IN SOLUTIONS

Flexibility – WEGA II, NOVA II & LYRA II

FULL FLEXIBILITY
WEGA II & NOVA II
is the perfect solution for:

- Tenants
- Renovation projects
- Layout changes



EXCELLENCE IN SOLUTIONS

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FläktWoods

Functions – WEGA II, NOVA II & LYRA II

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EXCELLENCE IN SOLUTIONS

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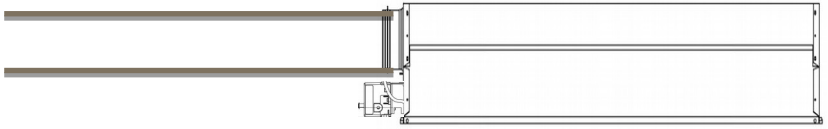
FläktWoods

Pi solution vs. competitors solution

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Pi actuator

30 l/s
80 Pa

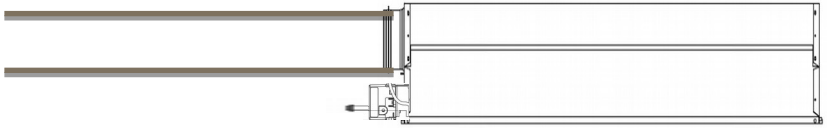


Nozzle setting



Nozzles are changing with the airflow

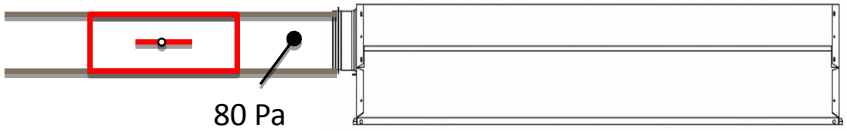
15 l/s
80 Pa



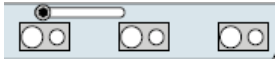


Chilled beam with damper – (Competitor solution)

30 l/s
80 Pa

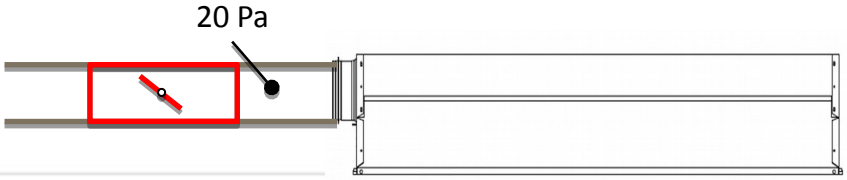


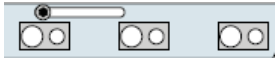
Nozzle setting



Nozzles are NOT changing with the airflow

15 l/s
80 Pa





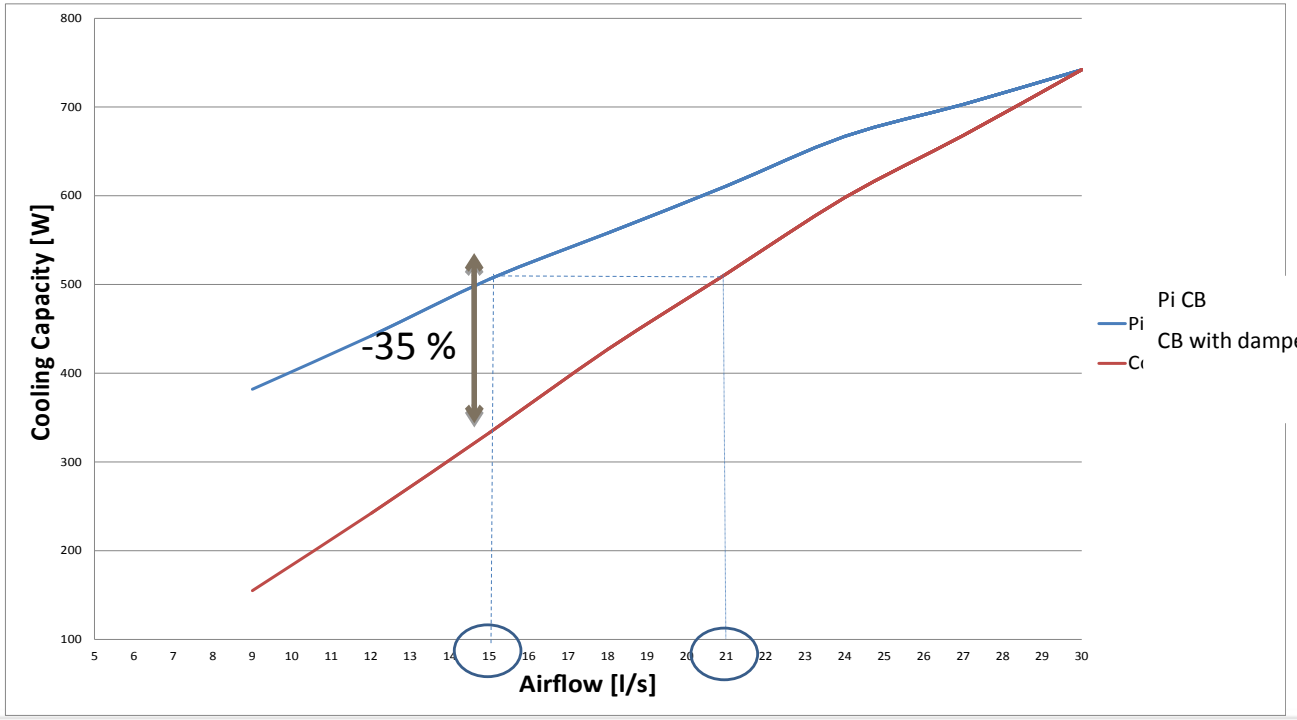
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Cooling capacity comparison

Chilled beam with damper gives 35 % lower cooling capacity with half airflow vs. Pi
Chilled beam with damper needs 21 l/s instead of 15 l/s to get same cooling capcity



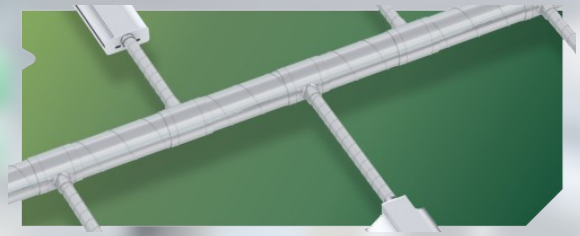
Pi function, pressure independent – WEGA II, NOVA II & LYRA II

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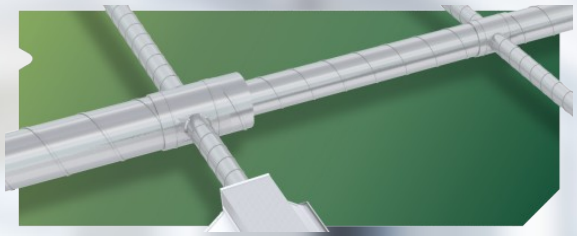
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PRESSURE INDEPENDENT– SUITS ALL DUCTWORKS

Pi AIRFLOW CONTROL



PRESSURE REGAIN DUCT SYSTEM



TRADITIONAL DUCT SYSTEM

DencoHappel

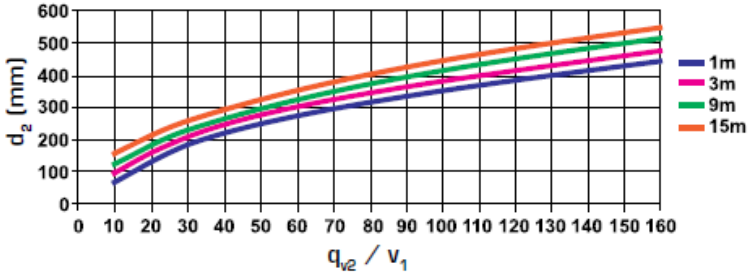
FläktWoods

Samarõhukanali dimensioneerimine

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Static pressure regain method



q_{v2} = volume flow after branch [dm^3/s]
v_1 = velocity in duct before branch [m/s]
l_2 = equivalent length of duct/fitting after branch [m]
d_2 = duct diameter after branch [cm]

Example of how to use the graph

v_1 = 4 m/s; q_{v2} = 96 l/s; l_2 = 3 m
96/4 = 24

- Move up from point 24 at the bottom to the 3 m line
- Read off the nearest duct size on the left
- The nearest duct size is 200 mm

Motorised nozzles with Pi – WEGA II, NOVA II & LYRA II

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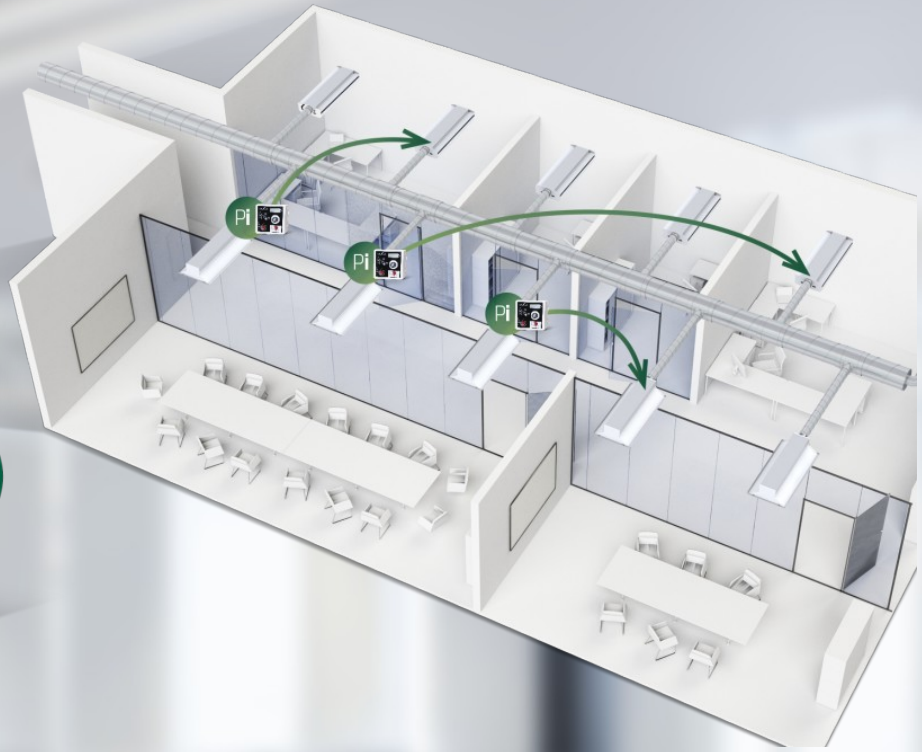
Flexibility – WEGA II, NOVA II & LYRA II

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FULL FLEXIBILITY WITH Pi-ACTUATOR

- Easy to move
- Quick commissioning





EXCELLENCE IN SOLUTIONS

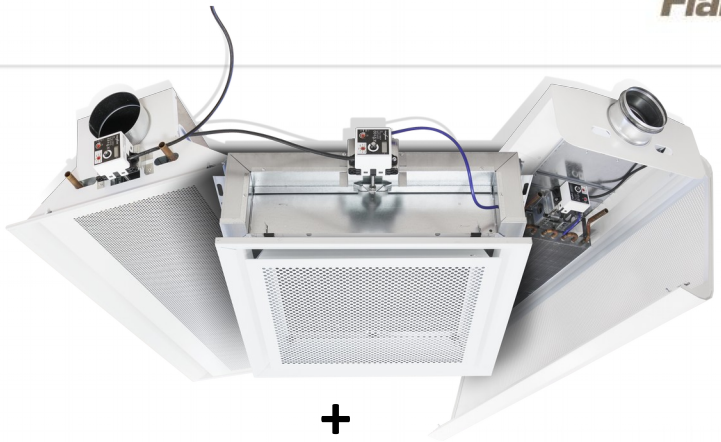
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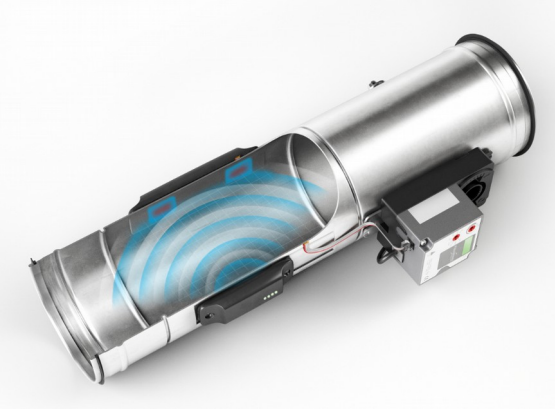
New UltraSound VAV-damper

- New VAV-damper has high accuracy from 0.5 m/s till 16 m/s
- Chilled beam for supply and VAV-damper for exhaust which both can handle an extremely wide airflow range
- Energy saving thanks to enabling low airflows
- 0-100 l/s in chilled beam

- Ultrasound VAV-damper Ø160 down to 10 l/s with very good accuracy



+





EXCELLENCE IN SOLUTIONS

WEGA II CHILLED BEAM

HYGIENE APPLICATIONS

Coil has flexible hoses and locker thus it can easily be opened in order to vacuum clean…

- Outlet nozzles
- Coil on both sides

Coil is coated to achieve a smooth surface – so dust cannot stick to coil



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DENCO HAPPEL SEMCO FLÄKT WOODS DELBAG ILOXAIR



8. Selection program

SELECT

http://select.flaktgroup.com

http://select.flaktgroup.com/ProductCatalogue/Index/4901

Kust leiab infot - www.flaktgroup.com

Technical catalogue gives codes for Chilled beam and at the end accessories ordering examples

Product page for Room controller gives futher information about Room controller and its accessories

WEGA II IQII TECHNICAL CATALOGUE — TECHNICAL
Language: English
Status: Current
View | Download | Send file | Share link



Technical Catalogue WEGA II

Home page

STRA-24 INSTALLATION AND COMMISSIONING MANUAL — COMMISSIONING, INSTALLATION, MAINTENANCE, OPERATION
Language: English
Status: Current
View | Download | Send file | Share link

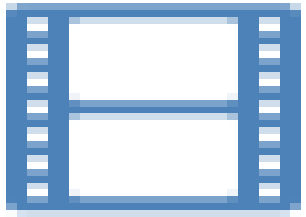
STRA-24 TECHNICAL CATALOGUE — TECHNICAL
Language: English
Status: Current
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STRA GENERAL ACCESSORIES — ACCESSORIES
Language: English
Status: Current
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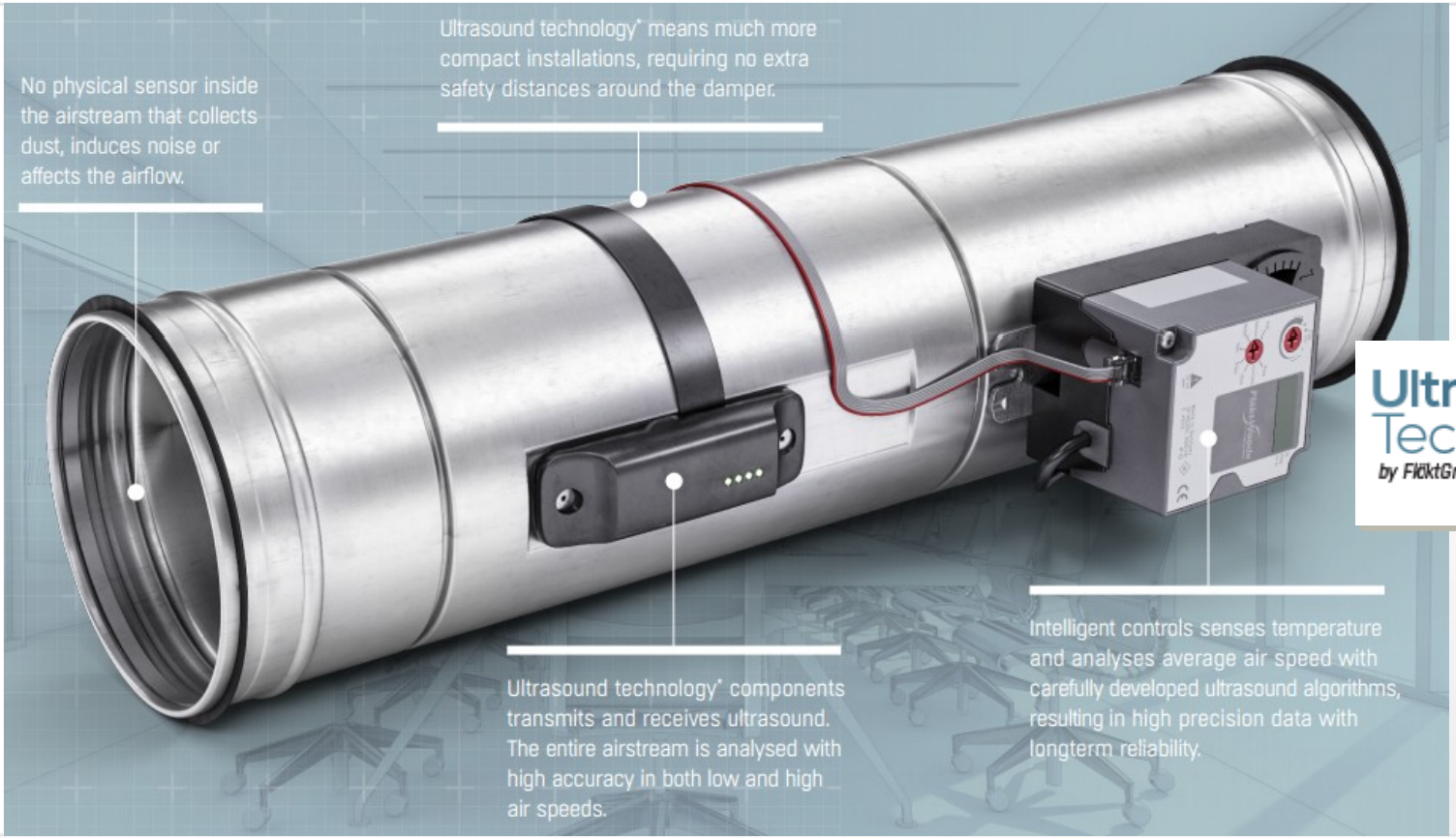
EXCELLENCE IN SOLUTIONS

SMOKE FILM



EXCELLENCE IN SOLUTIONS

Intelligent Ultrasound Technology makes VAV damper simple



EXCELLENCE IN SOLUTIONS

Tasakaalus süsteem toimivate VAV klappidega

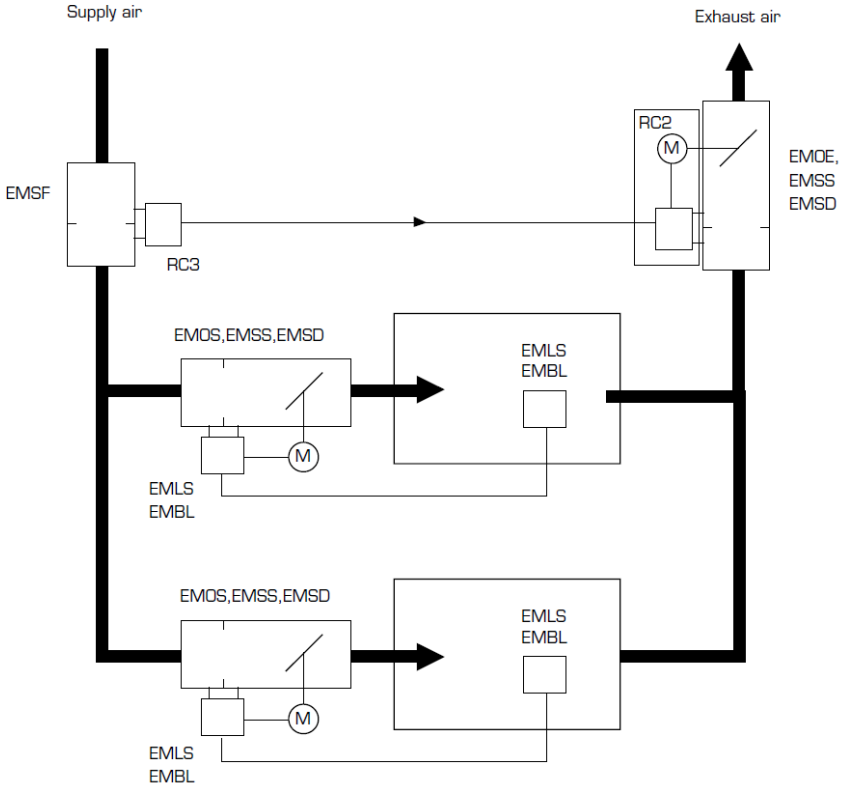
FläktGroup Academy

Rõhuklapp EMPA, EMPD



Mõõteosa EMSF





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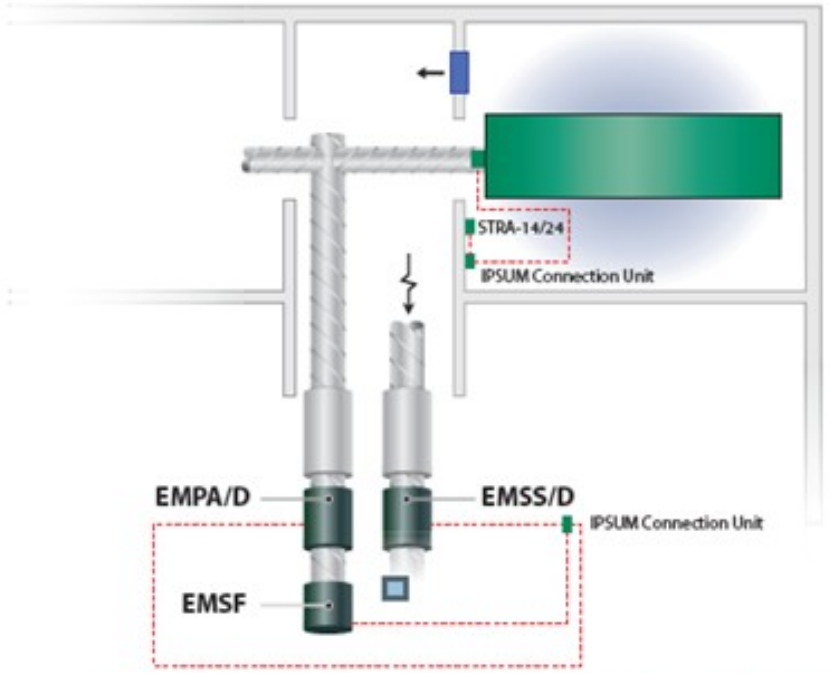
Tasakaalus süsteem palkidega

Rõhuklapp EMPA, EMPD



Mõõteosa EMSF





Chilled beams with a VAV function – central extract air

IPSUM
Õhuhulkade ja temperatuuride jaotamise optimiseerimine



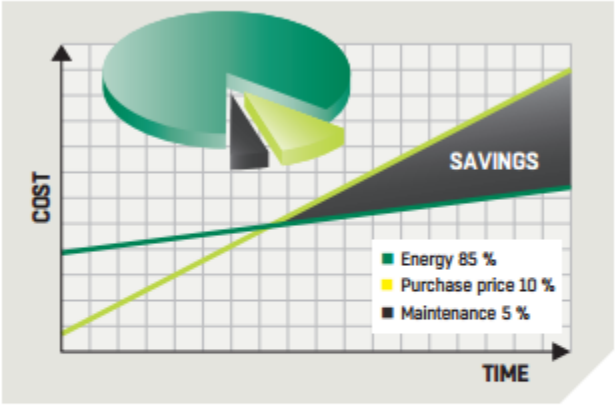
EXCELLENCE IN SOLUTIONS

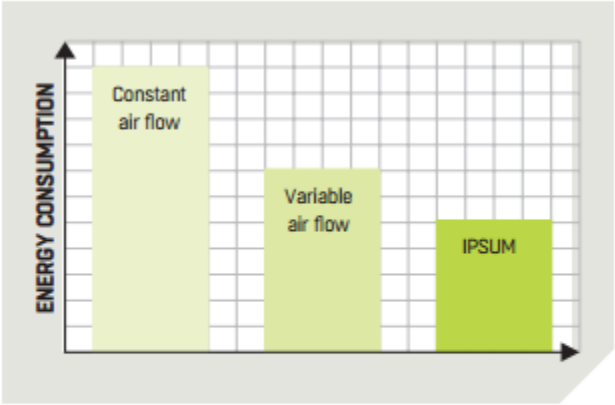
IPSUM
Õhuhulkade ja temperatuuride jaotamise optimiseerimine

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EXCELLENCE IN SOLUTIONS

IPSUM – temperature and pressure optimise your system





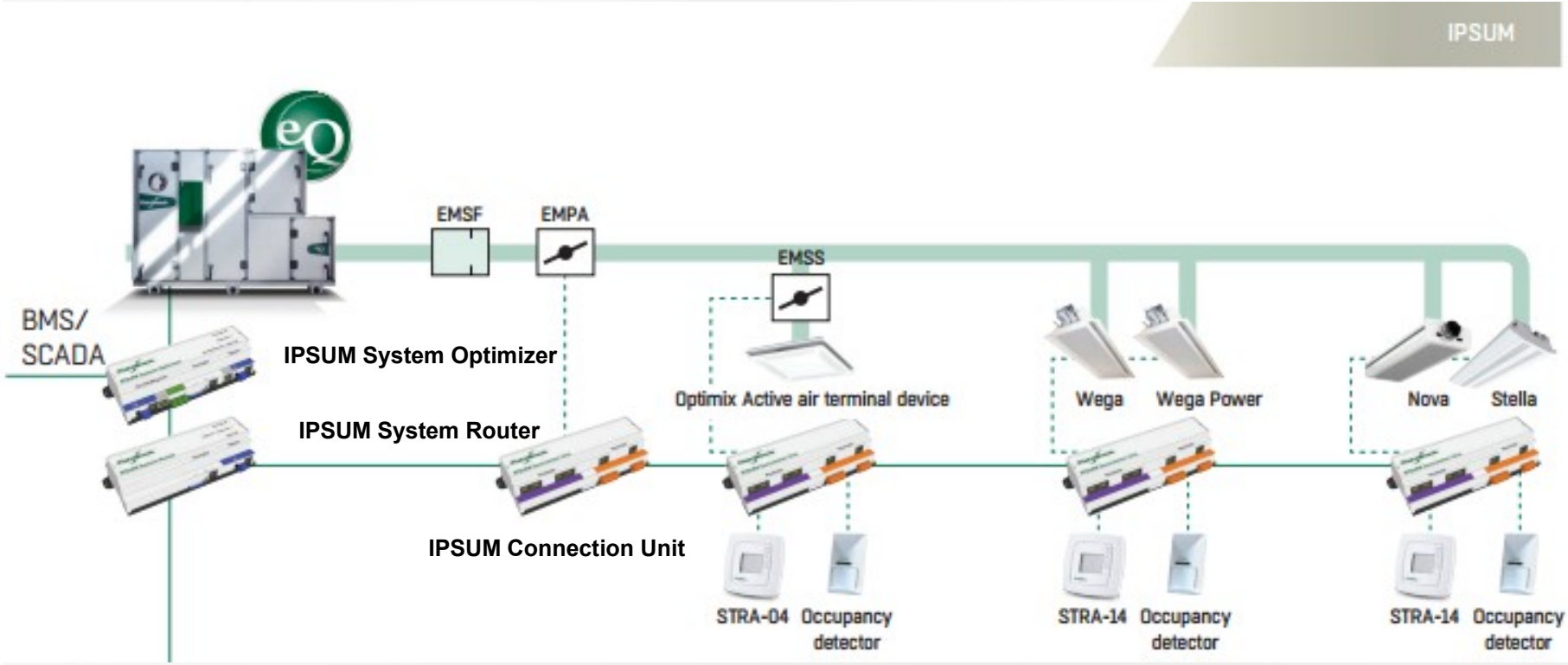
CUSTOMER BENEFITS

1. Pressure optimisation provides energy savings
2. Temperature optimisation provides energy savings
3. Free cooling provides energy savings
4. Energy monitoring in real time
5. The fire protection function provides increased safety
6. Full control down to room level

IPSUM
Õhuhulkade ja temperatuuride jaotamise optimiseerimine

- IPSUM optimiseerib rõhu ja temperatuuri seadesuurusi ventilatsiooniseadme juhtimiseks.
- Sellega saavutatakse parim optimaalne tööreziim ja märkimisväärne energiasääst.
- Lisaks komponentidele mis on vajalikud VAV süstemile on IPSUM'is kolm componenti:
- • **IPSUM System Optimizer** – töötleb süsteemi andmeid ventseadme optimaalseks juhtimiseks
- • **IPSUM System Router** – ühendab andmed, ruumid, korrused ja tsoonid
- • **IPSUM Connection Unit** – ühendab tooted süsteemi, ruumi kontrollerid ja ajamid
- IPSUM juhib nii vee- kui õhusüsteeme või mõlemaid korraga

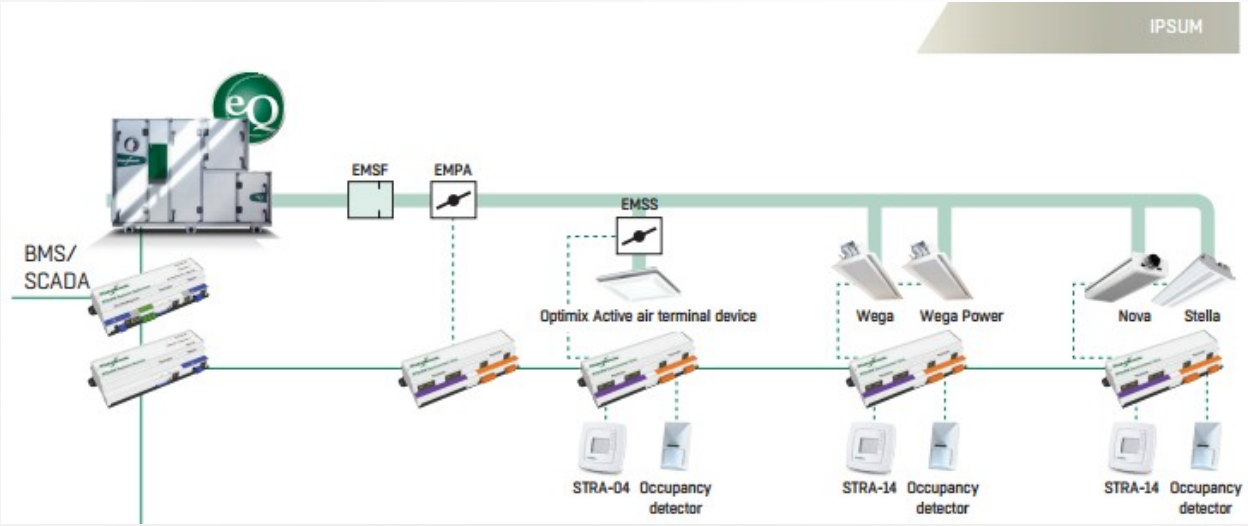
IPSUM
Õhuhulkade ja temperatuuride jaotamise optimeerimine



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IPSUM
Õhuhulkade ja temperatuuride jaotamise optimiseerimine

1. Rõhu optimeerimine
2. Temperatuuri optimeerimine
3. Vabajahutus
4. Energia monitooring
5. Tuletkahju oleku kontroll
6. Optimeerimine



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IPSUM kaabeldus

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Lihnte kaabeldus, saab kasutada hoome üldist Ethernet võrku

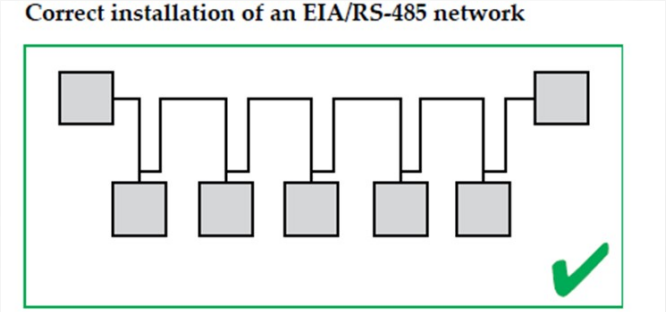


Figure 3: Daisy chain

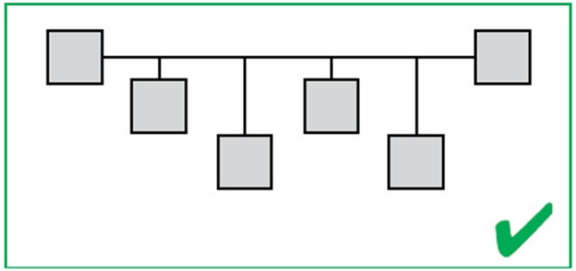


Figure 4: Backbone with studs

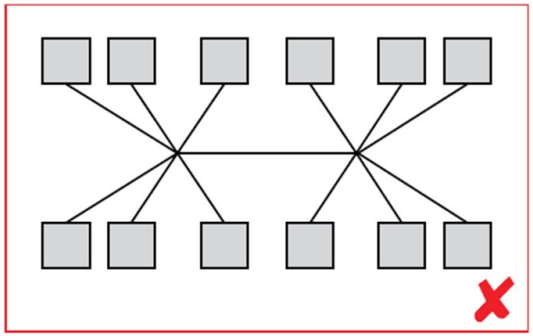


Figure 6: Backbone with stars or clusters

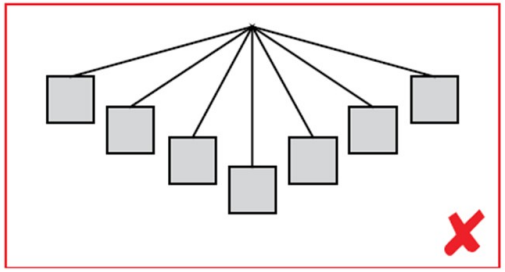


Figure 7: Star network

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IPSUM
Õhuhulkade ja temperatuuride jaotamise optimiseerimine

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1. Rõhu optimiseerimine

Õhukanali rõhku (hulka) reguleeritakse võimalikult madalale, et oleks veel tagatud vajalik sisekliima

2. Temperatuuri optimiseerimine

Temperatuuri reguleeritakse võimalikult optimaalsele tasemele, et see tagaks vajaliku sisekliima.
Ventilatsiooniseadme sissepuhkeõhu temp. seadesuurus arvutatakse ruumikontrollerite andmete baasil.

3. Vabajahutus

Vahetatakse jahutuspalkide juhtimisprioriteeti.
Eelistatakse õhuga jahutamist veega jahutamisele kui ventilatsiooniseadme andmetel on vabajahutus saadaval.

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Õhuhulkade ja temperatuuride jaotamise optimiseerimine

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4. Energia monitooring
Energiasääst kuvatakse reaalajas otse veebiliideses.

5. Tulekahju funktsioon
Tulekahju häire korral saab klappe juhtida
nii, et nad liiguvad ettemääratud asendisse: sulgeda kõik, avada kõik, avada sissepuhke- või avada väljatõmbe klapid.

6. Optimeerimine
IPSUM süsteemi ülesehitus võimaldab kogu hoone kliima täielikku monitooringut ja kontrolli, kuni iga üksiku ruumini välja.

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Küsimused – vastused?

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