

Ventilation design report

Dom nad jeziorem

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Project summary

Designed airflow 125.0 m³/h	Supply 125.0 m³/h	Extract 125.0 m³/h
Airflow difference 0.0 m³/h	Recommended air handling unit capacity 150.0 m³/h	Total duct length 77.7 m

Selection flow with 15% reserve: **144.0 m³/h**
Available air handling unit sizes: **150, 200, 250, 300, 350, 400, 500, 600, 700, 800 m³/h**
Total material to purchase by diameter: **85.4 m**
Purchase quantities are calculated separately for each diameter and duct type.

Design assumptions

- Airflows are based on room purpose, occupancy, and room volume.
- Supply is marked S and extract is marked E; design airflows must be balanced and commissioned on site.
- Duct diameters and quantities follow the adopted airflow limits and route geometry.

Room balance

#	Room	Type	Point type	Diffusers	Ducts	Diameter	Flow/duct	Total flow	Occupants
1	Living room [1]	Living room	Supply	2	4	90 mm	18.8 m³/h	75.0 m³/h	3
2	Kitchen [1]	Kitchen	Extract	2	2	90 mm	34.7 m³/h	69.4 m³/h	1
3	Bedroom [1]	Bedroom	Supply	2	2	90 mm	25.0 m³/h	50.0 m³/h	2
4	Hallway [1]	Hallway	—	0	0	—	0.0 m³/h	0.0 m³/h	0
5	Hallway [2]	Hallway	—	0	0	—	0.0 m³/h	0.0 m³/h	0
6	Bathroom [1]	Bathroom	Extract	1	2	90 mm	20.9 m³/h	41.7 m³/h	0
7	Utility room [1]	Utility room	Extract	1	1	90 mm	13.9 m³/h	13.9 m³/h	0

Diffuser locations

Room	Diffuser	Coordinates	Nearest wall	Wall distances (L/R/T/B)
Living room [1]	S1 · · Supply	X 2.30 m / Y 0.70 m	top 0.70 m	top 0.70 m · left 2.30 m · right 2.33 m · bottom 4.22 m
Living room [1]	S2 · · Supply	X 3.80 m / Y 0.50 m	top 0.50 m	top 0.50 m · right 0.83 m · left 3.80 m · bottom 4.42 m
Kitchen [1]	E1 · · Extract	X 2.00 m / Y 0.50 m	top 0.50 m	top 0.50 m · left 2.00 m · right 2.63 m · bottom 3.10 m
Kitchen [1]	E2 · · Extract	X 2.00 m / Y 2.00 m	bottom 1.60 m	bottom 1.60 m · left 2.00 m · top 2.00 m · right 2.63 m
Bedroom [1]	S1 · · Supply	X 2.50 m / Y 0.70 m	top 0.70 m	top 0.70 m · left 2.50 m · right 2.50 m · bottom 2.90 m
Bedroom [1]	S2 · · Supply	X 1.00 m / Y 0.50 m	top 0.50 m	top 0.50 m · left 1.00 m · bottom 3.10 m · right 4.00 m
Bathroom [1]	E1 · · Extract	X 4.50 m / Y 0.50 m	right 0.50 m	right 0.50 m · top 0.50 m · bottom 1.25 m · left 4.50 m
Utility room [1]	E1 · · Extract	X 0.50 m / Y 0.71 m	left 0.50 m	left 0.50 m · top 0.71 m · bottom 1.14 m · right 2.41 m

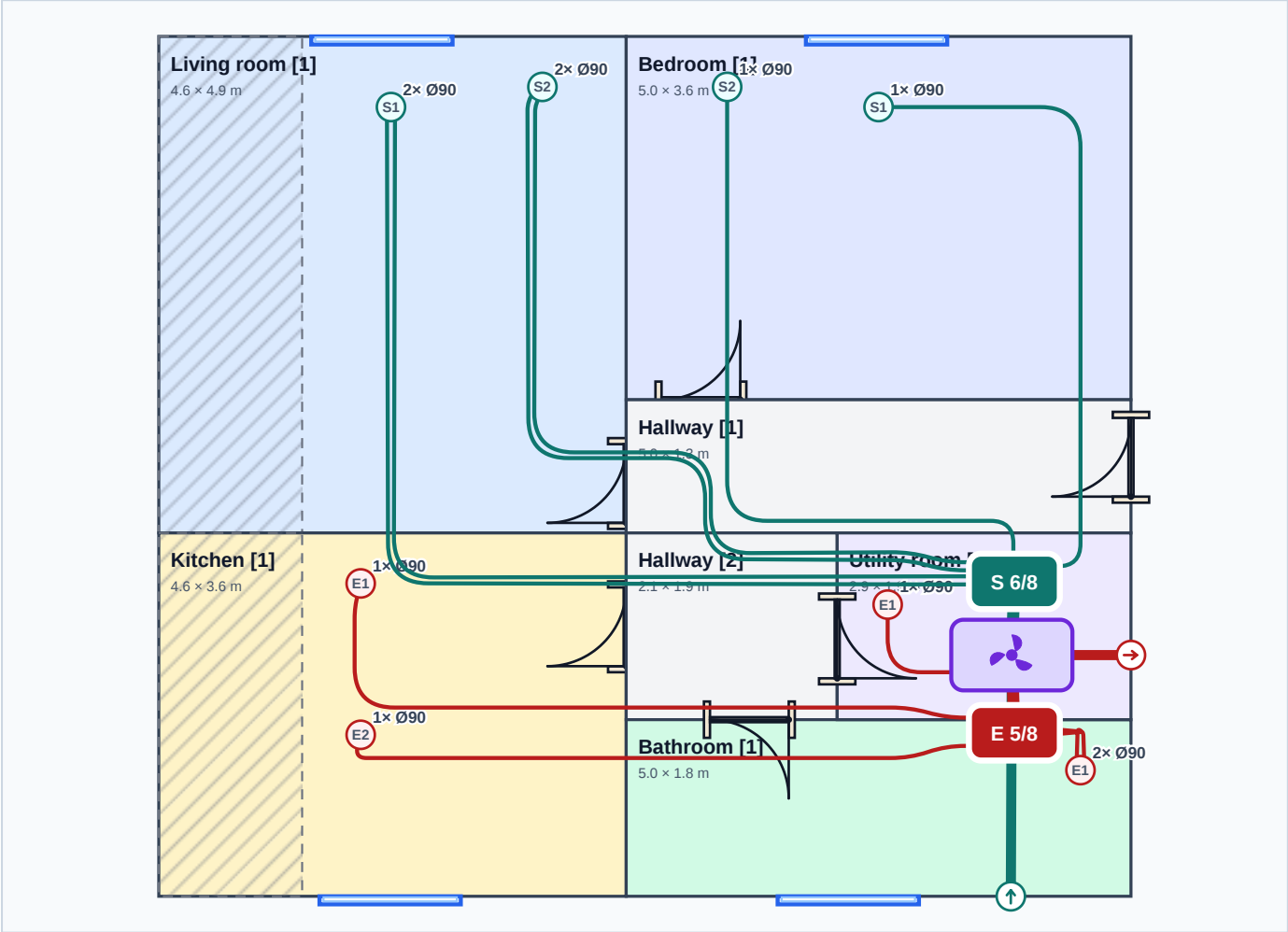
Floor plans

Floor 1

Room balance: 7 · Floor supply: 125.0 m³/h · Floor extract: 125.0 m³/h

PROJECT SYMBOL LEGEND

-  Supply
-  Extract
-  Supply distribution box
-  Extract distribution box
-  Outdoor intake
-  Outdoor exhaust
-  Air handling unit
-  Gas appliance



S Supply · E Extract · Duct routes: 8

Complete route table

Route type	Room / Distribution box	Ø	Quantity	Unit length	Total length
Distribution box to diffuser	Bathroom [1] · Diffuser 7	Ø90 mm	2 ducts	0.85 m	1.70 m
Distribution box to diffuser	Utility room [1] · Diffuser 8	Ø90 mm	1 duct	2.4 m	2.4 m
Distribution box to diffuser	Kitchen [1] · Diffuser 4	Ø90 mm	1 duct	6.6 m	6.6 m
Distribution box to diffuser	Kitchen [1] · Diffuser 3	Ø90 mm	1 duct	7.6 m	7.6 m
Distribution box to diffuser	Bedroom [1] · Diffuser 5	Ø90 mm	1 duct	7.0 m	7.0 m
Distribution box to diffuser	Bedroom [1] · Diffuser 6	Ø90 mm	1 duct	7.6 m	7.6 m
Distribution box to diffuser	Living room [1] · Diffuser 2	Ø90 mm	2 ducts	9.26 m	18.52 m
Distribution box to diffuser	Living room [1] · Diffuser 1	Ø90 mm	2 ducts	10.64 m	21.28 m
Route length checksum					77.65 m

Route type	Room / Distribution box	Ø	Quantity	Unit length	Total length
Air handling unit to distribution box	Extract distribution box — Floor 1 · 8 lines (5/8)	Ø125 mm	1 duct	0.8 m	0.8 m
Air handling unit to distribution box	Supply distribution box — Floor 1 · 8 lines (6/8)	Ø125 mm	1 duct	0.7 m	0.7 m
Outdoor intake/exhaust	Outdoor intake terminal	Ø125 mm	1 duct	2.4 m	2.4 m
Outdoor intake/exhaust	Outdoor exhaust terminal	Ø125 mm	1 duct	1.2 m	1.2 m
Route length checksum					77.65 m

Duct distribution to diffusers

Room	Point type	Diffusers	Ducts	Diameter	Diffuser configuration	Flow/duct	Total flow
Living room [1]	Supply	2	4	90 mm	A90-2-38 · DN125 · 2 × Ø90	18.8 m³/h	75.0 m³/h
Kitchen [1]	Extract	2	2	90 mm	A90-1-35 · DN125 · 1 × Ø90	34.7 m³/h	69.4 m³/h
Bedroom [1]	Supply	2	2	90 mm	A90-1-25 · DN100 · 1 × Ø90	25.0 m³/h	50.0 m³/h
Hallway [1]	—	0	0	—	—	0.0 m³/h	0.0 m³/h
Hallway [2]	—	0	0	—	—	0.0 m³/h	0.0 m³/h
Bathroom [1]	Extract	1	2	90 mm	A90-2-42 · DN125 · 2 × Ø90	20.9 m³/h	41.7 m³/h
Utility room [1]	Extract	1	1	90 mm	A90-1-14 · DN100 · 1 × Ø90	13.9 m³/h	13.9 m³/h

Distribution box schedule

Distribution box	Point type	Capacity / used	Ducts	Total flow
Extract distribution box — Floor 1 · 8 lines (5/8)	Extract	8 / 5	5	125.0 m³/h
Supply distribution box — Floor 1 · 8 lines (6/8)	Supply	8 / 6	6	125.0 m³/h

Air handling unit, intake and exhaust

Air handling unit	1.2 × 0.7 m · Floor 1 · Planned
Outdoor intake/exhaust location	Outdoor intake/exhaust location: Floor 1 · 10.3 × 9.9 m; Outdoor exhaust terminal: Floor 1 · 11.4 × 7.5 m
Gas appliance	No gas appliance marked

Length control by material group

Material group	Total without reserve	10% material reserve	To purchase
Distribution box to diffuser · Ø90 mm	72.6 m	7.3 m	79.8 m
Outdoor intake/exhaust · Ø125 mm	3.6 m	0.4 m	3.9 m
Air handling unit to distribution box · Ø125 mm	1.5 m	0.2 m	1.7 m

Project technical data

Utility room purpose	Storage
Gas appliance	No gas appliance marked
Kitchen hood	Not applicable / none

Indicative installation calculations

The results are indicative. They do not include data from the specific air handling unit, boxes, fittings, or diffusers and require construction-stage verification.

Calculation assumptions: 20°C air; density 1.20 kg/m³; equivalent roughness 1.5 mm; typical fitting loss coefficients; diffuser 25 Pa; 15% design reserve

Maximum duct velocity	2.83 m/s
Maximum duct friction loss	5.9 Pa
Estimated fitting and box loss	5.8 Pa
Assumed diffuser loss	25.0 Pa
Longest route to a diffuser	10.64 m
Estimated required available pressure	48 Pa

Warnings and items requiring verification

- Floor 1 - Utility room [1]: A simple fallback route was used; check its path near the air-handling unit.
- Floor 1 - Living room [1]: A simple fallback route was used; check its path near the air-handling unit.
- Some routes require manual verification near the air-handling unit: Floor 1 - Kitchen [1], Floor 1 - Living room [1].
- Piętro 1 - Łazienka [1]: Trasa jest krótsza niż zalecane minimum 2.5 m.
- Piętro 1 - Gospodarcze [1]: zastosowano prostą trasę awaryjną; sprawdź jej przebieg przy centralce.
- Piętro 1 - Kuchnia [1]: Trasa została wyznaczona w trybie awaryjnym z zachowaniem rozdzielania od wcześniejszych tras.
- Piętro 1 - Salon [1]: Trasa została wyznaczona w trybie awaryjnym z zachowaniem rozdzielania od wcześniejszych tras.
- Piętro 1 - Salon [1]: zastosowano prostą trasę awaryjną; sprawdź jej przebieg przy centralce.

Report limitations and construction-stage verification

This report is indicative. Before installation, verify the design on site, select specific equipment and system components, and confirm routes, diameters, acoustics, insulation, and condensate drainage with the installer.

Materials to purchase

Material	Quantity	Specification
Recommended air handling unit	1 szt.	150.0 m ³ /h
Outdoor intake terminal	1 szt.	wall/roof terminal with weather protection and insect mesh
Outdoor exhaust terminal	1 szt.	wall/roof terminal with weather protection and insect mesh
Ventilation duct	79.8 m	Ø90 mm, z 10% zapasem
Main air-handling-unit-to-box duct	1.7 m	smooth, circular, insulated Ø125 mm; długość od centrali do skrzynek; z 10% zapasem
Outdoor intake/exhaust duct	3.9 m	smooth, circular, insulated; run to external terminal Ø125 mm; z 10% zapasem
Distribution box	1 szt.	Extract distribution box — Floor 1 · 8 lines (5/8)
Distribution box	1 szt.	Supply distribution box — Floor 1 · 8 lines (6/8)
Diffuser	1 szt.	extract · A90-1-14 · DN100 · 1 × Ø90
Diffuser	2 szt.	extract · A90-1-35 · DN125 · 1 × Ø90
Diffuser	1 szt.	extract · A90-2-42 · DN125 · 2 × Ø90
Diffuser	2 szt.	supply · A90-1-25 · DN100 · 1 × Ø90
Diffuser	2 szt.	supply · A90-2-38 · DN125 · 2 × Ø90

Installation recommendations

- Ensure free air transfer between rooms using door undercuts, transfer grilles, or openings with sufficient free area.
- Consider acoustic silencers near the air handling unit and on sections where noise could travel to living areas.
- Thermally insulate the outdoor intake and exhaust ducts and protect them against condensation, especially in unheated spaces.
- Plan condensate drainage from the air handling unit with a fall, trap, and service access in accordance with the manufacturer's instructions.