

Working project

"Current repair of anti-anti-anti-radiation shelter № 52108 (group P-4)
Ingul Lyceum of the Ingul Village Council, at the address:
st. Sadova, 49, Ingulka village, Bashtanka district, Mykolaiv region"

Ventilation and air conditioning
173-WP-2024-F-VAC

Chief Project Engineer
Qualification Certificate by engineering-construction design AR № 019809. Ministry of Regional Development, construction & housing-Public Utilities of Ukraine. Architectural Certification-building commission.



Shelikhova V.

Погоджено:		
Зам. інв. №		
Підпис і дата		
Інв. № ор.		

LIST OF DRAWINGS OF THE MAIN SET

Sheet	Name	Note
1	Total.	A 2
2	Floor plan M 1:100; Axonometric diagram of the B1 system; PV1	A 2
3	Schematic diagram of control of the automation panel of the PV1 system	A 2
4	Volume of dismantling materials for ventilation.	A 2

MAIN INDICATORS FOR HEATING AND AIR CONDITIONING DRAWINGS

Name of the premises	Volume, m³	Period year at t c, ° S	Heat consumption, kW					Installed power electric motors, kW
			For heating	Upon ventilation	Execution scheme	Upon hot water-supply	General	
Basement room	570,2	- 19	-	15	-	-	15	2,2

DOCUMENT LIST, ATTACHED

Notation	Name	Note
	DOCUMENT LIST, ATTACHED	
173- WP-2023- F-VAC. S	Hardware Specification, products and materials.	

CHARACTERISTICS OF VENTILATION SYSTEMS

System Designation	Call. systems	Room name, serviced	Type installation	Fan							Electric Motor			Air Heater					Note
				Type, execution on explosive-Histu	n, pcs	Execution scheme	Placing	L, m ³/ year	P, Pa	n, ob/ min	Type, explosion protection design	N, kW	n, ob/ min	Type	N, kW	Call.	Temperature cooling., °C		
																	from	to	
PV 1	1	Room 1; 7; 9; 11; 12	SBV- 50- 30/ 25-4 D	-	2	-	gor.	1520	300	1370	IP 54	0,93	1380	-	-	-	-	-	hood
							gor.	2000	180	1380	IP 54	0,93	1380	SEH- 5 0 x 3 0- 15	15,0	1	- 19	+ 2 0	tide
Q1	1	Bathrooms 3; 5; 6	RV 200 L	-	1	-	gor.	500	3 10	2 66 0	IP 4 4	0, 1 3	2 66 0	-	-	-	-	-	hood

GENERAL GUIDELINES

The drawings are developed in accordance with the current standards, rules and standards. The reason for the development of working drawings of the ventilation system on the (a) to the extent permitted by the provisions of this t address: c.Ingulka, Bashtanka district, Mykolaiv oblast, st. Garden 2and is architecturally - planning drawings premises.

Estimated Winter Outdoor Temperature -19 ° C. Indoor air temperature is accepted: +20° C.

For the preparation of supply air, a duct electric surge and a cafeter filter, filtration class are used G4.

Ventilation equipment of the PV system1 install in room 4.

Air ducts of the PV system1 cover the water from the outside to the recuperator with mineral wool, cover the supply branch mineral wool completely foiled, 50mm thick.

Install fire valves when the air ducts of the wall pass from room 2 to room 4.

Air supply and exhaust are provided by the PV supply and exhaust system1 from the upper area of the room.

In room 7 in the door leaf in the lower part, install a Vents MV 450 /2 flow grille to ensure air exchange.

An individual exhaust ventilation system is provided from the bathrooms. Air removal is provided by an exhaust system B1 from the upper area of the room.

Ventilation grilles are adopted: metal double-row regulating.

Ventilation systems in the basement are installed in an open way.

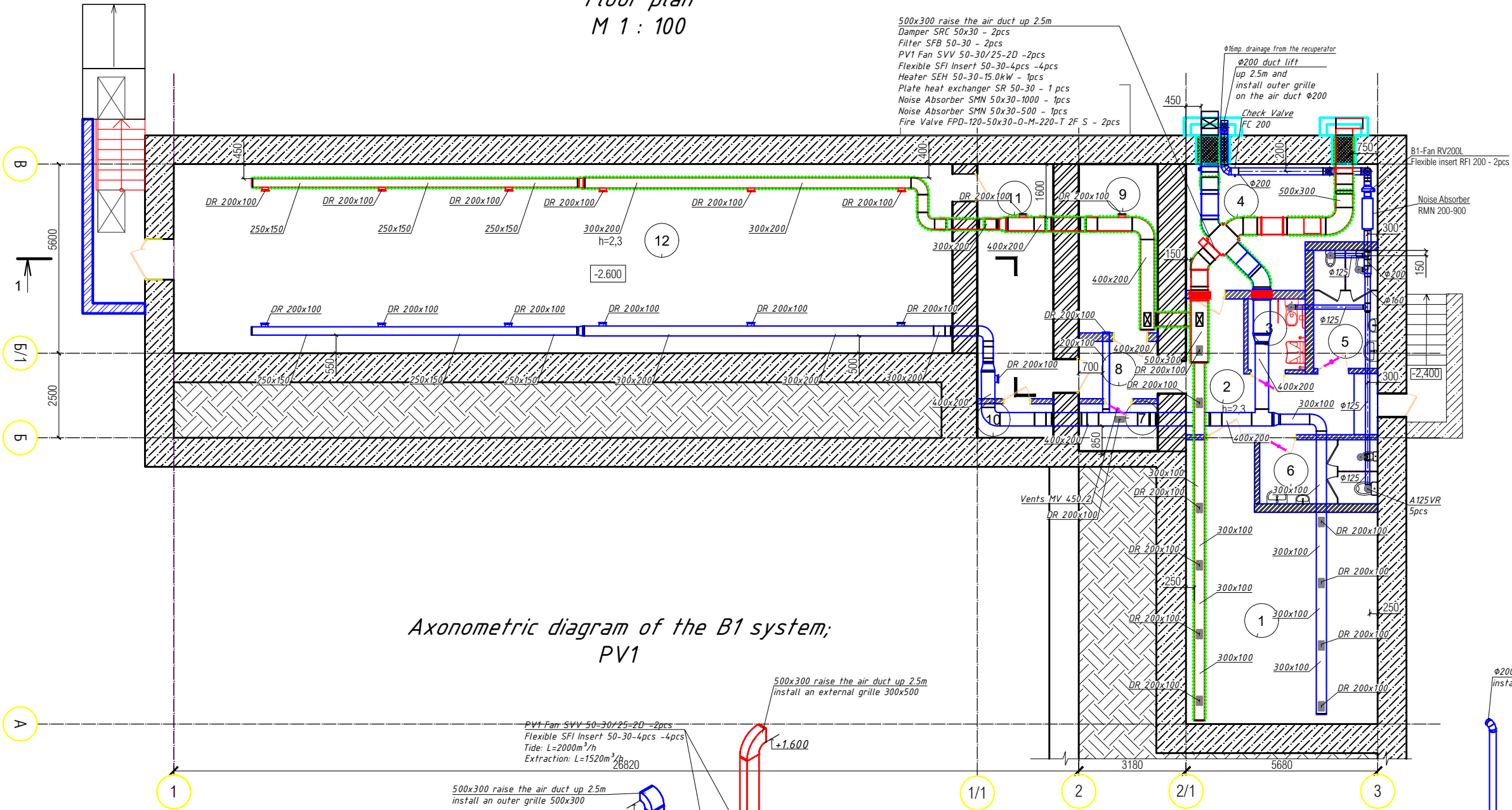
Place the automation panel for controlling the PV1 system in room 4.

In the technical room, a tidal supply is provided-mechanically induced exhaust ventilation with heat recovery.

Инв. № подл.	Взам. инв. №	Инв. № дубл.	Подп. и дата

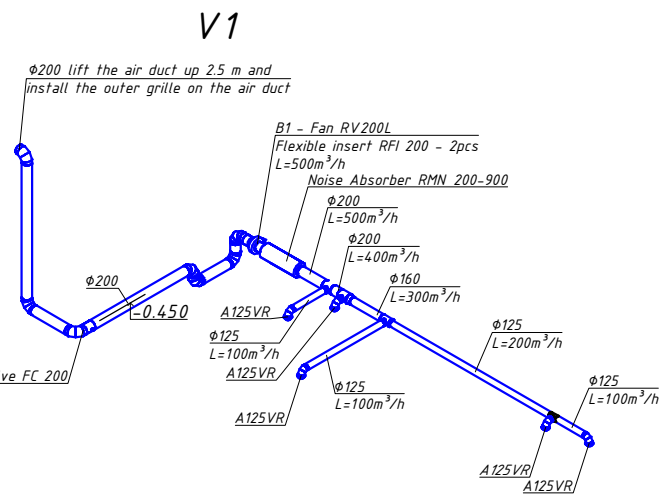
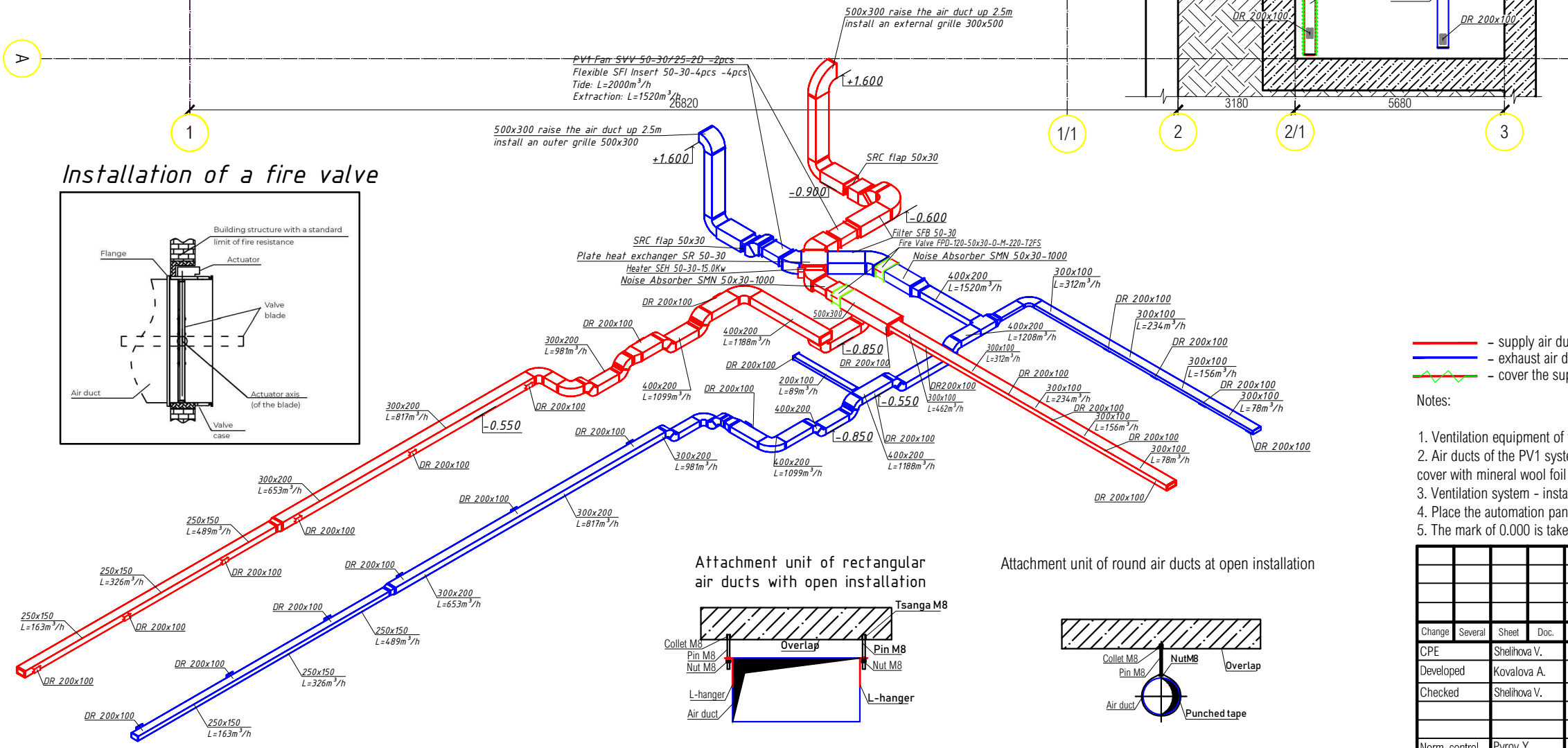
							173-WP-2024-F-VAC
							Current repair of anti-radiation shelter № 52108 (group P-4) Ingul Lyceum of the Ingul Village Council, at the address: st. Sadova, 49, Ingulka village, Bashtanka district, Mykolaiv region
Change	Several	Sheet	Doc.	Signature	Date		
CPE		Shelihova V.					
Developed		Kovalova A.					
Checked		Shelihova V.					
Norm. control		Pyrov Y.					
						Stage	Sheet
						WP	1
							4
						General data.	
						FORTIS	

Floor plan
M 1 : 100



Explanation of premises			
Room number	Name	Area, m ²	Note
1	Premises for persons, to be sheltered	39.98	
2	Corridor	14.03	
3	Universal sanitary-hygienic approx. for MGN	3.57	
4	Ventilation	18.15	
5	Women's bathroom	6.65	
6	Men's bathroom	6.65	
7	Water conservation facilities	3.28	
8	Corridor	3.98	
9	Premises for persons, to be sheltered	11.7	
10	Switchboard room	2.26	
11	Premises for persons, to be sheltered	15.71	
12	Main room	129.25	
Total area		255.21	

Axonometric diagram of the B1 system;
PV1



- Notes:
- Ventilation equipment of the PV1 system install in room 4.
 - Air ducts of the PV1 system covering the supply branch passing from the outside to the recuperator with mineral wool cover with mineral wool foil completely, 50mm thick.
 - Ventilation system - installation is carried out in an open way.
 - Place the automation panel for controlling the PV1 system in room 4.
 - The mark of 0.000 is taken on the floor of the first floor.

173-WP-2024-F-VAC					
Current repair of anti-radiation shelter № 52108 (group P-4) Ingul Lyceum of the Ingul Village Council, at the address: st. Sadova, 49, Ingulka village, Bashtanka district, Mykolaiv region					
Change	Several	Sheet	Doc.	Signature	Date
CPE	Shelihova V.				
Developed	Kovalova A.				
Checked	Shelihova V.				
Norm. control	Pyrov Y.				
Ventilation				Stage	Sheet
Floor plan M 1:100; Axonometric diagram B1 systems; PV1				WP	2
					3



The supply and exhaust ventilation control equipment is supplied as a set and remains unchanged.

The automatic control system for supply and exhaust ventilation provides control by means of a shield control of the supply and exhaust system with an electric air heater.

System management includes the following functions:

- control system per using switch ON/O or automatically along graphics per using installed into controller control panel;
- maintaining the supply air temperature (using a duct air temperature sensor) by control of the number of stages of the electric heater and the speed of rotation of the shaft of the electric drive of the supply fan (EC Motor);
- maintaining the temperature in the room in the recuperation mode by controlling the speed of rotation of the shafts electric fan drives (EC Motors);
- monitoring the operation of fans, recuperator and air filters using differential pressure sensors;
- protection electric heater tidal section from overheating per using built-in into electric heater protective thermostat;
- use sensor temperature external air for optimization algorithms control supply and exhaust ventilation system;
- opportunity disabling vent system from electrical network at signals from of the appliance fire alarm;

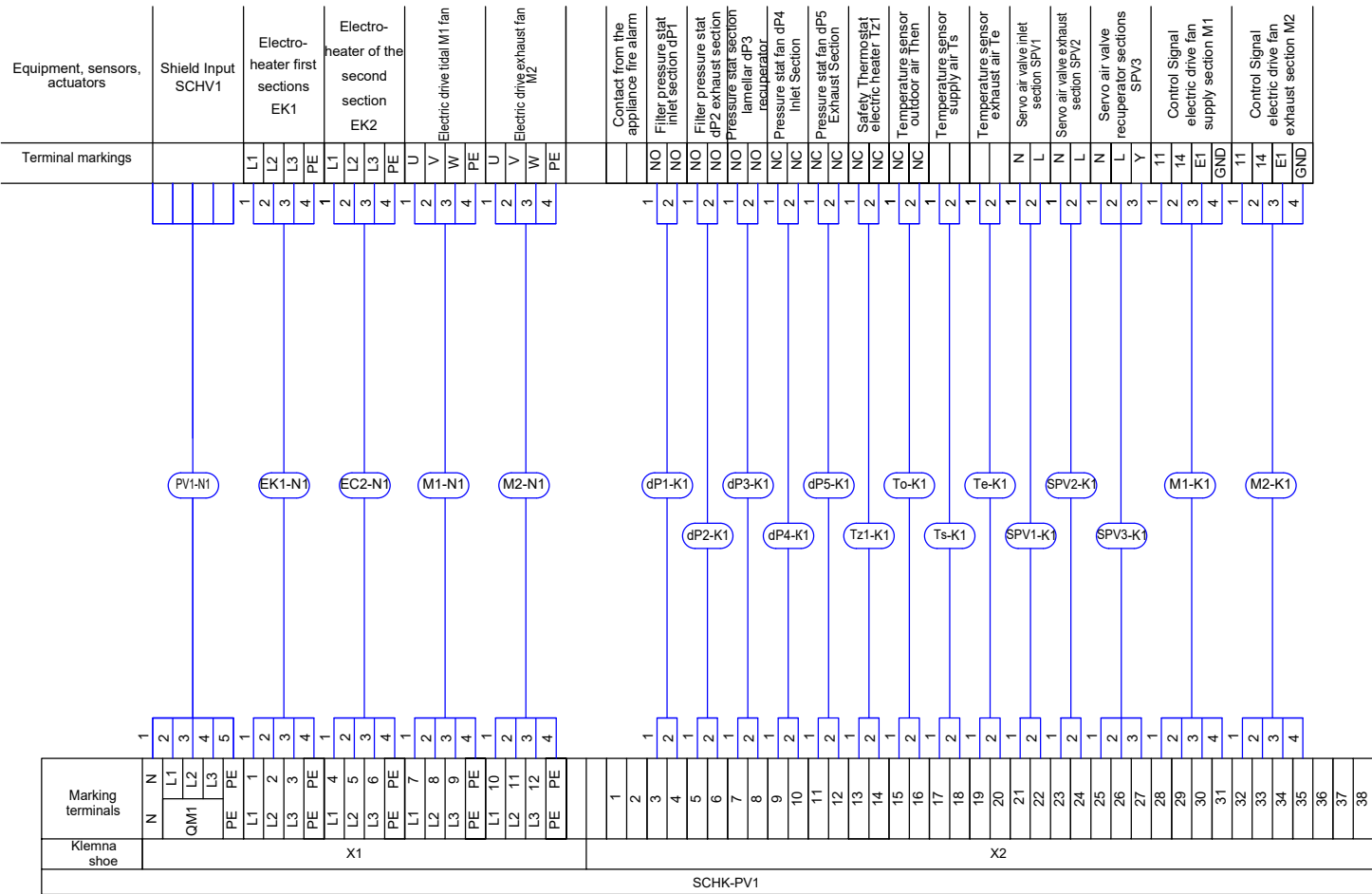
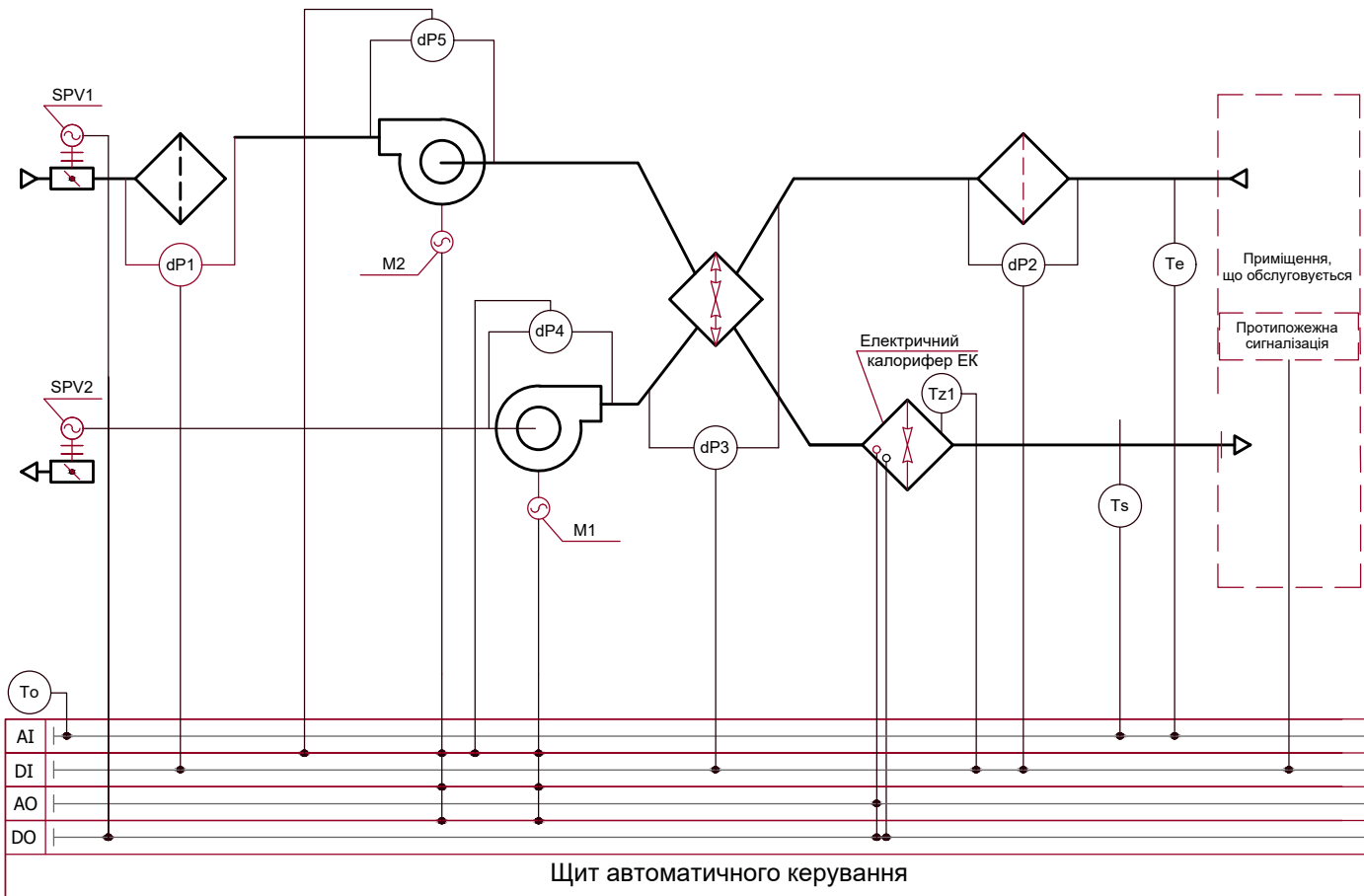







Схема функціональна припливно-витяжної установки ПВ1

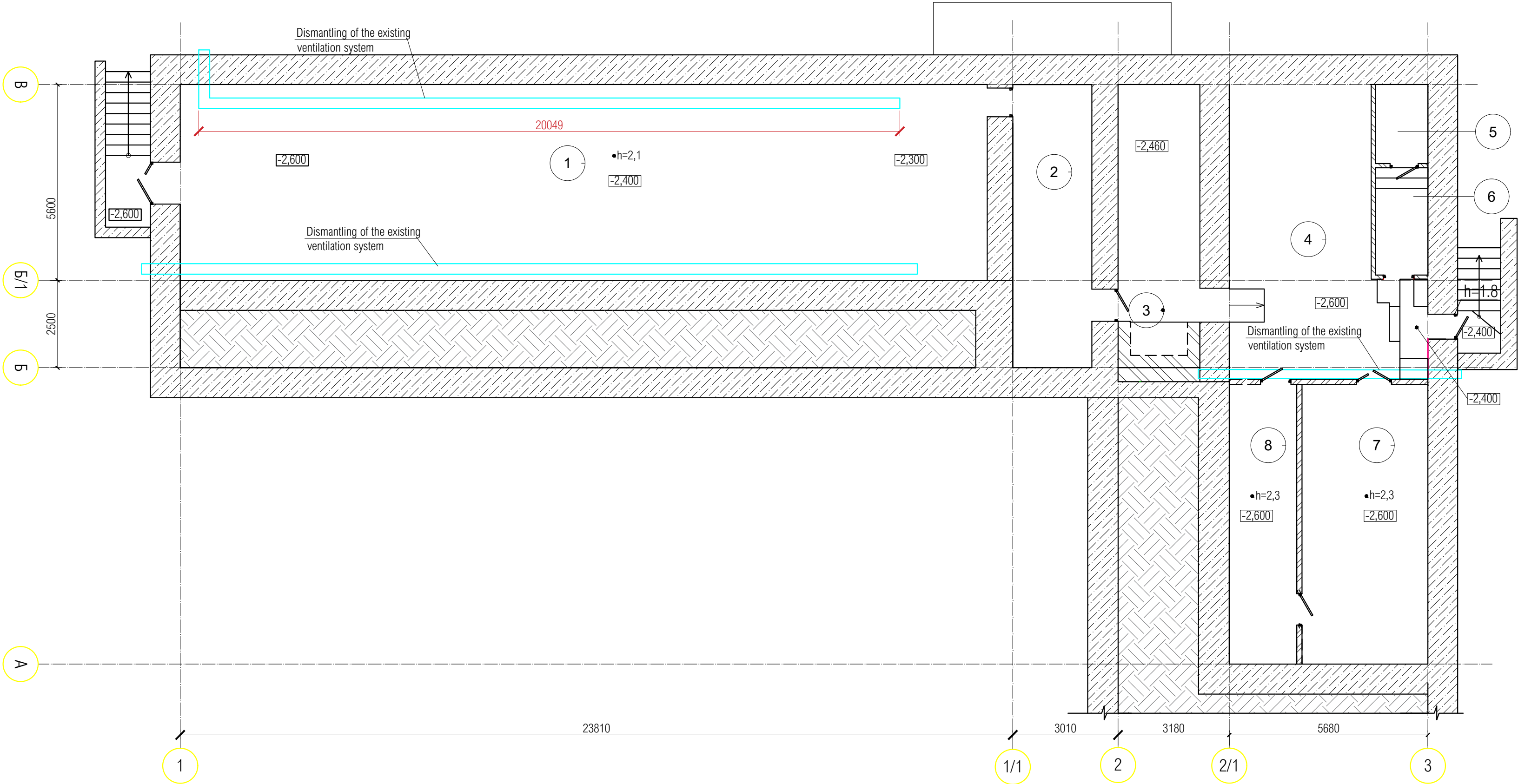


EC - Electric heater;
M1 - Electric drive of the supply fan;
M2 - Electric drive of the exhaust fan;
dP1 - Pressure stat of the filter of the supply section;
dP2 - Pressure stat of the exhaust section filter;
dP3 - Pressure stat of the recuperator section;
dP4 - Pressure stat of the supply section fan;
dP5 - Exhaust section fan pressure stat;
Tz1 - Electric heater protective thermostat;
To - Outdoor temperature sensor;
Ts - Supply air temperature sensor;
Te - Exhaust air temperature sensor;
SPV1 - Servo drive of the air valve of the supply section;
SPV2 - Servo actuator of the air valve of the exhaust section.






* Cables from the control panel to the add-ons and electric drives shown in the ETR section.






						173-WP-2024-F-VAC			
						"Current repair of anti-radiation shelter № 52108 (group P-4) Ingul Lyceum of the Ingul Village Council, at the address: st. Sadova, 49, Ingulka village, Bashtanka district, Mykolaiv region"			
Change	Several	Sheet	Doc.	Signature	Date	Ventilation	Stage	Sheet	Sheets
CPE		Shelihova V.					WP	3	3
Developed		Kovalova A.							
Checked		Shelihova V.							
						Schematic diagram of the automation panel control PV1 systems			
Norm. control		Pyrov Y.							

Volume of dismantling materials for ventilation.



Position	Name	Units of measurement	Amount.
Volume of dismantling materials of ventilation systems			
	Channel fan Vents VKM 250	шт	2
	Channel fan Vents VKM 160	шт	1
	Cassette filter Vents FB 250	шт	1
	Anemostat A150VR	шт	17
	Check valve Vents KOM1 250	шт	2
	Check valve Vents KOM1 160	шт	1
	Duct Ø250	м	43,5
	Duct Ø160	м	9
	Tee Ø250-Ø150	шт.	14
	Tee Ø160-Ø150	шт.	3
	Plug Ø250	шт.	2
	Tap 90° Ø250	шт.	5
	Tap 45° Ø250	шт.	4
	Tap 90° Ø160	шт.	2
	Tap 45° Ø160	шт.	2

						173-WP-2024-F-VAC			
						Current repair of anti-radiation shelter № 52108 (group P-4) Ingul Lyceum of the Ingul Village Council, at the address: st. Sadova, 49, Ingulka village, Bashtanka district, Mykolaiv region			
Change	Several	Sheet	Doc.	Signature	Date	Ventilation	Stage	Sheet	Sheets
CPE		Shelihovala V.					WP	4	4
Developed		Kovalova A.							
Checked		Shelihovala V.							
						Volume of dismantling materials for ventilation.			
Norm. control		Pyrov Y.							

Position	Name and technical characteristics	Type, brand, designation of the document, survey sheet	Equipment, product, material code	Manufacturing plant	Unit	Number	Weight of the unit kg	Note
1	2	3	4	5	6	7	8	9
	Ventilation							
	<u>Air ducts and fittings of the PV1 system</u>							
	Duct 200x100				m	3		
	Duct 250x150				m	21		
	Duct 300x100				m	22		
	Duct 300x200				m	24		
	Duct 400x200				m	18		
	Duct 500x300				m	15		
	Cut into a rectangular duct 200 X 100				piece	27		
	Cut into a rectangular duct 400 X 200				piece	2		
	Cut into a rectangular duct 300 X 100				piece	1		
	Lead 90° - 45° -500x300				piece	4		
	Lead 90° - 45° -300x500				piece	4		
	Lead 90° - 60° -200x300				piece	8		
	Lead 90° - 60° -200x400				piece	12		
	Lead 90° - 90° -200x400				piece	2		
	Tap 90° - 90° -300x100				piece	1		
	Lead 90° - 90° -300x200				piece	3		
	Lead 90° - 90° -300x500				piece	3		
	Lead 90° - 90° -400x200				piece	2		
	Lead 90° - 90° -500x300				piece	2		
	Plug 500x300				piece	1		
	Plug 400x200				piece	1		
	Plug 300x100				piece	2		
	Plug 250x150				piece	2		
	Transition 300x200-250x150-200				piece	2		
	Transition 400x200-300x100-200				piece	1		
	Transition 400x200-300x200-200				piece	2		
	Transition 500x300-400x200-200				piece	1		
	Tee 400x200-400x200-400x200				piece	1		
	<u>PV1 system equipment</u>							
	Fan	SVV 50-30/25-2D		AeroStar	piece	2		
							173-RP-2023-F-VAC.S	
			Chang	Kil.	Ark	Doc. N	Signature	Date
			GIP		V. B. Shelikhov			
			Developed		Kovaleva A.V			
			I checked		V. B. Shelikhov			
			Norm. contro		Ya. A. Pyrov			
Specification of equipment, products and materials						Stage	Sheet	Arkushov
						WP	1	3
								

Position	Name and technical characteristics	Type, brand, designation of the document, survey sheet	Equipment, product, material code	Manufacturing plant	Unit	Number	Weight of the unit kg	Note
1	2	3	4	5	6	7	8	9
	Flexible insert	SFI 50-30		AeroStar	piece	4		
	The damper is regulating	SRC 50-30		AeroStar	piece	2		
	Cassette filter	SFB 50-30		AeroStar	piece	2		
	Heater	SEH 50-30-15.0 kW		AeroStar	piece	1		
	Noise absorber	SMN 50x30-1000		AeroStar	piece	1		
	Noise absorber	SMN 50x30-500		AeroStar	piece	1		
	Fire valve	FPD-120-30X30-DM-220-1 2E S		AeroStar	piece	2		
	Plate recuperator	SR 50-30		AeroStar	piece	1		
	Internal two-row regulating metal grid 200x100				piece	27		
	Peretic door grill	MV 450/2		Vents	piece	1		
	The grid is external	500x300			piece	1		
	The grid is external	300x500			piece	1		
	Automation set				kit	1		
	Mineral wool foiled 50 mm				m2	85		
	Collet M8				piece	250		
	Nut M8				piece	250		
	Pin M8				m	90		
	L-suspension				piece	250		
	Metal-plastic pipe 16 mm				m	4		
	mm				piece	2		
	Clamp with M8 dowel				piece	3		
	<u>Air ducts and fittings of the B1 system</u>							
	Duct Ø125				m	9		
	Duct Ø160				m	1		
	Duct Ø200				m	10		
	Tap 90°-125				piece	5		
	Tap 90°-200				piece	7		
	Transition Ø160-Ø125				piece	1		
	Transition Ø160-Ø200				piece	1		
	Tee Ø160-Ø125-Ø160				piece	1		
	Tee Ø125-Ø125-Ø125				piece	1		
	Tee Ø200-Ø125-Ø200				piece	2		
	<u>B1 system equipment</u>							
	Channel type fan	RV 200 L		AeroStar	piece	1		
	Flexible insert	RFI 200		AeroStar	piece	2		
	Check valve	FC 200		AeroStar	piece	1		
			Chang	Kil.	Ark	Doc. No	Signature	Date
173-WP-2023-F-VAC.S								Sheet
								2

[illegible]