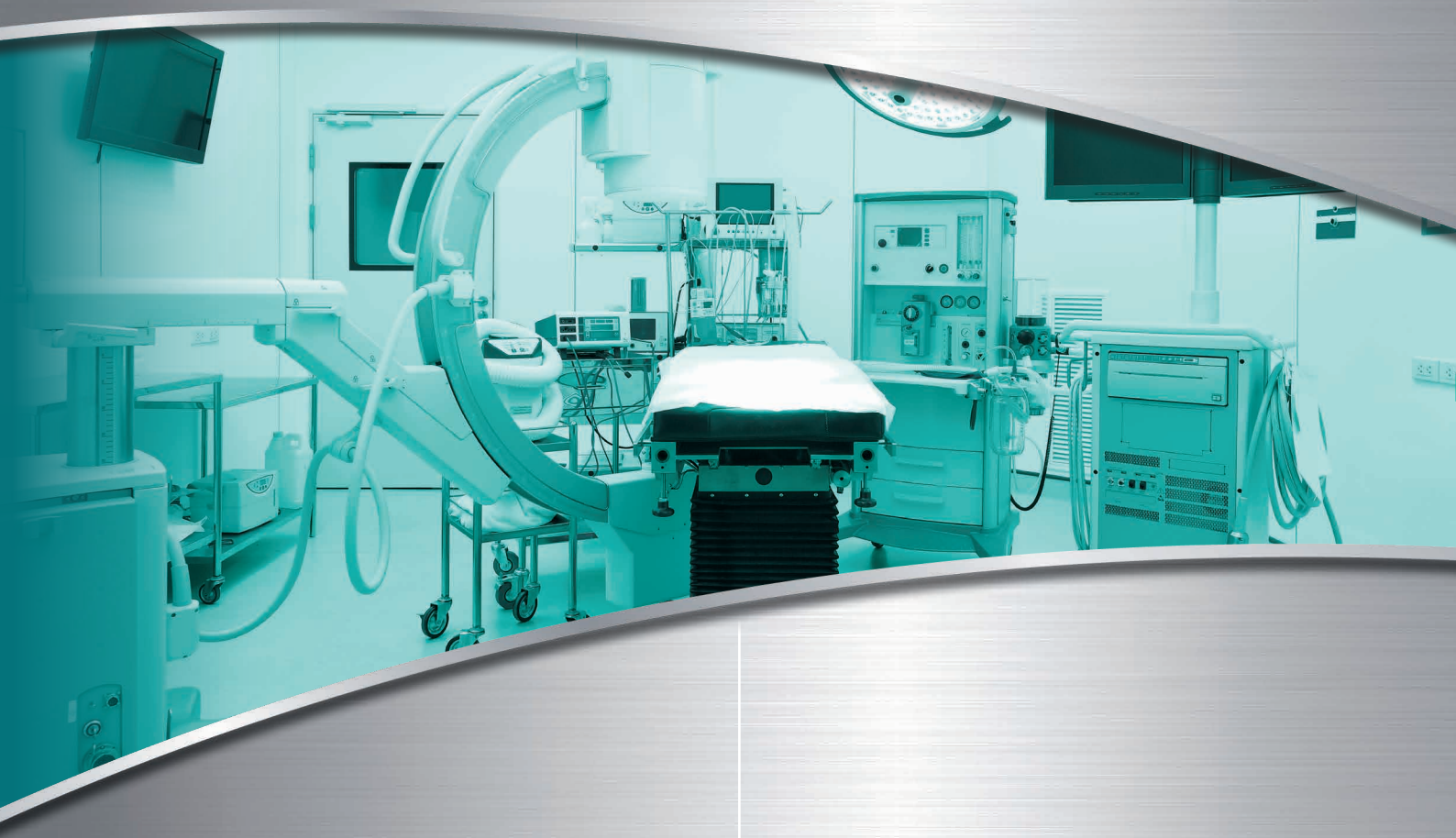
AIR CONDITIONERS
FOR OPERATING THEATRES AND HOSPITALS



TECNAIR LV

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H SERIES AIR CONDITIONERS FOR OPERATING THEATRES AND HOSPITALS

Thanks to twenty years of experience, TECNAIR LV presents a new generation of H Series air conditioners dedicated to operating theatres and hospitals, where the primary objective is high air quality.

The **H Series** units, in their standard configuration, are complete with all adjustment components (heat recovery system, cooling, pre- and post-heating, humidification and dehumidification), sized for the treatment of full fresh air or with partial recirculation.

A flexible configuration and a high number of accessories guarantee the use of **H Series** units for applications such as: operating theatres, laboratories and clean rooms, image diagnosis rooms, wards and intensive care.



CHARACTERISTICS

- Compatibility with European Regulation 1253/2014/EU ErP NRVU 2018
- TÜV certification according to DIN1946/4
- Single block painted structure with epoxy resins 60µ RAL 9010
- Panels with thermal and acoustic insulation system using 50 mm thick self-extinguishing material, equipped with handles with safety closing system and inspection window
- Motorised dampers on external air intake and gravitational ones on exhaust
- High levels of static pressure available based on the need for installing absolute terminal filters
- Section for air suction from the rooms, partial recycle or total exhaust to the outside
- Static or dynamic management of overpressure or depression in the controlled room compared to a reference environment
- Room emergency negative pressure activation system
- Three air filtration stages (external, supply and return). Tight seal filter and differential pressure switch supports for each filter
- Easy to sanitise and sterilise. No risk for Legionella Pneumophila
- Condensate drains of the independent sections and fitted with syphon that can be inspected
- Electrical panel complete with adjustment and safety devices
- SURVEY^{EVO} control microprocessor with graphical display
- EC FANS electronic fans
- Hydronic heat recovery system with inverter-controlled pump with thermal by-pass function
- R410A scroll compressors with inverter-controlled brushless DC motor
- Electronic expansion valves EEV with SMART COOL system
- Modulating 3-way valves
- Anti-freeze safety system
- Submerged electrode humidifier
- Nighttime machine standby and load reduction system for UPS power supply
- RS485 Modbus RTU slave board for interface with BMS (Building Management System)

ACCESSORIES

Rectangular silencers for duct installation designed for hospital environments and clean rooms	Constant pressure control in supply and return ducts
Motorised dampers on all outlets.	Remote or duct installation room temperature and humidity probes
Motorised air recirculation damper	Supply humidity probe
Execution for external installation	Display system showing the percentage of filter clogging
Modulating two-way valves instead of three-way	User terminal for remote installation
Booster pump with anti-freeze function, for low outdoor temperatures	LED lighting inside the compartments and electrical panel
Direct expansion post-cooling circuit for cardiac surgery	Power supply line for remote condenser
System for regulating and distributing network steam	Power supply line with speed regulator for remote condenser
Rectangular silencers for duct installation designed for hospital environments and clean rooms	Condensation regulation with 0-10V signal for remote condenser with EC fans

H SERIES AIR CONDITIONERS FOR OPERATING THEATRES AND HOSPITALS

MODELS		2500	3800	4800	7000	9200	11200
Chilled water performance (OHU - HR)							
Total cooling capacity (1)	kW	32.3	-	64.1	104.5	117.2	141.0
Direct expansion performance (OHA – HR)							
Water cooling capacity (2)	kW	27.1	45.7	53.3	86.6	110.7	118.8
Air circulation							
Air flow (3)	m3/h	2500	3800	4800	7000	9200	11200
Sound quality							
Sound pressure level (4)	dB(A)	58	59	61	61	63	65
Dimensions and weights							
Length	mm	2600	2800	2800	2800	2800	2800
Depth	mm	930	1180	1180	1470	1820	2100
Height	mm	1740	2080	2080	2080	2080	2080
Net weight	kg	900	1200	1250	1600	1800	2000

Notes:

(1) The performances, declared according to UNI EN 14511-1:2018, do not consider the heat generated by the fans which must be added to the thermal load of the system. The performances refer to the following conditions: incoming air: 35°C-40% UR; heat recovery with glycol at 27%; water: 7/12°C.

(2) The performances, declared according to UNI EN 14511-1:2018, do not consider the heat generated by the fans which must be added to the thermal load of the system. The performances refer to the following conditions: incoming air: 35°C-40% UR; heat recovery with glycol at 27%; R410a coolant; condensation temperature: 45°C.

(3) External static pressure: 800 Pa

(4) The sound pressure levels at a distance of 2 m, 1.5 m height, free field and with ducted supply outlets, declared according to UNI EN ISO 3744:2010.

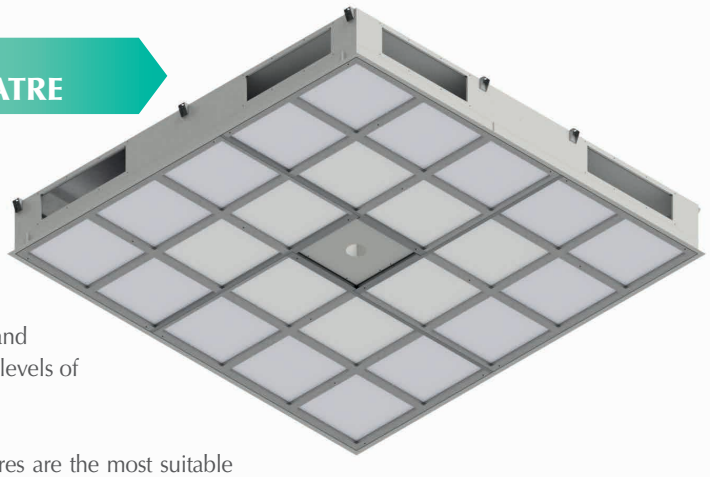
NEW EUROPEAN REGULATION ON NON-RESIDENTIAL VENTILATION
ErP NRVU - Ecodesign Directive – European Regulation 1253/2014/EU

Within the legislative framework of the European Community ErP (Energy-related Products) 2009/125/EC, also called Ecodesign Directive, Regulation 1253/2014/EU came into force on 26 November 2014. This regulation concerns non-residential ventilation units (NRVU) and establishes the specific ecodesign requirements to be met before placing them on the market or putting them into service.

The following table contains data for the units this regulation applies to:

Manufacturer's name		TECNAIR LV					
Series identifier		H					
Model identifier		2500 b HR	3800 b HR	4800 b HR	7000 b HR	9200 b HR	11200 b HR
Declared type		UVNR UVB					
Fans drive type		Speed variator					
Type of HRS		Heat transfer fluid					
Heat recovery thermal efficiency	%	68.0	68.0	68.0	68.0	68.0	68.0
Nominal flow rate	m3/s	0.7	1.1	1.3	1.9	2.6	3.1
	m3/h	2500	3800	4800	7000	9200	11200
Effective electric power input	kW	2.7	3.5	5.1	7.9	10.3	13.1
SPFint	W/(m3/s)	818.4	418.4	803.1	883.8	938.1	937.5
Face velocity	m/s	2.0	2.0	2.5	2.8	2.9	3.0
Supply nominal external pressure ΔPs,ext	Pa	800.0					
Return nominal external pressure ΔPs,ext.	Pa	500.0					
Supply internal pressure drop ΔPs,int	Pa	226.0	156.0	257.0	269.0	308.0	291.0
Return internal pressure drop ΔPs,int	Pa	224.5	110.0	249.0	256.0	261.0	258.0
Supply fans static efficiency	%	52.9	64.0	63.4	58.4	63.2	56.1
Return fans static efficiency	%	57.4	63.0	62.6	60.5	57.9	61.6
Maximum external leakage rate	%	0.26					
Maximum internal leakage rate	%	0.0					
F7 filters energy classification		A+					
Dirty filter warning description		Detection with differential pressure switch and graphic/acoustic indication on the machine display terminal					
Sound power level LWA	dBA	91.6	91.7	94.1	94.5	96.5	98.1
Internet address		www.tecnairlv.it					

SQR SERIES ONE-WAY AIR FILTRATION AND DIFFUSION SYSTEM FOR OPERATING THEATRE



Operating theatres require very high control of environmental sterility. The choice of the air filtration and diffusion system therefore plays a decisive role in creating and maintaining the necessary aseptic level of the operating field and the surgical wound.

Thanks to its know-how in operating theatre air conditioning, **TECNAIR LV** has developed a complete range of one-way air filtration and diffusion systems for operating theatres, capable of ensuring operating field levels of sterility in compliance with **ISO 7 Class** or **ISO 5 Class**.

SQR Series one-way air filtration and diffusion systems for operating theatres are the most suitable choice to minimise biocontamination while maintaining adequate working conditions for the surgical team.

ISO 7 ONE-WAY AIR FILTRATION AND DIFFUSION SYSTEM FOR OPERATING THEATRES SQR 24-18 AT SINGLE SPEED

CHARACTERISTICS

Classification according to ISO 14644-1	ISO 7
Dimensions	2400 x 1800 x 400 mm
Distribution plenum	AISI 304 stainless steel
Frame and visible parts	AISI 304 stainless steel
Intakes for DOP test	Placed in the plenum
Type of air diffusion	Single speed
Nominal air flow rate	4500 m^3/h
Nominal air speed	0.30 m/s

FILTERING SECTION

Filtration according to EN 1822	H14
Number of filters	11
Filtering media	Made of water repellent and fire retardant glass microfibre (M1) arranged in small folds
Frame	Made of aluminium with painted aluminium protection grilles on both sides
Gasket	Liquid seal with polyurethane based gel

ISO 5 ONE-WAY AIR FILTRATION AND DIFFUSION SYSTEM FOR OPERATING THEATRES SQR 32-32 AT DOUBLE SPEED

CHARACTERISTICS

Classification according to ISO 14644-1	ISO 5
Dimensions	3200 x 3200 x 400 mm
Distribution plenum	AISI 304 stainless steel
Frame and visible parts	AISI 304 stainless steel
Intakes for DOP test	Placed in the plenum
Type of air diffusion	Double speed
Nominal air flow rate	8000 m^3/h
Nominal air speed	External crown: 0.23 m/s / Internal crown: 0.30 m/s

FILTERING SECTION

Filtration according to EN 1822	H14
Number of filters	24
Filtering media	Made of water repellent and fire retardant glass microfibre (M1) arranged in small folds
Frame	Made of aluminium with painted aluminium protection grilles on both sides
Gasket	Liquid seal with polyurethane based gel

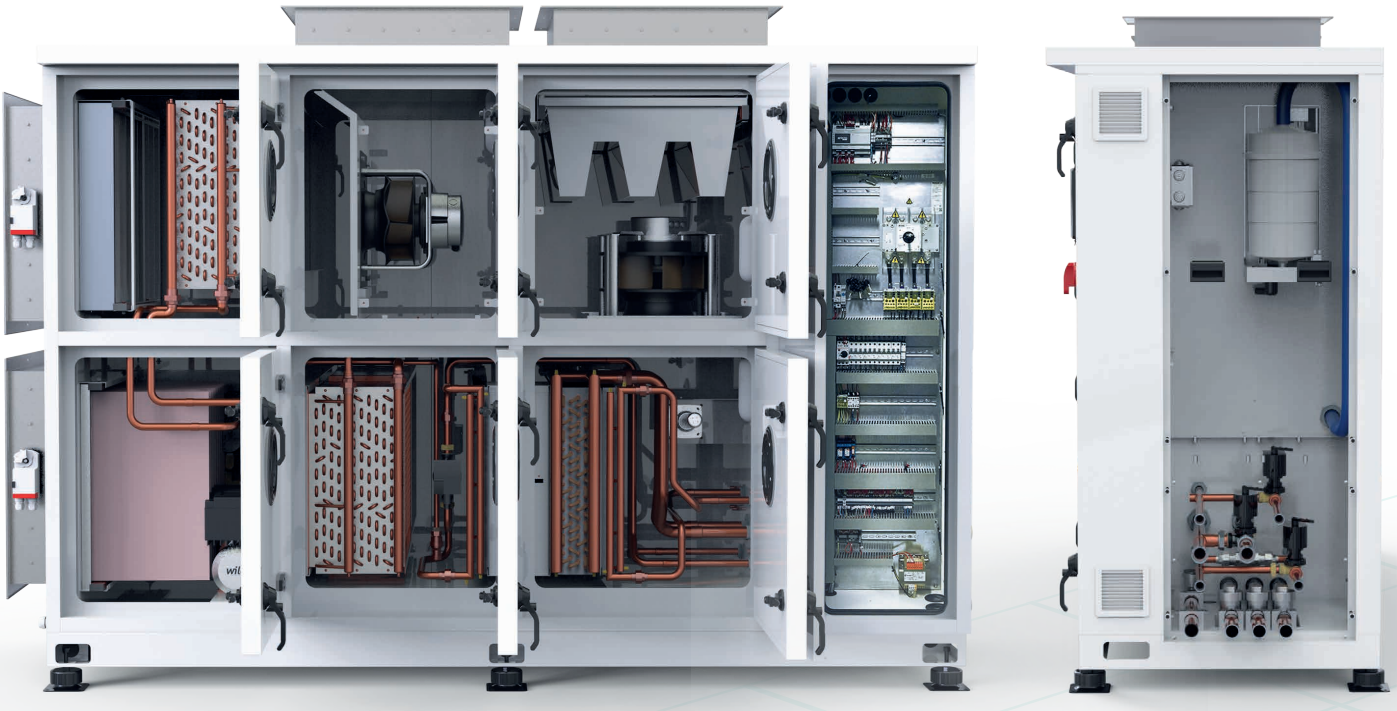
RIC 1200 RECIRCULATION MODULES

The **RIC 1200** modules are designed to manage room air recirculation even where, due to space issues, it is not possible to manage it in the air handling unit (Refurbishments, expansions, modernisations).

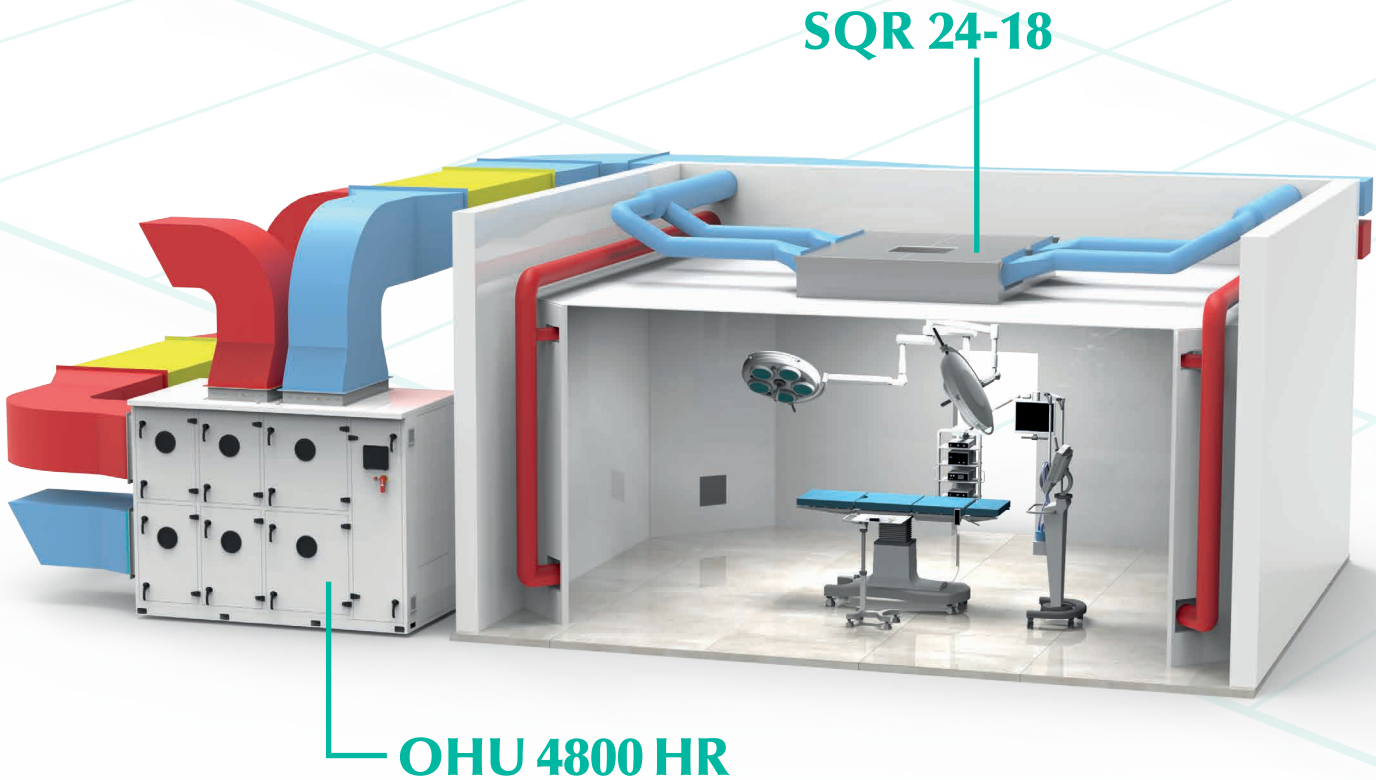
CHARACTERISTICS

- Suction container with M5 class filter (according to EN 1822) and dirty filter warning sensor
- Ventilating container with EC motor fan. Air flow regulator with display and RS485 Modbus RTU slave board for interface with the BMS (Building Management System)
- Silencers designed for hospital environments
- Overpressure dampeners to be positioned on the ceiling mounted filtering unit

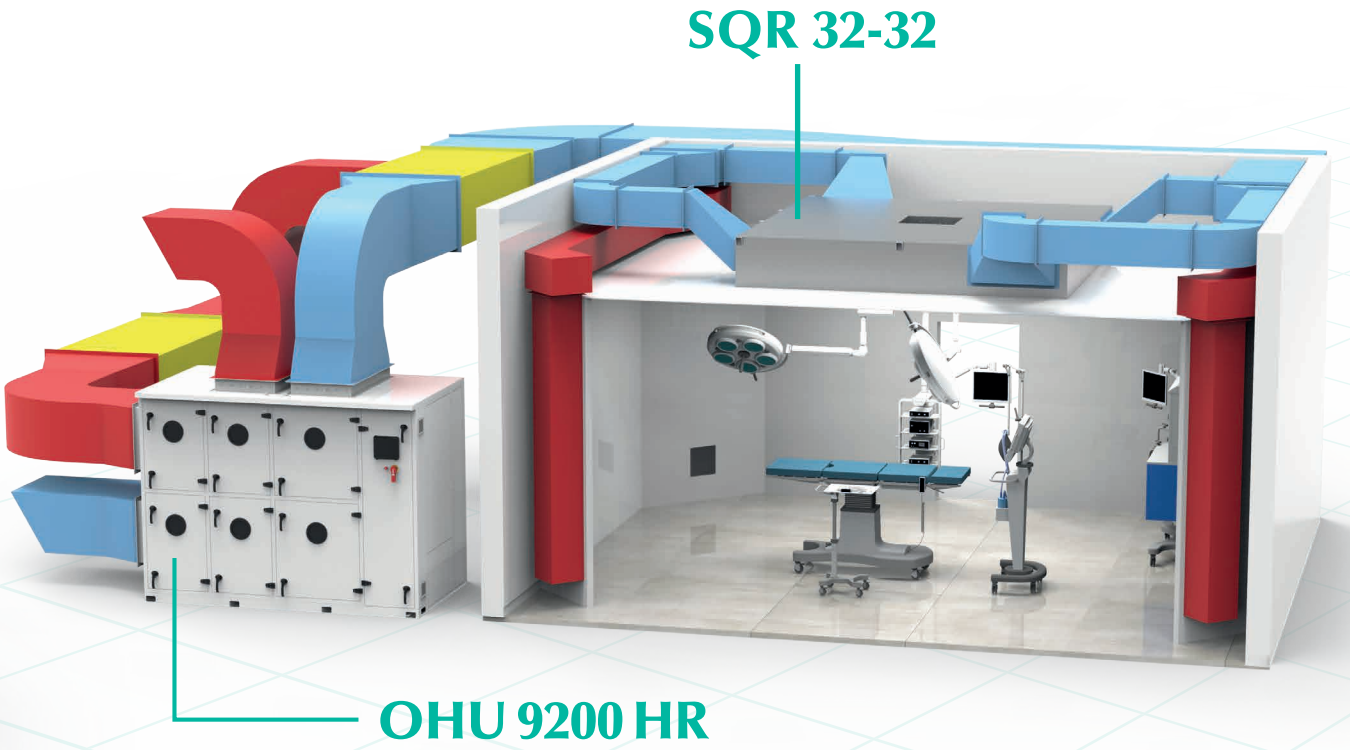
OHU 4800 HR: FRONT AND SIDE OPEN VIEW (TECHNICAL COMPARTMENT)



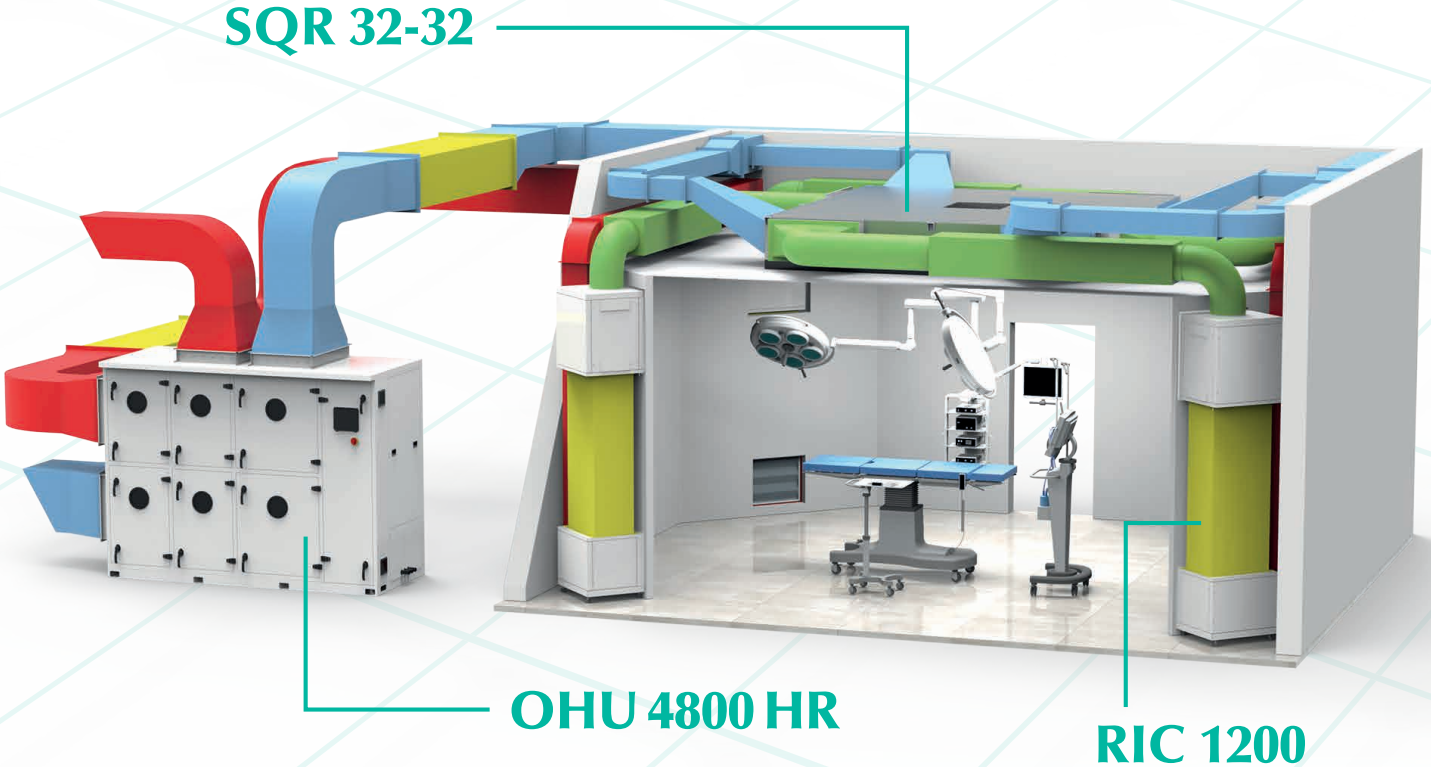
ISO 7 CLASS OPERATING THEATRE WITH ONE-WAY AIR FILTRATION AND DIFFUSION SYSTEM



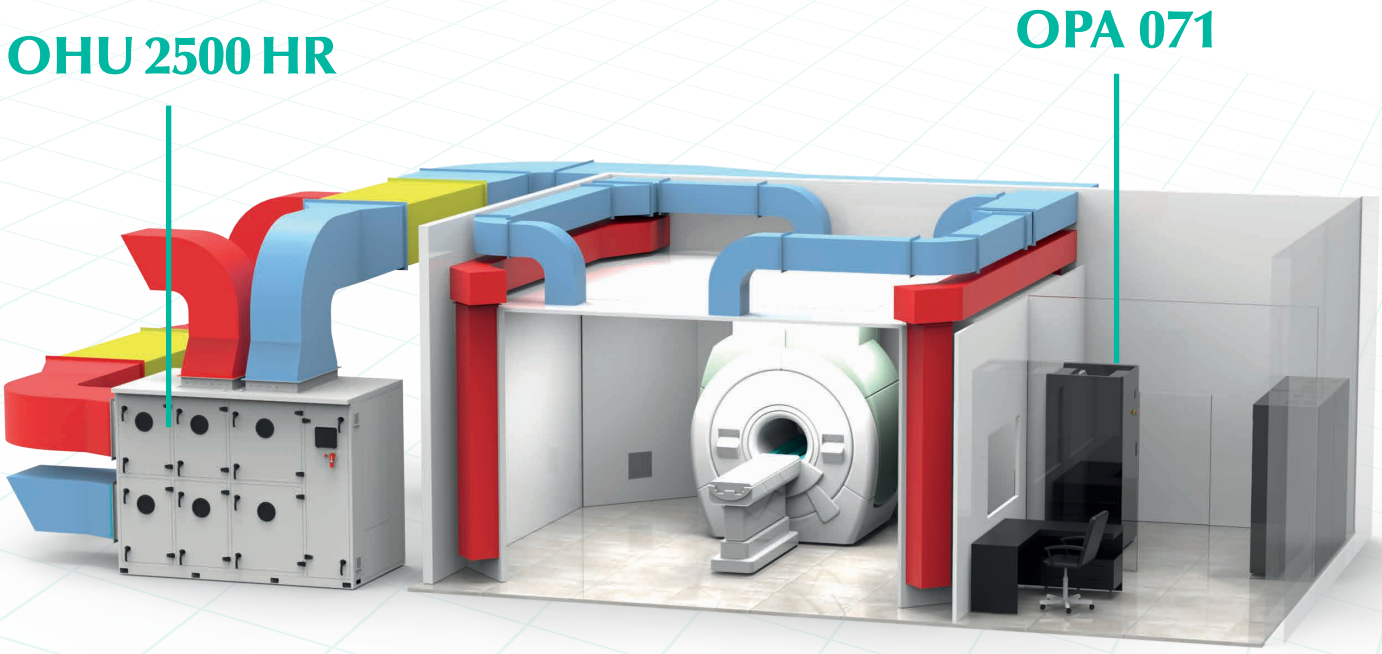
ISO 5 CLASS OPERATING THEATRE WITH ONE-WAY AIR FILTRATION AND DIFFUSION SYSTEM



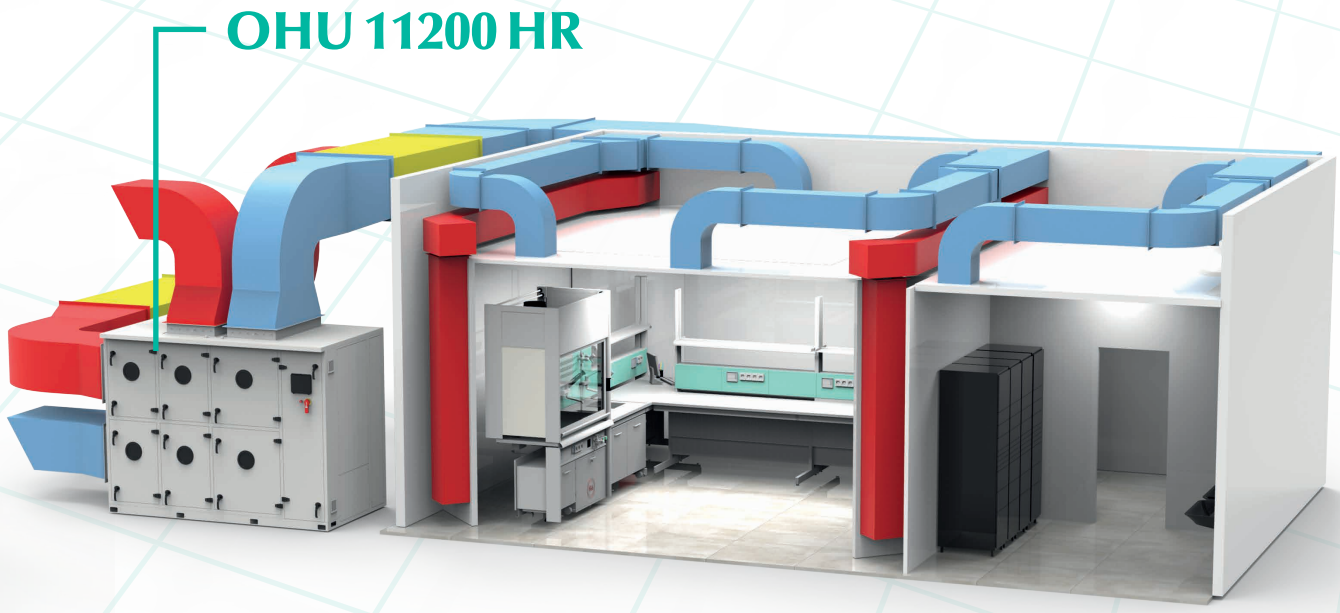
ISO 5 CLASS OPERATING THEATRE WITH ONE-WAY AIR FILTRATION AND DIFFUSION SYSTEM AND AIR RECIRCULATION IN THE THEATRE



MAGNETIC RESONANCE TOMOGRAPHY MRT



RESEARCH AND ANALYSIS LABORATORY



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02/19
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