

Medic Clean Air

 Medic Clean Air

Proof of efficiency:

Reliable filtration & purification

Reliable filtration & purification

Filter tests

Each filter is individually leak tested based on ISO 29463-4, Annex A (oil thread test, visual test) and F (particle counter)

HEPA14 = Annex F, with 0,5 µm-1 µm

ULPA15 = Annex A, with 0,3 µm-1 µm

MPPS for HEPA & ULPA = 0,1 µm & 0,2 µm

An example of a test and test-report on request

Device tests

Our assembled device is tested in laboratory circumstances to verify whether the device is air and seal tight (no air can escape).

Tested up to 0,017 µm

Efficiency on particles > 0,3 µm = 100%

Effectivity and efficiency tests of Medic Clean Air devices: Particle concentration evolution (CADR1 & CADR2) by **VITO**

Read our [laboratory](#) tests

Reliable filtration & purification

Medical & Clinical studies

Is the device proven to be efficient in:

- real hospital circumstances,
- with real patients,
- for a longer period

Around [12 studies](#) published worldwide

Scientific studies

Can a device reach all the corners of a room?

Is the airflow optimal?

Is purified air supplied to every part of the room and is the contaminated air extracted from every part of the room?

Correct air flow of Medic Clean Air devices: Computational Fluid Dynamics (CFD) by **KU Leuven**

Reliable filtration & purification

Organizations that confirm and support the efficiency of the Medic Clean Air® devices

By means of medical, clinical and scientific studies and test published test reports

- The Hospital Infection Society (UK)
- European Bone Marrow Transplant (EU)
- German Institute for Hospital Hygiene (DGKH)
- National Cancer Institute Italy (I)
- Belgium National Institute for Tuberculosis (VRGT – FAREZ)

Hygiene Institutes of University Hospitals (some examples)

- Belgium: Univ. Hosp. St. Pierre Brussels, Uni Ghent, Uni Sart Tilman Liège, Children Hospital Queen Fabiola, Uni Antwerp, ZNA Antwerp, Uni Brugmann Brussels, Saint Elisabeth Namur, Saint Lucas Bruges, C. Santé Fagnes Chimay, UZ Brussel, etc.
- Other: University Hospital Bonn (G), Uni Hamburg-Eppendorf (G), Uni Münster(G), Uni Berlin(G), Uni Kassel(G), Uni Duisburg(G), EALING (U.K.), Newham(U.K.), Manchester(U.K.), Uni Cuneo (I) etc. HUG,
- M.E.: King Fahed Medical City – Saudi Arabia, King Abdulah Medical City – Mekkah, Rashid Hospital – Kuwait, MOH – Kuwait, Rustom Khatib –Lebanon, Dubai Police Clinics, Al Salama – UAE, GATA – Ankara, Imam Komeini Hospital – Iran, ...

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Real hospital circumstances

Sante Croce Hospital Cuneo Italy – Hematology department
University of Genoa – Hygiene & National Cancer Institute Italy



Subject: Invasive Aspergillosis (I.A.) in **immune compromised patients** undergoing allo/autoSCT or aggressive chemotherapy for acute leukemia
Method: Clinical, laboratory and microbiological study with 20 months of monitoring without and with Medic Clean Air devices, installed in every patient room, running 24/7.
385 tests for a week in 42 immunocompromised hosts
Galactomannan (Gal) twice

Results:

	historic figures without Medic Clean Air 12 months	with Medic Clean Air 8 months
CFU/m³ air	1	0, 6/9m³
CFU/m²/h furniture	51	8, 1, 3
CFU/m²/h floor	140	0
Gal tests	18/193	8/192
I.A. patients	5 (on 23)	0 (on 17)
Treatment costs for (proven or probable) I.A. with liposomal (L-Amb)	5 patients: € 161.627 € 32.200/patient	€ 0
Testing costs	€ 1809	€ 1843
Total avoided cost (saving, depending from country to country), in this case		€ 161.627

Report: E Bone Marrow Transplantation, 29 (2) 2002 p. 5245 N°852+853
Conclusion: The use of the **Medic Clean Air®** **reduces the number of infected patients to 0** as shown by a triparametric (clinical, laboratory and microbiological) survey

Reliable filtration & purification

Real hospital circumstances

University Hospital Antwerp, Belgium – Neonatology department Hospital Infection Society United Kingdom

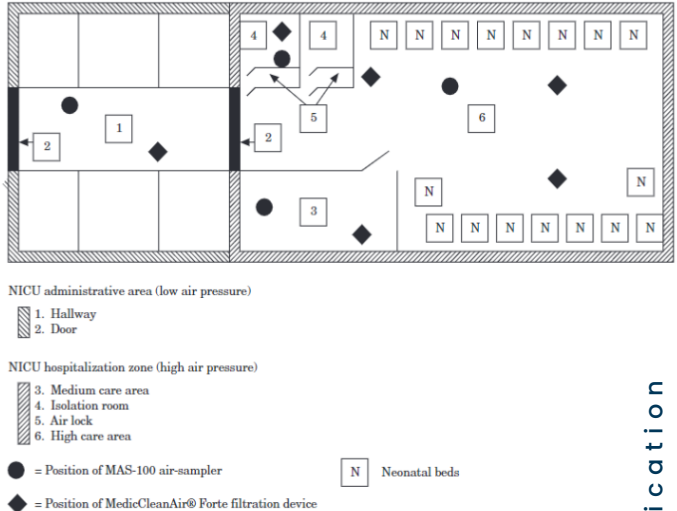
Subject: Aspergillus concentrations **during building & renovation activities** in a **neonatology department** (MC)

Method: clinical, laboratory and microbiological study with 1 years of monitoring in different areas, without and with Medic Clean Air devices installed in every area/room

Weekly air samples in administrative areas, isolation rooms , medium care areas and high care areas

Results:

	historic figures during renovation Median Q1–Q3	with Medic Clean Air Median Q1–Q3	impact % reduction	P–value Pearson correlation co-efficient with P < 0,25
CFU/m³ isolation room	122 Range 54–313	38 Range 23–93	–68%	0,005
CFU/m³ MC	147 Range 25–313	45 Range 27–87	–69%	0,107
CFU/m³ HC	207 Range 177–263	37 Range 27–87	–82%	< 0,001
Total CFU/m³	252 Range 92–327	73 Range 35–188	–71%	0,004



Report: [Journal of Hospital Infections 2000 45 : 191-197](#)

Conclusion: The use of the **Medic Clean Air®** is the solution to **reduce fungal spores with 82%, during renovation works in departments that are operational.** Additionally, this study confirms the **importance** of **efficient sealing** and **positive pressure** as a tool to prevent aero biocontamination.

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Real hospital circumstances

University Hospital Bonn, Germany – Hematology–Oncology department

Subject: Aspergillus concentrations in departments with **immunocompromised patients**.

Method: laboratory and microbiological study with 3 tests in different areas; without and with Medic Clean Air devices installed in every area/room

Results:

	Corridor & outside the department
CFU/m³ corridor in ward	26
CFU/m³ corridor near exit door	32
CFU/m³ outside	100
CFU/m³ outside	168

	without Medic Clean Air window closed	with Medic Clean Air window open	with Medic Clean Air window closed
CFU/m³ room window	12	8	0
CFU/m³ room centre	8	2	0
CFU/m³ room door	8	4	0
CFU/m³			

Report: Internal report Universitäts Klinikum Bonn: Anforderung der Hygiene bei immunsupprimierten Patienten in der Kinderonkologie, 2005–2007

Conclusion: The use of **Medic Clean Air®** reduces the number of CFU/m³ to 0. Additionally, this study confirms the **importance of fresh air to be purified before being supplied to the room.**

Reliable filtration & purification

Reports

Regionshospitalet Horsen, Denmark – Operating theatres Orthopedics

Subject: Aspergillus concentrations in **operating theatres with laminar air flow (LAF)**

Method: laboratory and microbiological study with different tests; no activities (at rest) and during activities (10–15 operations/day) without and with Medic Clean Air devices installed next to the operation table (2 devices) and in the scrubroom (1 device)

Results:

	without Medic Clean Air	with Medic Clean Air	impact % reduction
CFU/m³ No activity (at rest)	6–8	Not measured 0	– 100 %
CFU/m³ With activity	105–107	3–6	– 97 %

Report: Internal report Regionshospitalet Horsen, Denmark

Conclusion: The use of **Medic Clean Air®** **reduces the number of CFU/m³ with 97 %**. Additionally, this study confirms the development of CFU during activities compared to no activity (at rest).

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Reports

University Hospital Sart Tilman, Liège – Hematology department

Subject: Surveillance of agents responsible for nosocomial infections in **hematology department with immunocompromised patients**

Method: laboratory and microbiological study with different tests; after installation Medic Clean Air

Results:

	Figures 5/10/2005 14u30	Figures 5/10/2005 15u15	Figures 5/10/2005 20u00	Figures 6/10/2005 08u00	Figures 6/10/2005 12u00	Impact % reduction
Particles < 0,3 µ	2 400 000	1 900 000	1 500 000	620 000	1 000 000	60-70%
CFU/m³ Micrococcus spp	14	8	0	7	2	85-100%
CFU/m³ Bacillus spp	4	1	3	2	0	100%
CFU/m³ Staphylococcus coagulase negative	126	82	63	61	24	81%
CFU/m³ Streptococcus viridans			2		2	

Report: Internal report Sart Tilman, CHU Liège

Conclusion: The use of **Medic Clean Air® decreases the number of CFU/m³ up to 100%**. Additionally, this study confirms the development of CFU during activities compared to no activity (at rest).

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Reports

University Hospital Notre Dame des Bruyères , Liège – Operating theatre

Subject: determination of ISO classification and microbiorganisme (CFU) of the **operating theatre** after Medic Clean Air devices are installed

Method: laboratory and microbiological study with different tests; without and with Medic Clean Air devices (3 devices)

Results:

	ISO8		ISO7			
	without Medic Clean Air	without Medic Clean Air	with Medic Clean Air	with Medic Clean Air no activity	with Medic Clean after cleaning	impact % reduction
Particles < 0,5 µ	2 181 377	4 928 247	221 632	112 190	N.A.	- 97,7 %
CFU/m³ bacteries	31	N.A.	13	2	5	- 93,5 %
CFU/m³ mould	5	N.A.	2	2	0	- 100 %

	Target	Alert	Immediate action
CFU/m³ bacteries	10	100	1000
CFU/m³ mould	0	1	1

Report: Internal report Notre Dame des Bruyères, CHU Liège

Conclusion: The use of **Medic Clean Air®** decreases the **number of particles with 97,7 %** and **improves the ISO classification from 8 to 7**. In relation to the CFU, this study concludes that the values are better then the target values of CHU Liège.

Additionally, this study confirms the development of CFU during activities compared to no activity (at rest) and the importance of supervised cleaning procedures.

Reliable filtration & purification

Reports

Shahid-Rajaie Cardiovascular Medical Center, Iran,

Subject: Classification of **operation room** (OP1) based on ISO14644-1

Method: particle count with different tests; without and with Medic Clean Air devices

Results:

	Without Medic Clean Air	ISO-classification without Medic Clean Air	With Medic Clean Air	ISO-classification with Medic Clean Air	impact % reduction
Particles > 0,3 µ	4.036.280	ISO 8	972.610	ISO 7 (>102.000, <1.020.000)	-76%
Particles > 0,5 µ	268.570	ISO 7	56.040	ISO 7 (>35.200, <352.000)	-79%
Particles > 0,7 µ	66.700		14.100		-79%
Particles > 1,0 µ	31.350	ISO 7	6570	ISO 6 (>832, <8320)	-79%
Particles > 2,0 µ	11.740		2260		-81%
Particles > 5,0 µ	990	ISO 7	170	ISO 6 (>29, <293)	-83%

Report: Internal report Shahid Rajaie

Conclusion: The use of **Medic Clean Air®** decreases the number of particles with **80 %** on average and **improves the ISO-classification to ISO 6.**

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Reports

The Apollo Clinic, Ahmedabad, India

Subject: CFU concentrations **in ICU** with existing air conditioning unit that takes air from outside the building and blows it into the ICU without significant filtration. Consequently, the quality of the outside air has direct influence on the air quality in the room

Method: laboratory and microbiological study with pre and post procedure swabs taken and processed on nutrient agar, Mac conkey agar, blood agar and sabourads dextrose agar; without and with Medic Clean Air devices

Results:

	without Medic Clean Air	with Medic Clean Air
CFU/m³ tray	Bacillus megaterium 4 colony	0
CFU/m³ table	0	0
CFU/m³ wall	Bacillus megaterium 2 colony Bacillus subtilis 1 colony	0
CFU/m³ instrument	Bacillus megaterium 4 colony Coagulase negative Staphylococci 7 colony Bacillus Subtilis 6 colony	Bacillus magaterium 3 colony
CFU/m³ bed 1	Bacillus megaterium 2 colony	0
CFU/m³ bed 2	0	0

Report: Internal report Department of Laboratory Medicine, Microbiology, Surveillance report, 2008

Conclusion: The use of **Medic Clean Air®** reduces **the number of CFU/m³ to 0**. Additionally, this study confirms the **importance of fresh air to be purified before being supplied to the room.**

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Reports

Wockhardt Hospital, Surat, India

Subject: Classification of **operation room** (OT 2) based on ISO14644-1

Method: particle count on three locations (MP); without and with Medic Clean Air devices. The device runs for 1,45hrs.

Results:

	without Medic Clean Air MP 1	without Medic Clean Air MP 2	without Medic Clean Air MP 3	with Medic Clean Air MP 1	with Medic Clean Air MP 2	with Medic Clean Air MP 3	ISO-classification with Medic Clean Air
Particles > 0,3 µ	95.700	93.799	92.220	39.918	41.231	43.750	ISO 6 (>10200, <102000)
Particles > 0,5 µ	34.721	33.745	33.531	11.391	12.035	12.888	ISO 6 (>3520, <35.200)
Particles > 1,0 µ	11.557	11.274	11.236	2854	3058	3403	ISO 6 (>832, <8320)
Particles > 3,0 µ	981	925	924	164	128	194	N.A.
Particles > 5,0 µ	443	425	369	56	80	90	ISO 6 (>29, <293)
Particles > 10,0 µ	70	78	53	10	25	19	N.A.

Report: Internal report WHS/PC/01, Wockhardt Hospital Surat, 2009

Conclusion: Note: no additional cleaning was performed and no change on normal ventilation settings: risk for contaminated laminar flow. Medic Clean Air advices to place 2 devices in operating theatres. The use of **Medic Clean Air® decreases the number of particles** and **reaches an ISO 6**.

Reliable filtration & purification

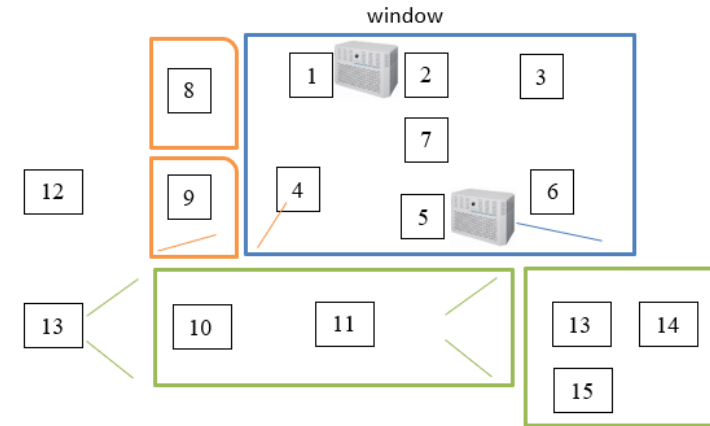
Reports

CHC Liège, Liège, Belgium

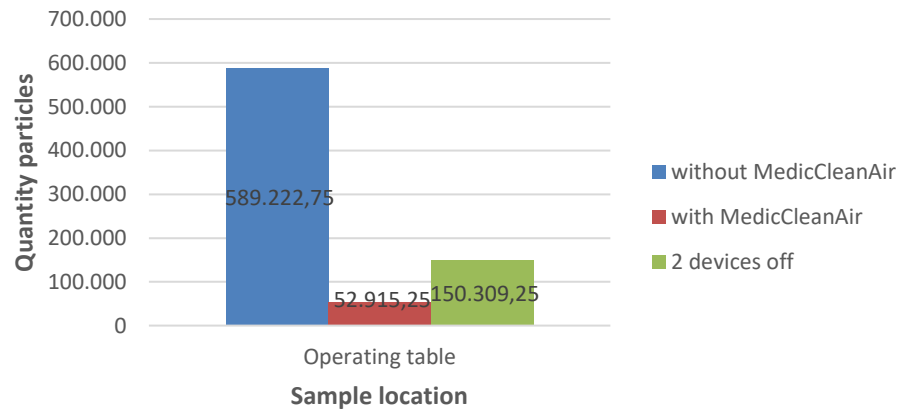
Subject: Classification of **operation room** (OR4) based on ISO14644

Method: particle count at different locations; without and with Medic Clean Air devices

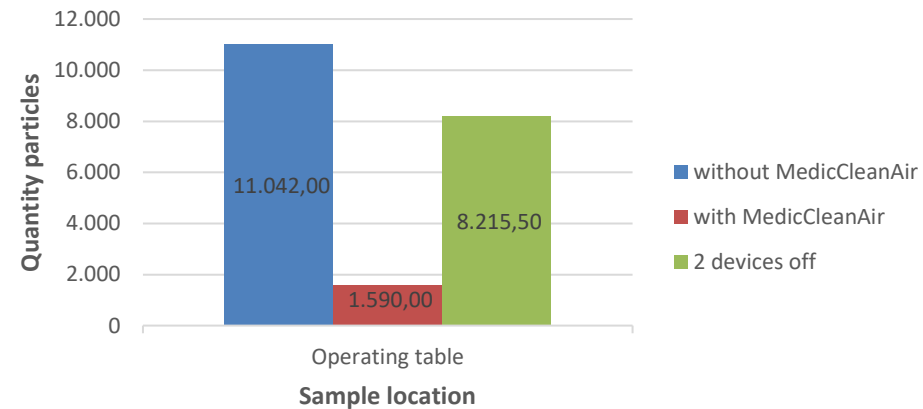
Results:



Average 0,5 µm Particle Samples on location 7:
operating table



Average 5 µm Particle Samples on location 7:
operating table



Report: Internal report CHC-Liège

Conclusion: The use of **Medic Clean Air®** decreases the number of particles with 83 % to 96 %, resulting in ISO 7 (even close to ISO 6). Additionally, this study proves the importance of **continuous air purification** (difference red versus green graph).

Reliable filtration & purification

Reports

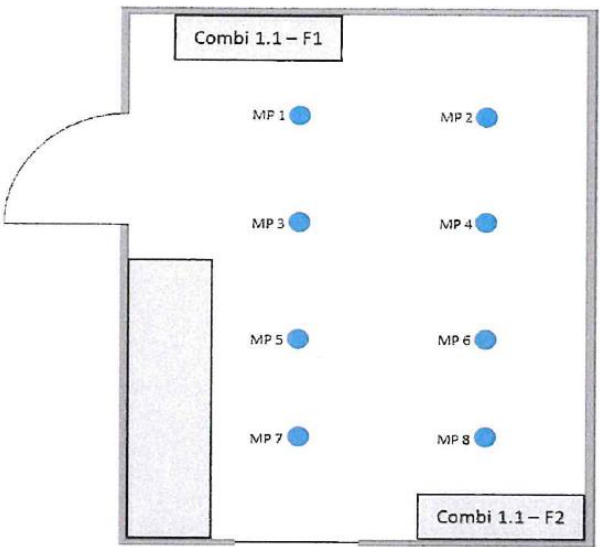
Augenlinik Zürich West, Zürich, Switzerland

Subject: Classification of **operation room** (OP1) based on ISO14644-1

Method: particle count at different locations; with 2x Medic Clean Air devices

Results:

	MP 1	MP 2	MP 3	MP 4	MP 5	MP 6	MP 7	MP 8	ISO-classification with Medic Clean Air
Particles > 0,5 µ	5274	4932	3155	2919	3390	3767	4084	3637	ISO 6 (>3520, <35200)
Particles > 5,0 µ	70	117	35	24	117	35	82	176	ISO 6 (>29)



Report: Internal report Augenlinik Zürich West

Conclusion: The use of **Medic Clean Air®** decreases the number of particles and **improves the ISO-classification to ISO 6**.

Reliable filtration & purification

Reports

University Hospital Brussels, Brussels, Belgium

Subject: Classification of **operation room** (OR7) based on ISO14644 and ISO14698

Method: particle count and microbiological study (CFU) at different locations (MP); with Medic Clean Air devices

Results:

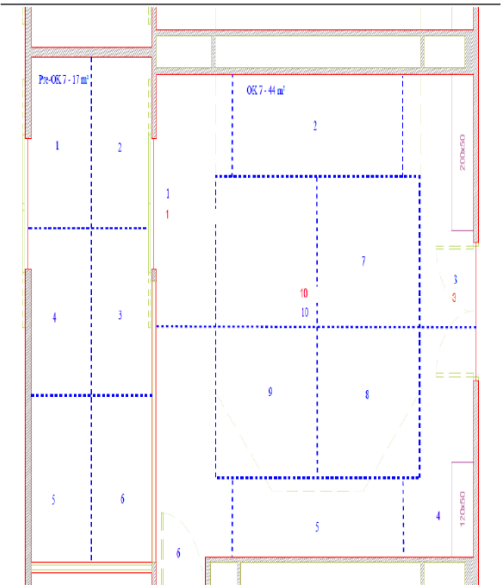
Under plenum	MP 1	MP 2	MP 3	MP 4	ISO-classification with Medic Clean Air
Particles > 0,5 µ	1411,4	2012,7	1976,7	1517,8	ISO 5 (>352, <3520)
Particles > 5,0 µ	70,6	565,0	282,4	247,1	NA

OK	MP 1	MP 2	MP 3	MP 4	MP 5	MP 6	ISO-classification with Medic Clean Air
Particles > 0,5 µ	2753,3	1870,1	1341,3	1553,1	1729,0	1623,7	ISO 5 (>352, <3520)
Particles > 5,0 µ	282,4	70,6	247,1	317,7	352,9	176,5	NA

OK	MP 1	MP 3	MP 7	MP 8	MP 9	MP 10	ISO-classification with Medic Clean Air
CFU	0	1	2	1	1	1	ISO 5 (<10)
Name		Staphylococcus species (not aureus)	Staphylococcus species (not aureus), Micrococcus species	Staphylococcus species (not aureus)	Micrococcus species	Staphylococcus species (not aureus)	

Report: Internal report UZ Brussels

Conclusion: The use **Medic Clean Air®** decreases the number of particles, CFU/m³ and improves the ISO-classification **from ISO 7 to ISO 5**.



Reliable filtration & purification

Reports

University Hospital Brussels, Brussels, Belgium

Subject: Classification of **operation room** (OR14) based on ISO14644 and ISO14698

Method: particle count and microbiological study (CFU) at different locations (MP); after installation Medic Clean A

Results:

OK	MP 1	MP 2	MP 3	MP 4	MP 5	MP 6	ISO-classification with Medic Clean Air
Particles > 0,5 µ	176,4	317,8	600,3	459,0	423,7	388,3	ISO 5 (>352, <3520)
Particles > 5,0 µ	0	70,6	70,6	70,6	35,3	35,3	ISO 6

OK	MP 1	MP 2	MP 3	MP 4	MP 5	MP 6	ISO-classification with Medic Clean Air
CFU	0	0	0	0	0	0	ISO 5 (<10)

Report: Internal report UZ Brussels

Conclusion: The use of **Medic Clean Air®** decreases the number of particles and CFU/m³, improving the ISO-classification from ISO 7 to ISO 6, some values are better (**ISO 5**).



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Reports

Dr. Carpentier, Ramegnies-Chin - Belgium

Subject: Classification of **operation room** based on ISO14644

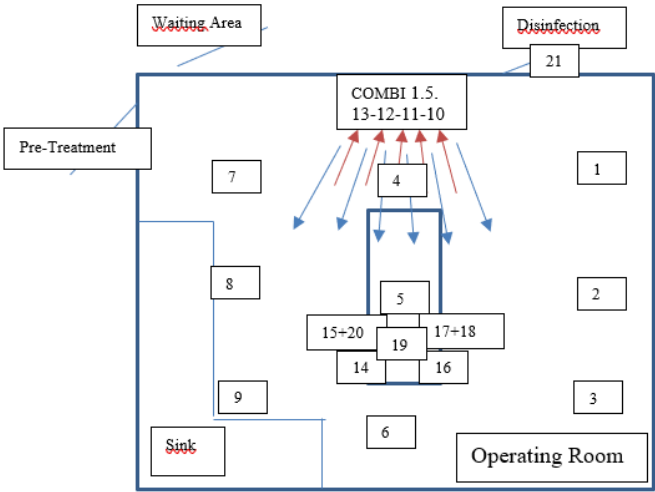
Method: particle count at different locations; with Medic Clean Air devices

Results:

OK	MP 14	MP 15	MP 16	MP 17	MP 18	MP 19	MP 20	ISO-classification with Medic Clean Air
Particles > 0,5 µ	59364	48057	50177	37456	46996	33922	48763	ISO 7 (>35.200, <352.000)
Particles > 5,0 µ	2473	1767	4947	1767	3887	5300	4594	ISO 6 (>832, <8320)

Report: Internal report Dr. Carpentier

Conclusion: The use of **Medic Clean Air®** **decreases the number of particles**, reaching **ISO 7 classification**, some of the values are better and close to **ISO 6**.



Reliable filtration & purification

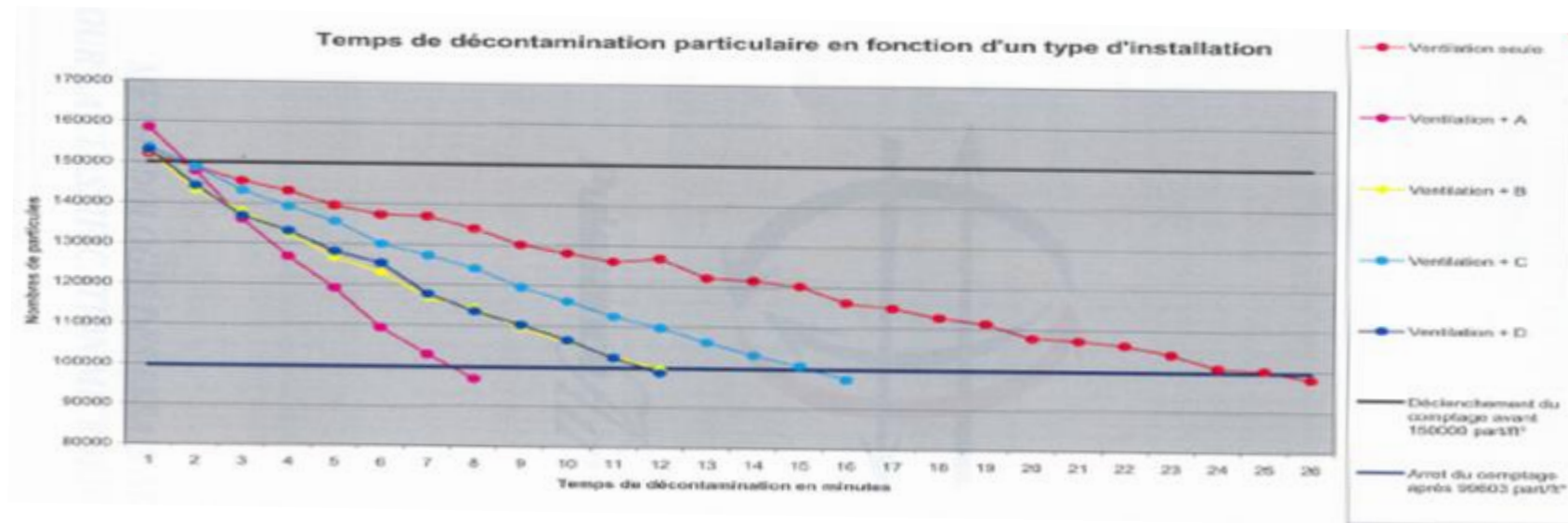
Reports

Report Institut Pasteur, Lille France University Hospital Saint Pieters, Brussels – Infectious Disease Department

Subject: **comparison several air purification units** in reducing contamination in a standard room size

Method: clinical, laboratory study with monitoring different devices

Results:



Report: Insitut Pasteur Octobre 2004

Conclusion: Institut Pasteur recommended **Medic Clean Air®** as the **best product** for **isolating infectious patients** and **protection** of **staff & visitors**.

Reliable filtration & purification

Reports

VITO, Vlasmeer, Belgium

Subject: Efficiency test of isolation devices based on ISO14644

Method: particle count with different tests

Results:

ISO 520	Air intake	Air outlet	Efficiency
Particles between 0,01 µm and 5 µm	269.572	8,4	99,997%

Report: Internal report VITO

Conclusion: This study confirms the impact of Medic Clean Air® isolation devices capture 269.563,6 particles from the 269.572 particles, meaning that the ISO 520 with ULPA15 filter is **completely sealed and airtight**, ensuring that the (possible contaminated) air is forced to pass through the filter and purified before being spread in the room, making it the **perfectly safe solution to create isolation rooms**.

Medic Clean Air



Lisa Van Passel

Business Intelligence

+32 499 43 66 54

lisa.vanpassel@mediccleanair.com

Bredestraat 13, 2000 Antwerp, Belgium

www.mediccleanair.com