

CoPlasma Comparison to HEPA

Clean room is defined as an environment, with a low level of environmental pollutants such as dust, airborne microbes, aerosol particles, and chemical vapors. More accurately, a clean room has a controlled level of contamination that is specified by the number of particles per cubic meter at a specified particle size.

This article compares the CoPlasma system to the traditional method of mechanical filtration (ISO 8 classification) achieved through the use of HEPA filters.

The analysis is based on room with 4m height and an area of 200m², thus a volume of 1000m³.

Description	HEPA Filtration system	CoPlasma© System	Variation of CoPlasma
Room Dimensions	Area = 200 m ² , Height = 5 m , Total Volume = 1000 m ³		-
Room Classification	ISO 8		-
Flow Rate:	12,500 m ³ /hr.		-
Type	Mechanical Type – Single use	Electrostatic 240V	Aluminium
Filters Elements	4 x F8 Type 600x600 4 x H12 Type 600x600	4 X FE-600x600 4 X FI-600x600	Similar size
Contamination Across the filter	Possible endotoxins production due to bacteria concentration on the filter surface causing contamination downstream - thus the clean room	The CoPlasma (negative ionization plus low levels of Ozone) after the filter acts as a killing zone, no bacteria remains alive past the filter	Continues sanitation of AHU and ducting
Filter Element disposal	Contamination hazard in handling and disposing due to high concentration of live contaminants	The filter elements are washable – all contaminants depleted on the surface are killed.	No Hazard
Effect on product flavour	-	-	-
Filter efficiency (for particles >=0.5µm)	99.5%	98.58%	0.9%
Pressure drop across the filters	460 Pa	129 Pa	331 Pa
Filter elements initial cost	€1,120	€9,386	€8,266 more expensive
Filter Elements power	-	0.096 kW	0.096 kW
Installed Power	6.21 kW	4.44 kW	1.77 kW
Annual Energy cost for 18 hrs/day at €0.23kW/hr (EU Average)	€9,393.93	€6,709.28	€2,684.65 saving
Frequency of replacement	Every 3 months	Never – Wash only	Re usable
Annual Maintenance	€4,480 (filter replacements F8@€82, H12@€198)	€108 Consumables on the filter (springs & wires)	€4,372 saving

The total savings per year is €2,684.65 from the electricity and €4,372 from the maintenance, with a total of **€7,056.65**.

The additional investment related to the CoPlasma can be recovered in **1.17 years** and thereafter the saving is continuous.