



Certified Quality Assurance Program According to AQAP-2110

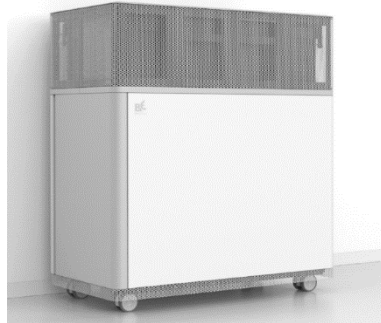


www.beind.com

1 Avshalom Road, Zikhron Yaaqov
+972-4-629 9999



Beth-El Industries Ltd.



Samuel Koeger
S.Koeger@beind.com



Introduction:

- **Samuel Koeger**
- **Since 31 years in Beth-El Industries Ltd.**
 - **R&D Manager**
 - **Export Manager**
 - **Technical Director**
 - **Product Manager**
- **Member of standards committee SI 4570 (# 41818)**



Innovations and applications in **Room Air Purification and Collective CBRN Protection**

Presented by Samuel Koeger

Presentation Overview:

- 1. Where we come from...**
- 2. Bipolar Ion Generation Technology**
- 3. Room air purification for small size rooms**
- 4. Room air purification for medium and large size rooms**
- 5. Antibacterial and antiviral impregnation of air filter media**
- 6. Covid-19 Filtration technologies**
- 7. Innovations in CBRN technology**

1. Where we come from...



NBC-Filtration and Ventilation
for safe rooms



Hidden NBC-Filtration and Ventilation
for protection of 30-100 Persons



Filtration Batteries
for Collective Shelters

2. Bipolar Ion Generation Technology



2. Bipolar Ion Generation Technology

Efficiency Tests made with Bipolar ion Generation products:

Substance	Substance Name	Testing Organization	Removal	Year
Viruses	Influenza H1N1	Kitasato Research Center, Japan	99%	2011
	Influenza H5N1	Kasetsart University, Thailand	99%	2011
	Influenza SARS CoV-2 surface	Innovative Bioanalysis, USA	99%	2021
	Influenza SARS CoV-2 aerosolized	Innovative Bioanalysis, USA	99%	2021
Bacteria	Staphylococcus aureus (MRSA)	EMSL Analytical, USA	99%	2013
	Escherichia Coli ATCC	Istanbul University, Turkey	91%	2011
	Staphylococcus aureus	EMSL Analytical, USA	81%	2011
	Pseudomonas aeruginosa	Istanbul University, Turkey	99%	2011
	Escherichia Coli	EMSL Analytical, USA	99%	2011
Mold	Cladosporium cladosporioides	EMSL Analytical, USA	36%	2011
Spores	Bacillus subtilis var niger	Istanbul University, Turkey	89%	2011
Fungus	Aspergillus Niger	EMSL Analytical, USA	97%	2011
	Candida albicans	EMSL Analytical, USA	97%	2011
	Dichobotrys abundans	Prof. Joe F. Boatman, USA	90%	2006
	Penicillium	Prof. Joe F. Boatman, USA	95%	2006

2. Bipolar Ion Generation Technology

Comparison Test -

After 2 weeks in the fridge **without** Bipolar Ion Generation Technology:



2. Bipolar Ion Generation Technology

Comparison Test -

After 2 weeks in the fridge **with** Bipolar Ion Generation Technology:



3. Room air purification for small size rooms



- Smart indoor and outdoor **air quality detection** and monitoring in real-time
- Personalized use through **smartphone application**
- **Particle Filtration** – 99.98% effective particle filter
- With integrated **Bipolar Ion Generation Technology**

3. Room air purification for small size rooms



4. Room air purification for medium and large size rooms



4. Room air purification for medium and large size rooms

Areas of use –

- Schools
- Kinder gardens
- Hospitals
- Offices
- Clinics
- Dentists
- HMOs
- Waiting rooms
- Conference rooms
- Stores



4. Room air purification technologies in development for large size room Air Purifiers

- a. **Active noise cancellation technology** for noise reduction
- b. **Innovative form of filters** to reduce the pressure drop in the system and to enable highest filtration efficiency with lowest energy consumption
- c. **Special folding method** for the filter media (for the HEPA and charcoal filters) to reduce the required blower power and thus save energy and reduce the noise level
- d. **Special coating** of the filter media of the HEPA filter, for anti-bacterial and anti-viral effects
- e. A **smart control** unit, which analyzes the air data captured by sensors, and calculates the correct mode of operation
- f. Integrated **ionization** technology for improved air quality



5. Antibacterial and antiviral impregnation of air filter media

6. Covid-19 Filtration Technologies



Sterile Breathing Filter



Sterile Breathing Filter with heat and humidity exchanger



ULPA filter for virus filtering

Particle size	Efficiency %
0.1 μm	97.7 %
0.2 μm	98.0 %
0.3 μm	98.6 %
0.5 μm	99.4 %
0.7 μm	99.6 %
1.0 μm	99.7 %

Particle size	Efficiency %
0.1 μm	99.9997 %
0.2 μm	99.9999 %
0.3 μm	99.99995 %
0.5 μm	99.99997 %
0.7 μm	99.99999 %
1.0 μm	99.999999 %

6. Covid-19 Filtration Technologies



6. Covid-19 Filtration Technologies



6. Covid-19 Filtration Technologies

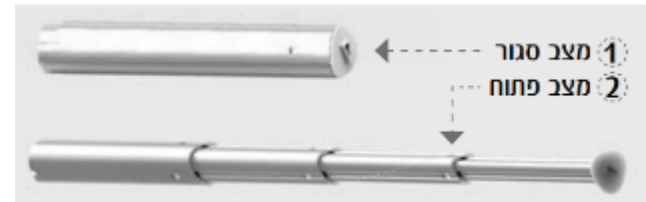


7. Innovations in CBRN Technology

Safe room systems



Easy changeover from ventilation to NBC-mode



Extendable manual operation handle

7. Innovations in CBRN Technology

Hidden

NBC-Filtration Technology

- Space-saving solution
- Walls stay free
- Safest solution
- Full life cycle service

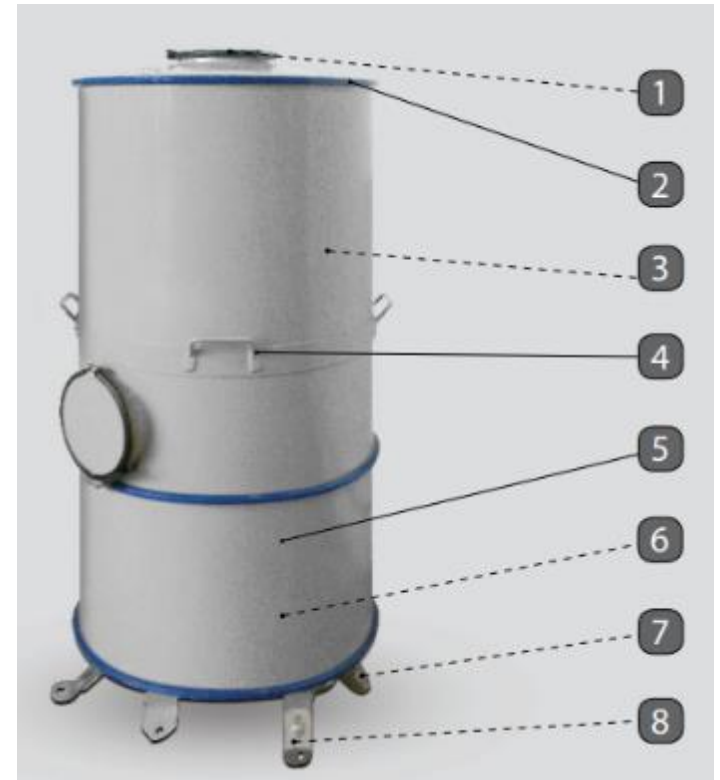


7. Innovations in CBRN Technology

NBC-Filter

for a nominal airflow rate of **1800 CMH**

- **50%** more air than the largest filter today
- Low space requirement
- High efficiency
- Very low maintenance cost



7. Innovations in CBRN Technology

Today's demands on NBC-Protection Technology:

- A culture of quality
- 'Peace of mind'
- Reliable operation
- Highest efficiency = space saving
- Professional project design - provided by the design department for approvals
- Full life cycle service

Conclusion

- **There is proven technology to defend against existing and expected threats caused by wars or natural disasters**
- **The innovation enables the provision of user-friendly and economical solutions**
- **The solutions must provide a rapid ability to transition from peace-time mode to emergency mode**



**Thank you for your
attention!**

**Please visit us at
booth # 17**



Any questions?

Samuel Koeger

S.Koeger@beind.com