

new

energy-saving

# FLOW GERMICIDAL LAMPS

ULTRA  VIOL<sup>®</sup>



operating theatre  
intensive care  
dialysis  
postoperative  
patient recovery



ULTRA  VIOL

series **NBVE**



# WHY "NEW"

## FIRSTLY: ENERGY SAVING

At present time when everybody is searching for savings and reducing costs, our company, the leading manufacturer of germicidal lamps in Poland, took actions in order to design energy-saving devices for air disinfection.

Currently, thanks to commitment and hard work of our specialists, we have the pleasure of presenting a new flow germicidal lamps series that **characterise extremely low power consumption** thus **they are CHEAP in operating**.

### To get down to business:

The annual electric energy consumption by a flow germicidal lamp working continuously, equipped with two radiators 30 W, **supplied in a conventional way** approximates:

**190 VA x 24 h x 365 days = 1665 kWh**

The annual electric energy consumption by a flow germicidal lamp working continuously, equipped with two radiators 30 W, **supplied in a energy-saving way** approximates:

**85 VA x 24 h x 365 days = 745 kWh**

**Therefore savings for one lamp dependence on its type can be estimated at the total amount between 100-200 EUR within one year.**

With the more common use of flow germicidal lamps annual savings in hospitals may obtain thousands or even in big posts several thousands EUR.

## SECONDLY: HIGHER EFFECTIVENESS

Thanks to the application of high-effective germicidal radiators TUV 55 W in new lamps, created by PHILIPS, we obtained the possibility of considerable increase in disinfection effectiveness without a change of previous cubage of the lamp. Thanks to the energy-saving supply system power consumption of the lamp with higher effectiveness amounts only 115 VA. Increase in effectiveness and also in capacity of the lamp even obtains 80% in proportion to the lamp with standard radiators with power of 30 W.



**NBVE 60 NL**  
**NBVE 110 NL**

# DISINFECTION WITH THE USE OF ULTRAVIOLET RADIATION

Ultraviolet radiation (UV) is a part of electromagnetic spectrum similar to X-radiation, radio waves or visible light.

For practical purposes the ultraviolet radiation has been divided into three bands:

- UV-A – long-wave band**     **400 nm – 315 nm**
- UV-B – medium-wave band** **315 nm – 280 nm**
- UV-C – short-wave band**   **280 nm – 100 nm**

UV-A radiation is contained in radiant energy from the sun. It activates photochemical and pigment-creating processes. Its erythemal effect is of no importance.

UV-B radiation is used mainly in therapy. It creates provitamin D and causes both pigmentation and erythemal effect.

**UV-C radiation has a strong germicidal and embryocidal effect.** It can cause burning of the skin (erythemal effect) and inflammation of conjunctiva (conjunctival effect).

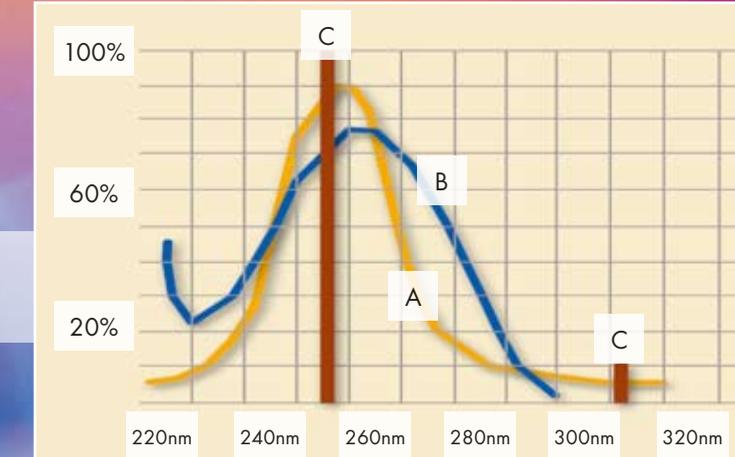
UV-C radiation can be produced in germicidal lamps by a passage of an electric arc through a low-pressure mercury vapour (germicidal radiators). Radiation of a wavelength below 200 nm produces ozone in air. This is a harmful phenomenon. To prevent this noxious effect, the TUV germicidal bulbs, used in our lamps, are enclosed in an envelope made of special quartz glass which has high transmittance coefficient for germicidal radiation. It also absorbs undesirable UV radiation of a wavelength below 200 nm. Therefore TUV radiators produce a small amount of ozone and during the first 100 hours of operation only.

It has been found that the wavelength region from 250 nm to 270 nm is the radiation of greatest germicidal effectiveness. The germicidal action of the UV-C radiation consists in absorption of UV radiant energy by nucleic acids and proteins. The absorbed energy induces chemical reactions in cell nuclei and thus destroys microorganisms.

TUV bulbs, used in our lamps, emit maximum of their germicidal energy just within the region from 250 to 270 nm.

## UV-C radiation is applied in:

- Medicine: operating theatres, treatment rooms, delivery wards, sick bays, dentist's
- Sanatorium, guest houses
- Pharmaceutical industry, herbal industry, cosmetic industry
- Agricultural and food industry (diaries, slaughterhouses, products packaging)
- Catering
- Stations, hotels, discoteques, cinemas
- In all places where high level of biological purity is required and at the same time people have to stay there



- A** the greatest germicidal effect is obtained with the UV-C radiation within the wavelength region from 250 to 270 nm
- B** curve of absorption of nucleic acids
- C** cosmic radiation by discharge in low-pressure mercury vapour

**UV-C radiation doses that are needed to deactivate of 90 % of some microorganisms in case of radiation at a wavelength of 253,7 nm**

	Type of bacteria, yeast or mould	Iridiation [Ws/cm <sup>2</sup> ]
<b>Bacteria</b>	B. Magatherium sp.	1300
	B. Magatherium sp. Spores	2730
	Staphylococcus albus	1840
	Staphylococcus aureus	2600
	Staphylococcus hemolyticus	2160
	Staphylococcus lactis	6150
	Sarcina lutea	19700
<b>Yeast</b>	Brewera yeast	3300
	Saccharomyces sp.	8000
<b>Mould</b>	Oospora lactis white	5000
	Penicillium roqueforti	13000
	Penicillium digitatum olive	44000
	Aspergillus niger black	132000



Disinfection of the air by means of UV-C radiation in the flow germicidal lamps is carried out inside a disinfection chamber. Contaminated air is drawn by a fan -through a filter catching dust and other contaminations-into the disinfection chamber. The UV-C radiation intensity and a time during which air remains in the disinfection chamber are selected so that air blown out from the lamp is practically free of microorganisms. Velocity of air flow through the disinfection chamber is therefore selected as a compromise between a desire to disinfect the greatest volume of air per time unit and germicidal effectiveness. It should also be noted that the forced flow of air results in a smooth circulation of air in the room and thus disinfection of air in the whole room.

## 2-FUNCTION FLOW GERMICIDAL LAMPS

2-function flow germicidal lamps with an external radiator of direct action guarantee a full range of disinfectant action. It gives a possibility of intensive disinfection of the air in the presence of people (disinfection chamber) and direct disinfection of the whole room when the personell and patients stay outside the room (direct action radiator). Disinfectant action of the external radiator is similar to standard germicidal lamps NBV series. UV-C radiation disinfects the air and surfaces in the room (walls, table tops, objects, etc.) Thanks to its nature it also reaches different nooks as reflected light.

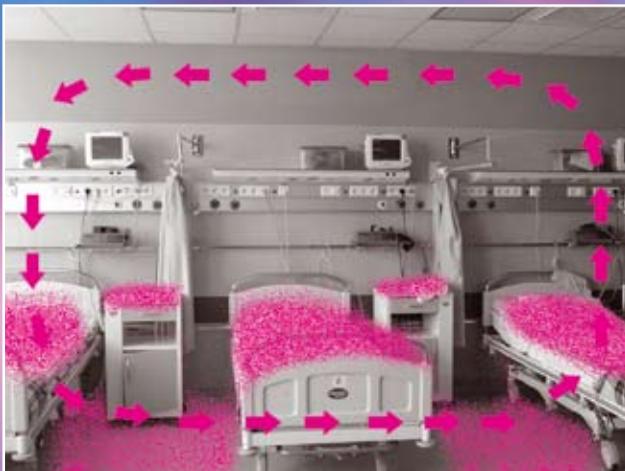


Safe to people – measurement of the irradiation with the use of counter indicates 0

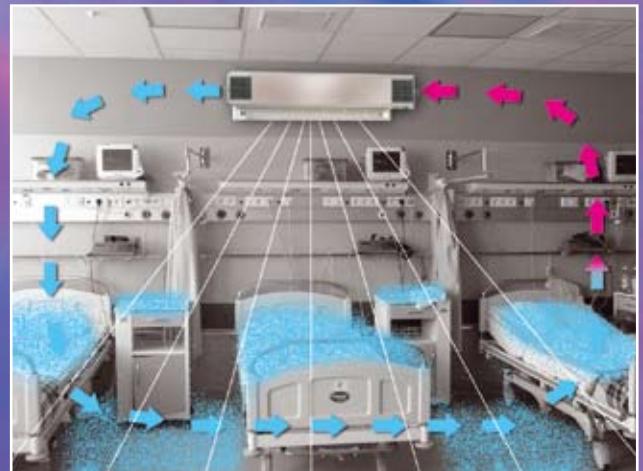
One of the important advantages of flow germicidal lamps with forced air flow is a possibility of their use in the presence of personell and patients (permanent disinfection of the air)



Process of the air and surfaces treatment with the use of internal and external radiators



Contaminated air in the room without germicidal lamps



Process of the air treatment with the use of internal and external radiators (air and surfaces)

# SECURITY, RELIABILITY, SAFETY, COMFORT

An external radiator is protected against breakage thanks to a durable cover made of nickel-plated steel bars.

**In case when particularly high demands as regards the safety against broken glass are required there is a possibility of covering of the radiators with special anti-splashed foil passing UV-C radiation.**

**In case of breaking the radiator that foil keeps broken glass inside the radiator.**

without protective foil



**In case of breaking the radiator special transparent foil protects against spilling pieces of glass**

with protective foil



**Modern and lasting materials guarantee effectiveness and no-failure.**

**Replacement of the filter is possible to be done without the use of tools.**

The main source of unpleasant, metal noise emitted by a flow germicidal lamp are vibrations of metal housing's covers as a result of the ventilator's operation. To eliminate that effect, all construction elements in NBVE lamps are fixed to the internal framework with high stiffness in order to prevent the lamp from resonance. In turn the covers of external lamps are immobilized by supports made of special plastic that protects them against vibration transfer from the lamp's interior. We would like to draw your attention to the fact that vibrations caused by lamps' covers with less advanced, economical construction are getting higher and higher and after 2-3 years of operating noise that is emitted may exceed initial value several times.

External lamps' covers are made of acid-resistant HPS commonly used as a construction material for making covers of devices that are equipment of operating rooms. Thanks to high resistance to factors causing degradation of surfaces that material assures durability of the device. If you place an order we can make covers' lamps coated with powder lacquer in optional colours from RAL palette.



**NBVE 60/30  
NBVE 110/55**

Air filter

Working signalling

Lamp type	NBVE 60	NBVE 110	NBVE 60/30	NBVE 110/55
Supply voltage	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz
Power requirement	85 VA	115 VA	115 VA	145 VA
UV-C-bulb	2 x TUV 30 W	2 x TUV 55 W	2 x TUV 30 W <small>internal</small> 1 x TUV 30 W <small>external</small>	2 x TUV 55 W <small>internal</small> 1 x TUV 55 W <small>external</small>
Bulb service lamp (min)	min. 8000 h	min. 8000 h	min. 8000 h	min. 8000 h
Radiation intensity of the external UV-C radiator at the distance of 1 m			100 $\mu$ W / cm <sup>2</sup>	150 $\mu$ W / cm <sup>2</sup>
Ventilator capacity	132 m <sup>3</sup> /h	199 m <sup>3</sup> /h	132 m <sup>3</sup> /h	199 m <sup>3</sup> /h
Cubage of disinfected room	25-50 m <sup>3</sup>	45-90 m <sup>3</sup>	25-50 m <sup>3</sup>	45-90 m <sup>3</sup>
Effective area of the lamp	10-20 m <sup>2</sup>	18-36 m <sup>2</sup>	10-20 m <sup>2</sup>	18-36 m <sup>2</sup>
Class of protection against electric shock	I	I	I	I
Cover type	IP 20	IP 20	IP 20	IP 20
Dimensions [mm]: Dome	1125x215x130		1125x285x130	
Overall dimensions - N making (wall mounted)	1190x215x145		1190x285x145	
Overall dimensions - S making (ceiling mounted)	1190x330x130		1190x400x130	
Overall dimensions - P making (mobile)	600x1740x600		600x1740x600	
Mass - N making (wall mounted)	8,5 kg	9,0 kg	9,0 kg	9,5 kg
Mass - S making (ceiling mounted)	8,5 kg	9,0 kg	9,0 kg	9,5 kg
Mass - P making (mobile)	13,0 kg	13,5 kg	13,5 kg	14,0 kg

We select the number of flow germicidal lamps taking the cubage of the room into consideration – look at the table above.

ULTRA-VIOL fulfills untypical orders as well. The producer reserves the right to innovate in the construction relevant the improvement of the manufacture.



**Counter LW**  
Digital counter LW with microprocessor with the display 4 field LED. Acoustic signaling the moment of exchange uv bulbs. The possibility of independent connecting to bought earlier germicidal lamps. For direct and flow germicidal lamps.



**Counter L02**  
External digital counter the time of the work to germicidal lamps with switch and display 4 field LED.



In case of switching on the lamp for one, two, four or eight hours it is allowed to use a counter-programmer LP-02



NBVE 60 on the stand  
NBVE 110

NBVE 60/30 on the stand  
NBVE 110/55

a stable stand, easy to move

# OUR OFFER:

## Phototherapy light PHOTOVITA

Antidepressive lamps are used in treatment of winter depression, sleep disturbance resulting of falling asleep time and synchronize internal biological rhythms.



## Germicidal lamps

The most popular devices used for rising the microbiological purity of rooms. Essential in hospitals, ambulatories, laboratories and food industry plants.



## X-ray film viewers

NGP X-ray film viewers are modern devices used for examination of radiograms.

There are one frame and multi-frame X-ray film viewers, two-level X-ray film viewers, X-ray film viewers with shutters and X-ray film viewers with shutters used for mammography.



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