THERE IS ALWAYS A WAY TO
DO IT BETTER

ZÖLLNER GMBH

the hygiene specialist

VISUAL RADIATION

Of the radiation energy to which we are exposed on a daily base, we are only aware of a small part as light or warmth. The far greater part of this electromagnetic energy, however, remains unnoticed. This also includes ultraviolet radiation.
The energies can also be explained with a wavelength model. Radiation differs through frequency, for example, radio waves are of long wavelength, while visual radiation is in the short wave range. The frequency range of UV radiation only includes a very small part of the electromagnetic range.

UV RADIATION

Ultraviolet radiation (UV) is a type of short wave energy and beside visible light and infrared rays is in the group of optical radiation. It is therefore possible to bend, deflect, refract and reflect this radiation.

The term 'ultraviolet' (in the sense of 'beyond violet') is based on the fact that the UV range with the shortest wavelength starts with those wavelengths that the human eye sees as blue-violet colour. Due to this fact UV rays are invisible for the human eye.

UV radiation is divided into three areas:

UVA (long wavelength):	400 - 315 nm
UVB (medium wavelength):	315 - 280 nm
UVC (short wavelength):	280 - 200 nm

CONNECTION BETWEEN DOSAGE AND EFFECT

The effectiveness of a disinfection method based on UVC radiation is directly connected to the dosage used (= duration x energy / surface). High intensity during a short duration, or low intensity over a long time period are practically interchangeable and almost have the same disinfecting effects. The dosage as an important element is demonstrated as µW*s/cm², and frequently also in J/m².

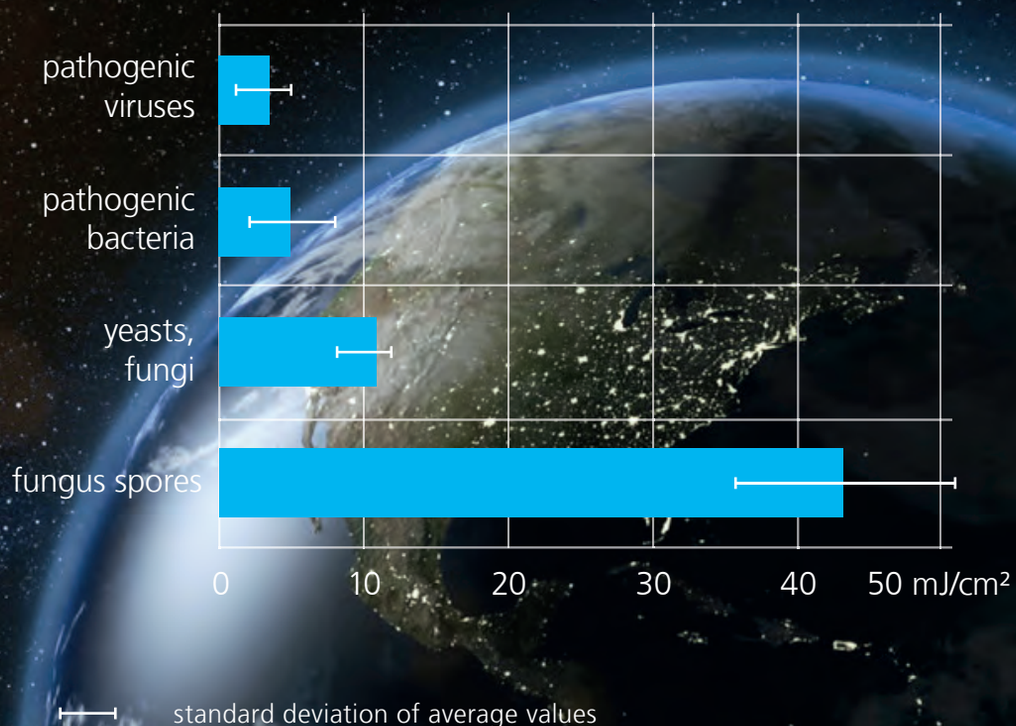
WHY DOES UV-C RADIATION HAVE DISINFECTING PROPERTIES?

The double helix structure of the DNA is based on a purine and pyrimidine base pairing. The pairing of these bases are really carriers of DNA information; the four bases adenine, thymine, guanine and cytosine can be distinguished.

Research in later years showed that the short wave and the strong energy of the UVC radiation mainly causes a photo-chemical effect in the thymines. These dimerise (meaning that the two information carriers lying next to each other form a chain or close up).

This molecular change makes the DNA unusable for the essential biological process of transcription (metabolism) and replication (cell division). A cell sufficiently damaged in that way will eventually die away.

typical LD90 doses of different microorganisms



UVC radiation has a short wavelength and contain more energy than UVA- and UVB radiation. It includes the greater part of the entire UV range and has a strong germicidal effect in the range of 254 nm. Like the visible wavelength of light, UVC radiation moves only directly and loses its intensity in proportion to the distance from the source.
UVC radiation does not essentially penetrate cloth or window glass.

HARMLESS USE OF UVC

UVC-radiation does not permeate solid bodies - even no window glass (borosilicate, duran) or transparent plastics (acrylic glass, polystyrene, etc.).

As with the visible wavelengths of light, UVC radiation only moves in a direct line and decreases in intensity by increasing distance to the source. Consequently, the further the distance towards the UV source the less dangerous it is. Equipment with protective slats or fully enclosing vessels therefore never can be hazardous.

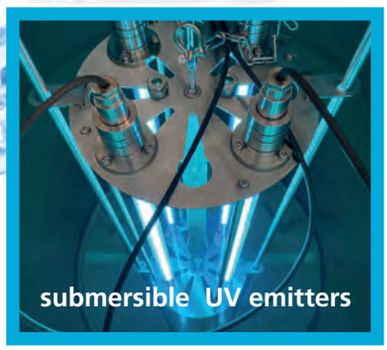
If protracted direct eye or skin contact with a freely emitting UV source is unavoidable, simple precautions such as protective glasses or suntan cream with a high protection factor are sufficient.

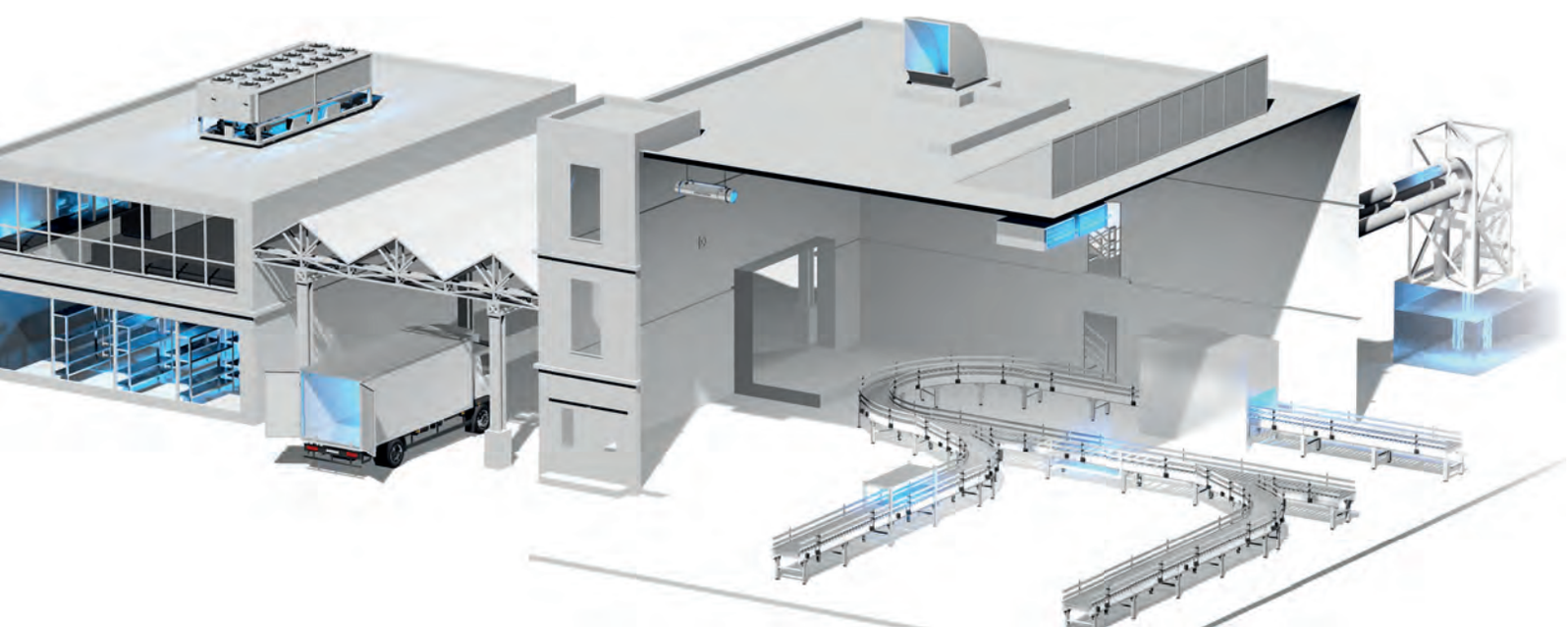
RADICALLY BETTER.

Ensured, physical disinfection via UVC technology for surfaces, air and water.

- Continuous and proven disinfection procedure
- Chemical-free disinfection
- No personell expenses
- Personell protection guranteed
- No formation of germ resistance known
- No disinfection gaps
- Positive visual impression during audits and company tours

Process water treatment via UVC technology





UVC ON
GERMS OFF!

UVC applications in textile care


laundry slide

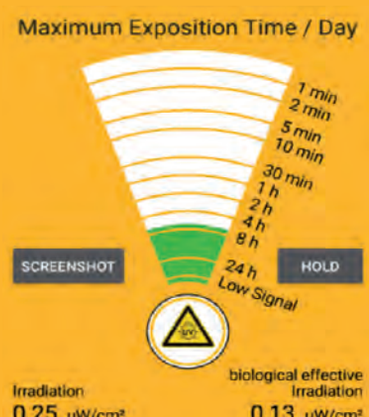

conveyor belt


truck loading area


container disinfection

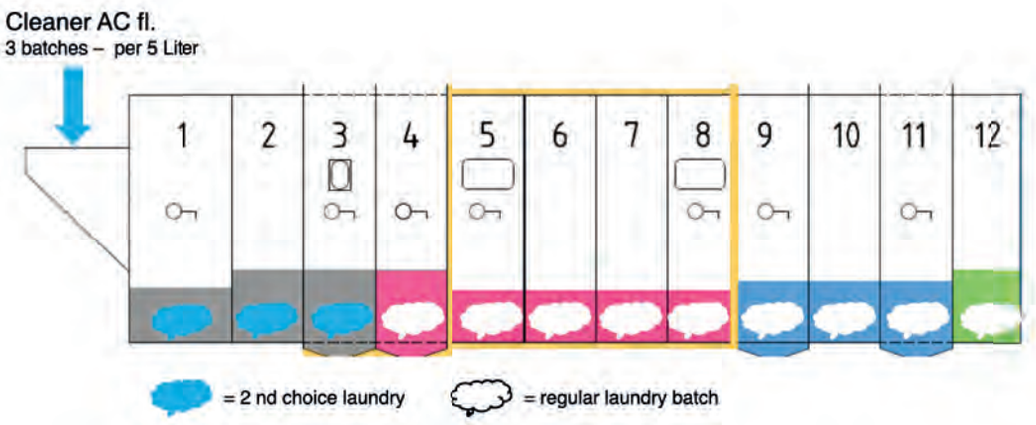
Safester UVC

- Smartphone (Android) based radiometer for hazard assessment of artificial UV radiation emitted by low pressure UVC sources in workplaces according to European Community guideline 2006/25/EC, e.g. used to ensure that UV air disinfection equipment used to inactivate COVID virus do not emit harmful UV irradiation intensity that may damage skin and eyes
- Visualization of the maximum exposure time per day with acoustical and optical warning features
- The radiometer complies with class 1 (highest precision requirements) of DIN 5031-11 for actinic radiometers
- The price includes a UVC sensor with PTB traceable calibration, a calibration certificate and a smartphone



HYGIENIC CLEANING OF TUNNEL WASHERS

Zöllner Cleaner AC fl.



The liquid, diamine-based Zöllner Cleaner AC fl. has been specifically tested for use in the hygienic cleaning of tunnel washers! The liquid product cleans and disinfects smooth surfaces in a single operation. Thanks to its strong foaming properties, it has an effective cleaning performance. It is effective against bacteria, yeasts and to a limited extent viruses.

- **Cleaning and disinfection in one step**
- **The high foaming properties of the product ensure effective cleaning, even in hard-to-reach areas.**
- **Aldehyde-, chlorine- and QAV-free**
- **Broad spectrum of activity**

PROCEDURE RECOMMENDATION TUNNEL WASHER CBW

(1x per quarter):

1. block the water supply and close the liquor drains

2. run in 3 batches of *2nd choice laundry

3. add product Zöllner Cleaner AC fl. to 3 laundry batches (2nd choice batches) , 5 liters each

4. temperature 30-60°C

5. 1 empty chamber

6. continue washing normally

* 2nd choice laundry batches serves as a carrier for the Zöllner Cleaner AC fl., which is thus pulled through to the end of the CBW
* recommended cycle time for cleaning = 5 minutes – liquor ratio = 1:4
* 5 liters of Zöllner Cleaner AC fl. in 200 liters of liquor (= 25 ml Zöllner cleaner AC fl. per liter of liquor)
* If necessary, an additional 5 liters of Zöllner AC fl. cleaner can be added to the press water tank

Important: Please also open the titration hoses (collection container), as these must also be cleaned!

ZÖLLNER LIQUID IRONING WAX

+ ANTI STATIC EFFECT

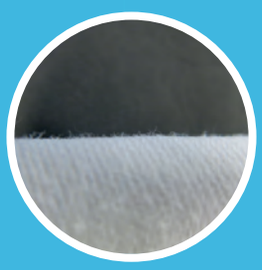


Table linen „without“ liquid ironing wax
Fabric surface hairy

Table linen „with“ liquid ironing wax
Fabric surface smooth

Zöllner liquid ironing wax

Advantages of using Zöllner liquid ironing wax:

- No production stop, as there is no manual waxing process needed anymore
- Application in the CBW (last bath) or extractor - no additional work process
- Antistatic finish
- Smooth fabric surface, nice and silky appearance of the textile after several ironing cycles
- Less lint accumulation / abrasion
- Prevention of yellowish spots on the textiles
- Reduction of the rewash rate of table linen, etc., due to a kind of stain protection effect caused by the liquid ironing wax
- Extends the shelflife of textiles

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