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Department of Molecular and Developmental Medicine

The IMPERA system

***Ugolini Electronic Engineering, in collaboration with the University of Siena,
has conducted a research study that has led to the development
of an innovative system of illumination and disinfection
that inactivates SARS-CoV-2 and reduces the microbial load by over 99%.***

The **IMPERA** system, patent-pending, is based on an array of nearUVA LEDs, sources of visible blue light (near-ultraviolet) at wavelengths centred around 405 nm. Its ability to reduce the microbial load by over 99% and to inactivate the SARS-CoV-2 virus by 99.9% has been attested by photometric, photobiocidal and microbiological analyses and tests, carried out both at the laboratories of the University of Siena and in real environments.

This is a surface disinfection system combined with classic white LED lighting. The disinfectant effect is due to nearUVA LEDs, whose light emission counteracts bacterial and fungal load, and viral activation (as for SARS-CoV-2) by triggering oxidative processes that alter the constituent structures of microorganisms. The nearUVA sources used on **IMPERA** do not produce secondary oxidative components such as ozone. Laboratory tests have verified the ability of IMPERA lamps to reduce by more than 99% the microbial component present in everyday life environments, up to more than 2.5 meters from the source, with a continue surface exposure of more than 8 hours.

The system has an algorithm, developed and programmed by Ugolini Electronic Engineering, which

- in the absence of humans and pets (for 8-12 hours), allows illumination with only the nearUVA component, at maximum power;
- in the presence of humans and pets, introduces the white lighting component and reduces the light power of the nearUVA component, so that the overall combined lighting (white and nearUVA, this last residual, but far from negligible) respects all limits imposed by the current regulations on the protection of workers from photobiological risks connected with the continuous presence in artificially lit environments.

Therefore, by adhering to both the above conditions and the general recommendations in the owner's manual, the **IMPERA** system is effective and can be safely used with any number and age of humans and pets, in any residential, domestic, healthcare, civil, military, public and private area.

Sincerely,

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