Beating the Heat
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Monica Sciarini, Nicola Colombo

Evaporative Cooling as a Tool for Heat Island Mitigation and Urban Requalification

Turbinenplatz in Zurich and Piazza del Sole in Bellinzona: Two applications of Nephos high-pressure water mist system

1

The principle of evaporative cooling has been known and used in various forms since antiquity. By exploiting this archaic physical principle, the instantaneous evaporation of water droplets produced by high-pressure misting subtracts caloric energy from the environment, thereby lowering the air temperature.

2

The Nephos Nozzle, equipped with a spiral vortex, is the result of collaboration between small Swiss companies rooted in the country's precision micromechanical tradition.

The Nephos Nozzle 3-100 nebulizes 2.6 litres of water per hour by 100 bar, consuming only 18 Wh of electricity.

Obsessive research aimed at improving water mist technology make it possible to efficiently reduce the temperature and create a controlled microclimate with limited means and low consumption. In particular, the development of a reliable modular fog system and a uniquely designed and self-manufactured ultra-fine nozzle allows for perfect misting over many years of use. With the know-how accumulated during two decades of experience, Nephos masters the design, production and installation of fog systems.

3

Alto Zürrus, Turbinenplatz
Zurich 2022-23
At Turbinenplatz – the largest and one of the hottest squares in Zurich – a suspended fog-ring with a nine-metre diameter was installed in 2022. In 2023, two additional smaller, lower rings (D 3.3 and 1.6 metres) and a seven-metre-long playful fog-line at ground level were added in different areas of the square. The installation magically transformed the square into a convivial place.

The pilot project is part of the heat reduction measures promoted by the City of Zurich and is being scientifically monitored by ZHAW.

The four-part installation at Turbinenplatz, Zurich (14,000 m²), equipped with 300 nozzles, uses a water volume comparable to an average water fountain and features self-regulating automation with environmental sensors.

4

La Nuvola Piovasca, Piazza del Sole
Bellinzona 2019
Over the summer of 2019, a 14x7x4-metre sculptural cloud-shaped installation with integrated fog nozzles was suspended above Piazza del Sole in Bellinzona. The cloud not only cooled and purified the air by acting as a natural filter against fine dust particles, but also offered an area of shade, inviting people to stop and making them rediscover the square as a cherished meeting place.

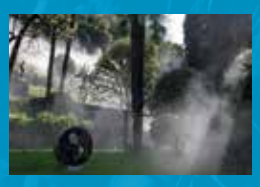
The heat island in the heart of Bellinzona, where the cloud installation was positioned.

150 nozzles, hidden inside the cloud, create sufficient fog to cool the 3,600 m² public space.

The installation was realised to celebrate the 150th anniversary of AMB, Azienda Multiservizi of the Municipality of Bellinzona.

5 **These site-specific installations are not only poetic, but sustainable and functional in combatting heat island phenomena with contained means and low-energy consumption. The system is particularly effective when combined with other measures, such as the integration of shading devices, permeable pavement, green spaces, and proper air circulation.**

Climate change and the rise in global temperature by a few degrees are already a reality that we must live with. The most effective course of action is to plant more trees in cities, starting today. However, the focused use of fog systems represents an immediate mitigating measure to make urban areas more liveable, thus contributing to the physical and psychological wellbeing of the community.



Video: Cooling and Revitalising Urban Spaces with Natural Fog