

EU's climate change monitoring office has reported recently that not only June 2024 may be the hottest month since temperatures have been recorded in Europe's history, but also 2024 may outrank 2023 as the hottest year. It is evident that the southern parts of the continent have gotten more thermal stress compared to its northern parts. This naturally brings us to the point that Mediterranean regions including MENA countries –which are known to be the cradle of human civilization- struggles with exorbitant, record high temperatures especially in summer season.

The European Union's Copernicus Climate Change Service (C3S) claims that the reason is human caused climate change supported by El Nino natural weather phenomenon. Despite continuing policies to curb global warming, the EU countries have so far failed collectively to reduce anthropogenic emissions.

The 4th REHVA Journal of 2024 issue brings this problem to the attention of REHVA community by showcasing the situation in different domains which affect the populations of the Mediterranean regions.

One of the articles presented in this issue digs into the relationship of wildfires in Greece caused by elevated temperatures with the spread of epidemics. The author: Prof. Dr. Nastos concluded that the increase of particulate matters attenuated the UV radiation as a result of the fires and eventually this caused a substantial decrease in vitamin D levels among the population, which can have various health implications. Moreover, there is a growing body of evidence suggesting that vitamin D plays an important role in the immune response to viral infections, including COVID-19. The author also suggests that the complex interplay between air pollution, solar radiation, vitamin D levels, and viral infections like COVID-19 requires more detailed investigation.

In another article, investigators from IREC (Institut de Recerca en Energ a de Catalunya) carried out a thorough analysis of the regulations of thermal comfort and indoor air quality in several Mediterranean countries. The aim of the study was to provide sports facility staff with a guide supported by scientific evidence on how to manage the indoor environmental quality of sports halls. Sports facilities that offer a good indoor environment quality will allow users to do sport in healthy conditions, improve their performance and offer them a satisfactory experience.

An academical group affiliated with Indoor Air Quality Committee of Turkish Climatization Assembly of The Union of Chambers and Commodity Exchanges of Turkey invest investigated the effects of several pollutants (CO₂, CO, NO₂, O₃, radon, VOC, formaldehyde, trihalomethanes, PM, bacteria, fungi) upon indoor

environmental quality. They pointed out the importance of knowing pollutant limits over which hazardous effects may arise in Mediterranean basin urban populations.

Energy Efficiency-Thermal Comfort-Indoor Air Quality trilemma concerns the researchers who work in the field of HVAC. A plausible solution is generally reached in optimizing ventilation rates to obtain energy efficient and high environmental quality (IEQ) dwellings. The research carried out in the Aula Magna of a university building by a group of researchers mainly from Sapienza University of Rome focuses on this evaluation.

Temperature rise is certainly more of a problem for those countries at the southern borders of the Mediterranean basin. A group of researchers from Morocco compare the 4E (Energy, exergy, environmental an economical) performances of PV, PVT and solar thermal systems applied to buildings in Moroccan climate framework.

A theoretical research article written by Prof. Dr. Birol Kilkis introduces an axially morphing heat recovery ventilation unit, which addresses the thermodynamic gaps in the current theory and practice due to the lack of recognition of the Second Law of thermodynamics, and the fixed design geometry and control parameters.

The orientation, optical and thermo-physical properties of the building envelope are among the most important design variables in hot climate regions. Coupling these parameters with the presence of PCM may alter their response to protect the Mediterranean dwellings from heat stress. This issue is presented here by two researchers from Istanbul Technical University Faculty of Architecture. Another group of researchers from Istanbul and New Castle tackled the same problem by using a holistic approach for warm climate. Their research aimed at investigating the impact of future climate scenarios on the performance of HVAC systems Their paper evaluates various performance parameters, revealing that projected temperature increases will significantly strain air conditioning systems, leading to potential disturbances, additional costs, and interruptions due to system overloads.

We are sure that REHVA community will continue its efforts to mitigate the heat stress of all Southern European and MENA countries by using sound solutions that answer the needs of Mediterranean populations. ■



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