

# Climate control for the burns unit

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Individualized climate control for burns victims in hospitals might not only improve comfort for such patients, but improve working conditions for those taking care of them. In addition, it could cut energy requirements by three quarters where cooling is needed and by up to a quarter where heating is used. Details of this low-exergy, LowEx, system are described in the latest issue of the International Journal of Exergy.

Mateja Dovjak and Aleš Krainer of the University of Ljubljana, Slovenia and Masanori Shukuya of Tokyo City University in Yokohama, Japan, explain how they have simulated [thermal comfort](#) conditions from the perspective of a burns patient, healthcare worker and visitor.

"Hospitals present a highly demanding indoor environment that should be treated as a three-dimensional system of users, environmental factors and specific activities," the team says. "Conventional heating, ventilation and air-conditioning (HVAC) systems are designed in most cases as interventions in active spaces, based on the requirements of an average user, and are not suitable for the selected individual user."

They have now taken inspiration from vehicle design, where climate control has been a feature of many cars and other vehicles for years. The researchers' LowEx approach uses a sensor system connected to low-exergy heating and cooling panels controlled by a central computer. It is optimized for the creation of healing and comfort conditions for specific burns patients with minimal possible energy use for heating and cooling purposes. It also allows for individual areas of comfort for [healthcare worker](#) and visitor alike. The presented system enables the control of

thermal comfort, of air quality and of visual and acoustic comfort. At the end integral individualization can be achieved.

Lowering human body exergy consumption rate valid for thermoregulation, minimizing evaporation, radiation and convection of burn patient body while allowing healthcare workers to do their job and visitors to interact with the patient is the ultimate aim of the LowEx approach as it is under such conditions that burns can heal most effectively. "This study can be considered as a first step towards individualization of personal space in indoor built environments," the team concludes, with specific application to hospital burns units in the first instance.

**More information:** "Individualisation of personal space in hospital environment" in *Int. J. Exergy*, 2014, 14, 125-155. [DOI: 10.1504/IJEX.2014.060279](https://doi.org/10.1504/IJEX.2014.060279)

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