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## ENVIRONMENTAL MONITORING HELPS INCREASING CONFORT IN A SHIP CABIN

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Many environmental data can affect the comfort of a guest in a cruise ship: cabin temperature, humidity, light intensity, noise, and air quality. Possible environmental discomfort may also have negative effects on the quality of the passenger's sleep, which is an important aspect of the overall concept of "human well-being". In this article, we describe both an environmental monitoring system for a closed environment, such as a ship cabin, based on sensor networks, and a minimal invasiveness approach for a robust monitoring of sleep quality, which integrates signals from different types of sensors to estimate physiological parameters (movements, heart rate, respiratory rate and their variability) correlated to the sleep stages (light sleep, deep sleep, REM sleep and wakefulness). Real-time measurements and analysis of the ambient noise in the passenger cabin is important to characterize the noisiness perceived by the passenger and to compare the measured values with ISO parameters, thus determining the acoustic bands that mostly impact on the passenger perception. The characteristics of a low-power sensor platform for the air-quality monitoring in a ship cabin will also be presented, together with the other networks of sensors and actuators for the environmental monitoring.

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