

COOLING WITHOUT AIR CONDITIONING

SP-510 Pyranometer and SL-510 Pyrgeometer



A collaboration of researchers from various disciplines used an Apogee SP-510 thermopile pyranometer and an SL-510 pyrgeometer to study a method of cooling people without cooling the air (by chilling surfaces and using thermal radiation). The manuscript was compiled on March 26, 2020.

The completed pavilion, known as the Cold Tube, allows radiation to pass, but not air and humidity, thus reducing convection and eliminating condensation. Net radiant heat transfer between occupants and surfaces was measured using an Apogee SL-510-SS pyrgeometer and an SP-510 pyranometer. The researchers found that the Cold Tube is a step forward for demonstrating 1) radiation and convection can be separated for comfort conditioning, and 2) to rely on radiation alone to product comfortable conditions. This research and resulting new technology of membrane-assisted radiant cooling could reduce comfort-related energy demand worldwide (e.g., air conditioning).

Read more about the research: www.apogeeinstruments.com/case-studies/.



Application Summary

Summary

Creating the first known radiant cooling system the leaves people comfortable in the hot and humid tropics without condensing water.

Apogee Sensors Used

SP-510 Pyranometer
SL-510 Pyrgeometer

Location

Singapore

