

Objective:

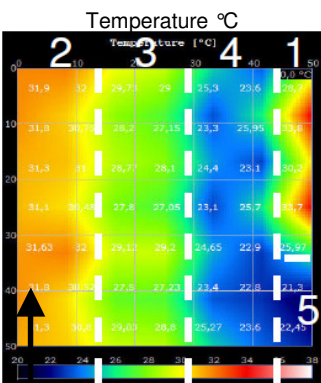
Visualisation of the climate development through textile layers of sports wear in a live test setup.

Realization:

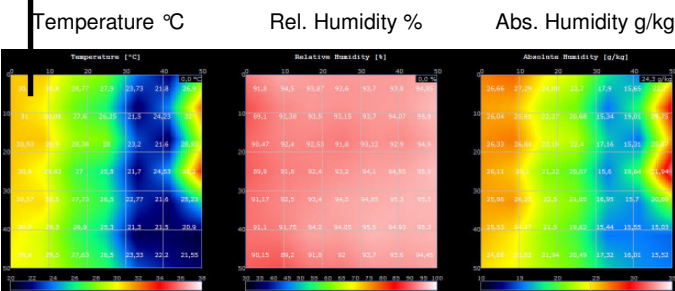
Summer 2010, Munich Olympic Park

Measurement tools and setup:

THG AreaView climate measurement technology in five zones with a total of 24 sensors evenly distributed over an occupant. Measurement of Temperature (T), Relative (RH) and Absolute Humidities (AH).



- Zone 1 (2 sensors):**
Skin surface
- Zone 2 (7 sensors):**
outside T-shirt
- Zone 3 (7 sensors):**
outside upper shirt
- Zone 4 (7 sensors):**
outside rain jacket
- Zone 5 (1 sensor):**
environment



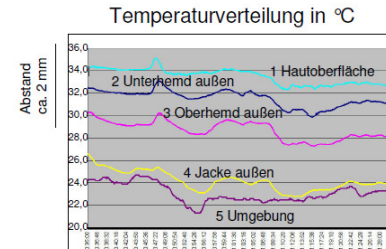
Results:

The THG AreaView image above shows one of the 1.450 taken sequences in this setup. Parallel to the heat transfer (left) the images show the development of RH (middle) and AH (right) starting from the skin through three textile layers into the environment. It becomes clear that a focus on RH does not add any value. The humidity in each layer is relatively equal. The fact that a humidity transfer is happening can only be demonstrated by looking at the T-independent AH on the right. The measurement setup even allows to visualize the activity of the rain jacket.

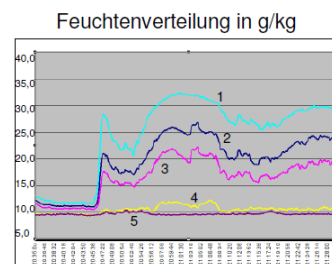
The measurement setup allows to detect the humidity penetration by looking at the vapour flow through the layers. The direction from which the humidity comes can be seen. Because zone 5 (environment) indicates the lowest AH level the humidity must come from inside the textiles. In

consequence complete textile systems can be tested on their individual climatic attributes. Live or mobile in a field test or stationary in a lab.

Curve view:



The curves show the climate development inside the textiles over the whole time of about 1 hour.



The climb up on the Olympic Hill in Munich shows off only like a little peak at the end of the first quarter of the T-view (upper picture).

The humidity starts its rise only with the climb up on the Olympic Hill (lower picture). The AH-development shows remarkably stronger dynamics than the T-values do. RH due to its dependence on T does not add valuable information in the differently tempered zones like already shown in the picture below.

Advantages of the technology:

- Representative measurement with up to 64 sensors per measurement unit
- Mobile measurements possible
- Live imaging (up to 2 sec per image)
- Comparability of textile systems
- Occupant and/or dummy measurements

Fields of application:

- Climate measurement over several zones
- Optimization of textiles or collections
- Automotive Seating, bedding, furniture, textile layers in general
- Address target groups with climate focus

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