

Objective:

Demonstration of the effectiveness of a passively climate regulating duvet.

Realization:

May – June 2009 based on client project

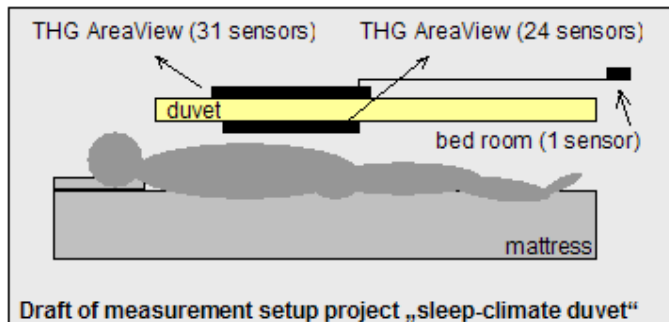
Measurement device and setup:

THG AreaView measurement technology setup in three zones with a total of 56 sensors. Measurement of temperature (T) and relative humidity (RH) as well as absolute humidity (AH).

Zone 1: Outer side of duvet (31 sensors)

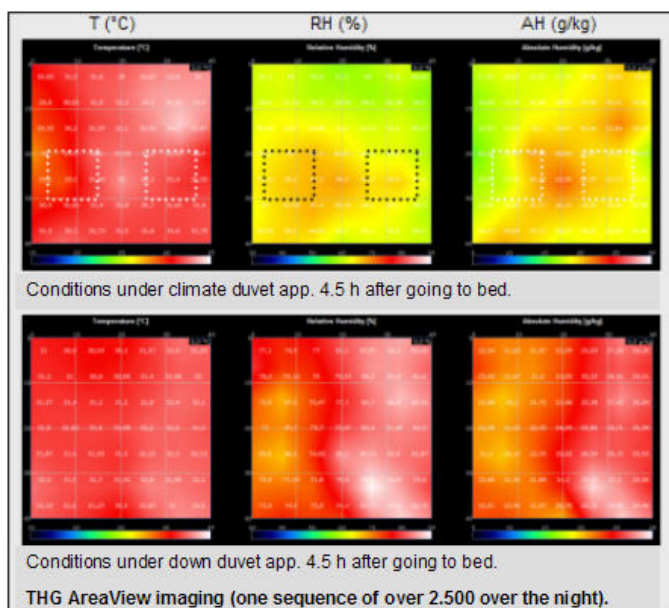
Zone 2: Inner side of duvet (24 sensors)

Zone 3: bedroom (1 sensor)



Results:

The imaging data output – one sequence of over 2,500 images – shows a humidity holdup beneath the down duvet for about 2 hours (lower line). The colours (turning from yellow to red/white) indicate an up to 20 % higher RH than the climate duvet.

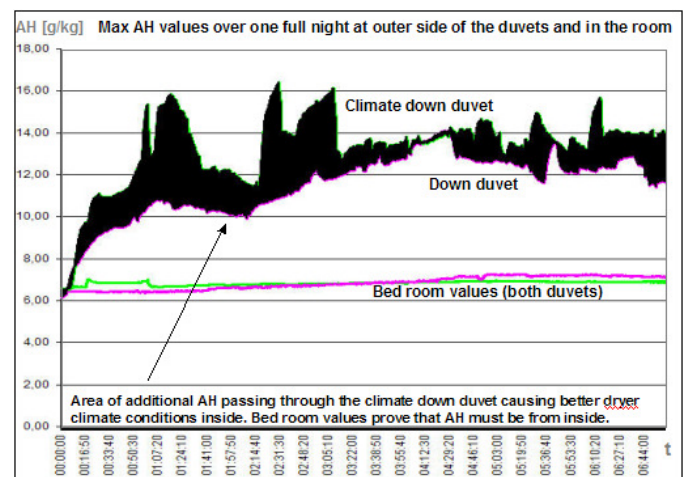


Simultaneously this holdup effect leads to a higher temperature (max. 36,9°C) due to increased heat

capacity of the “captured” humidity. Actually however this very effect follows a cooling attempt (transpiration) of the sleeper which concludes that it cannot be seen as comfortable. Does the duvet balance out the humidity in return it results in a more evenly tempered sleeping den.

In a curve view the max AH of each measured interval at the outer side of the duvets well expresses the more effective climate balance of the climate duvet (comparable down filling). A humidity holdup and in consequence unwanted T-increase does not happen.

In average over night the T-values beneath both duvets in fact only differ marginally (-0,3°C climate duvet). Due to this a heat loss through the climate duvet cannot be seen. Parallel studies with similar objectives clearly indicate to more relaxing sleep.



Advantages of this measurement setup:

- Representative measurement (56 sensors)
- Immediate availability of many sensors
- Live imaging (up to 2 sec intervals)
- Absolute Humidity (T-independent)

Fields of application:

- Bedding products and mattresses
- Climate categorisations
- Car seats
- Climate measurements in various areas

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Detailed report on request.