INSIDE CLIMATE

University for Applied Sciences, Munich - March 20, 2018

Test aids:

To carry the INUTEQ-PAC® biobased PCM elements a solid vest (weight 320 g, 100 % PES) with pockets to carry four PCM elements, two on the back and two on the front side (total weight of 4 blocks 1,76 kg) was used.
This vest (unloaded) was also worn in the test without PCM aids.

UNITECH work wear in atomic plants, regular overall + full protector.

Material:
Overall = (material data requested)
Full protection suit. = (material data requested)
Overall+Fully without cooling aids = noPCM
Overall+Fully with cooling aids = PCM (with 21° C capacity)

COPYRIGHT 2020 INUTEQ®
ALL RIGHTS RESERVED

INSIDE CLIMATE

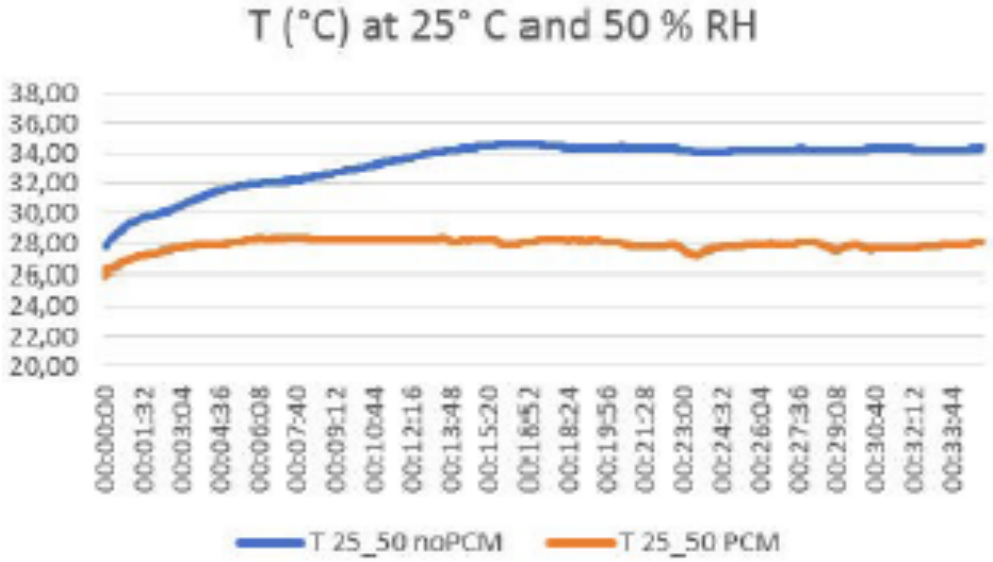
University for Applied Sciences, Munich - March 20, 2018

Overall + Fully setup

Vest carrying PCM blocks

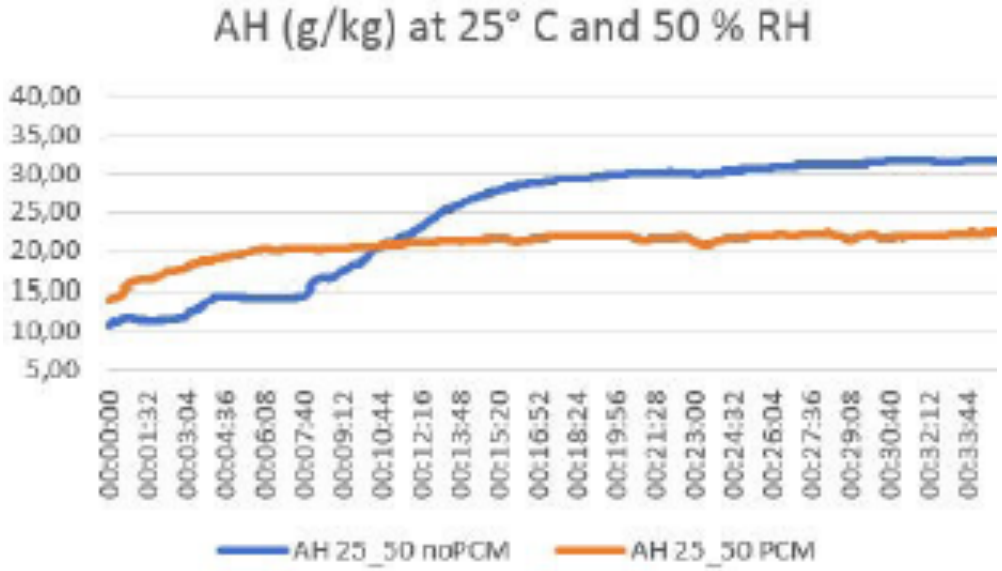
COPYRIGHT 2020 INUTEQ®
ALL RIGHTS RESERVED

Results INUTEQ bio-based PCM 21C tested in full protection suit at 25C - 50% RH



no PCM = 33,37°C

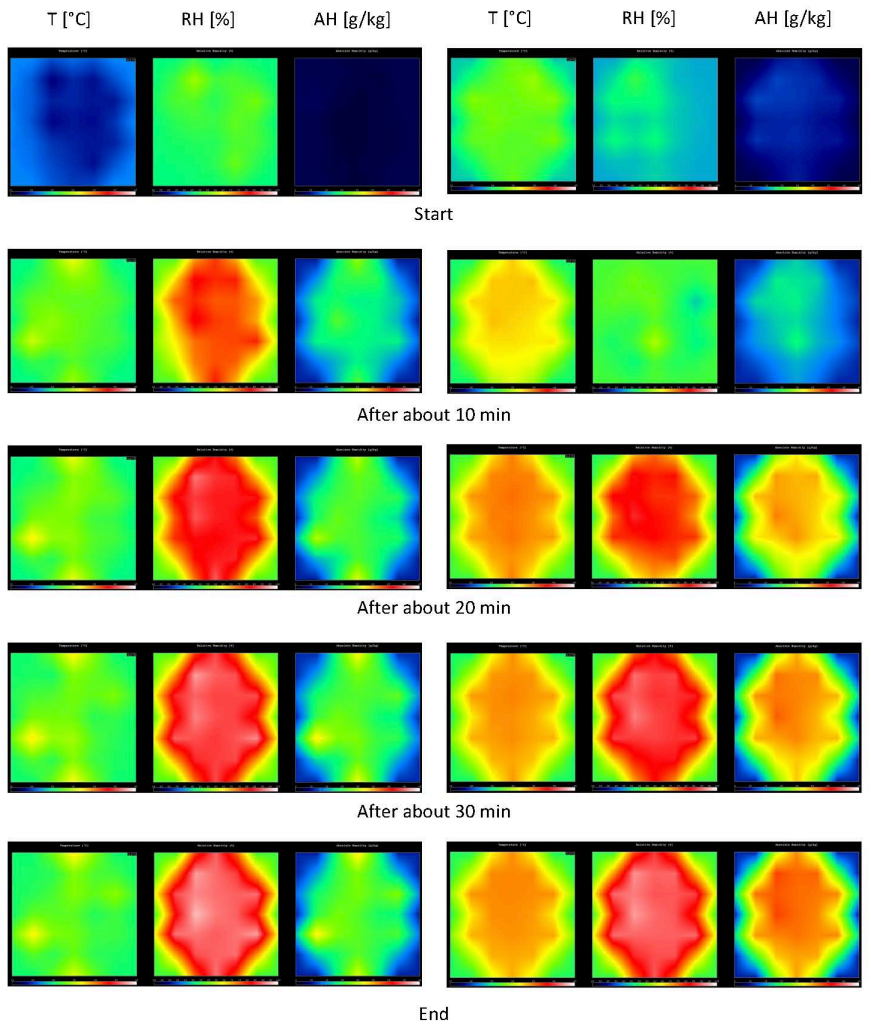
PCM = 27,95°C



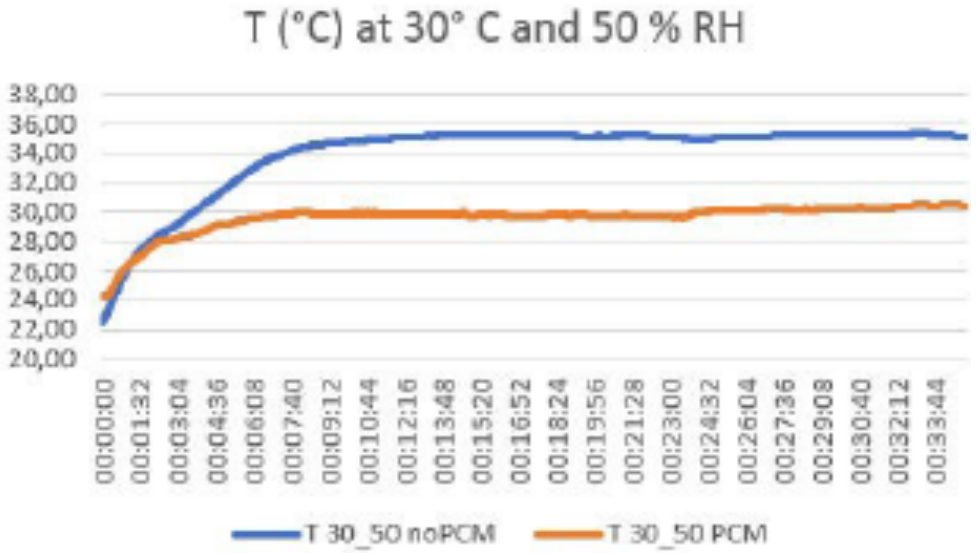
no PCM = 24,77 g/kg

PCM = 20,85 g/kg

Full protection suit at 25° C and 50% RH

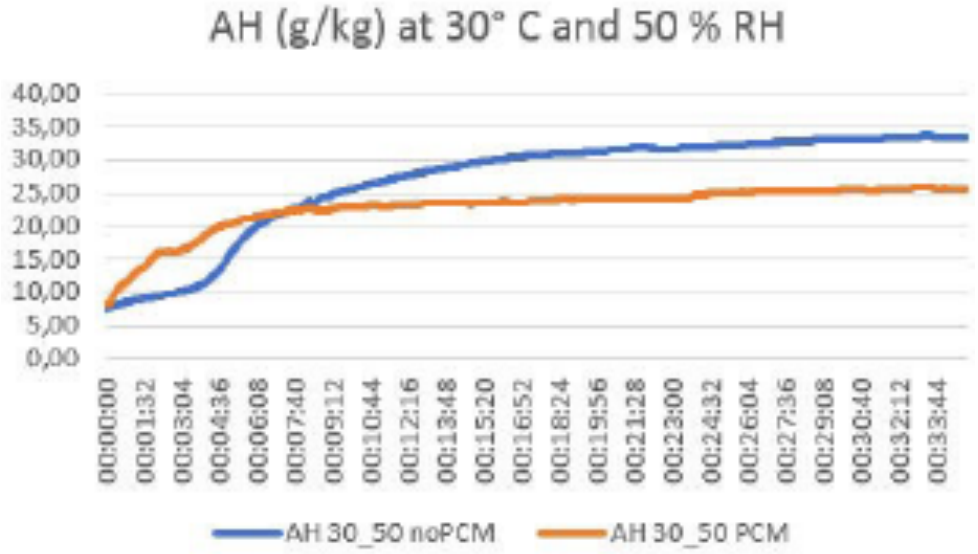


Results INUTEQ bio-based PCM 21C tested in full protection suit at 30C - 50% RH



no PCM = 34,00° C

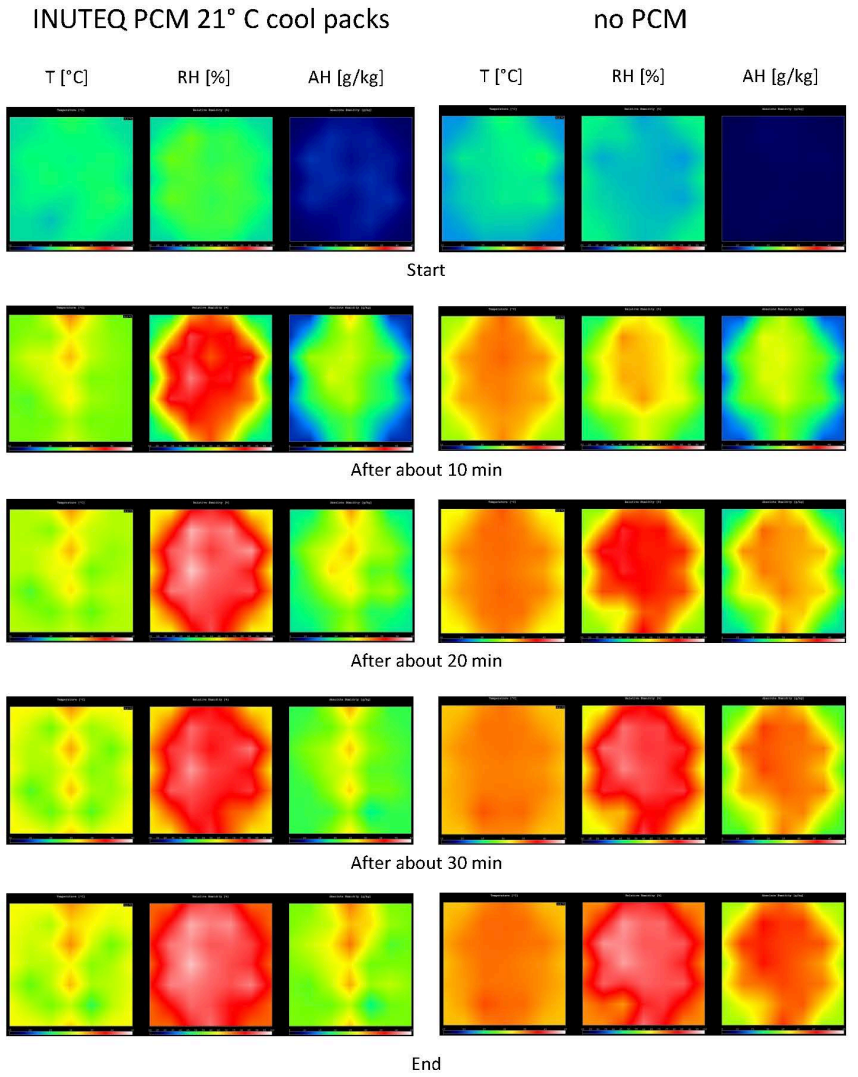
PCM = 29,62° C



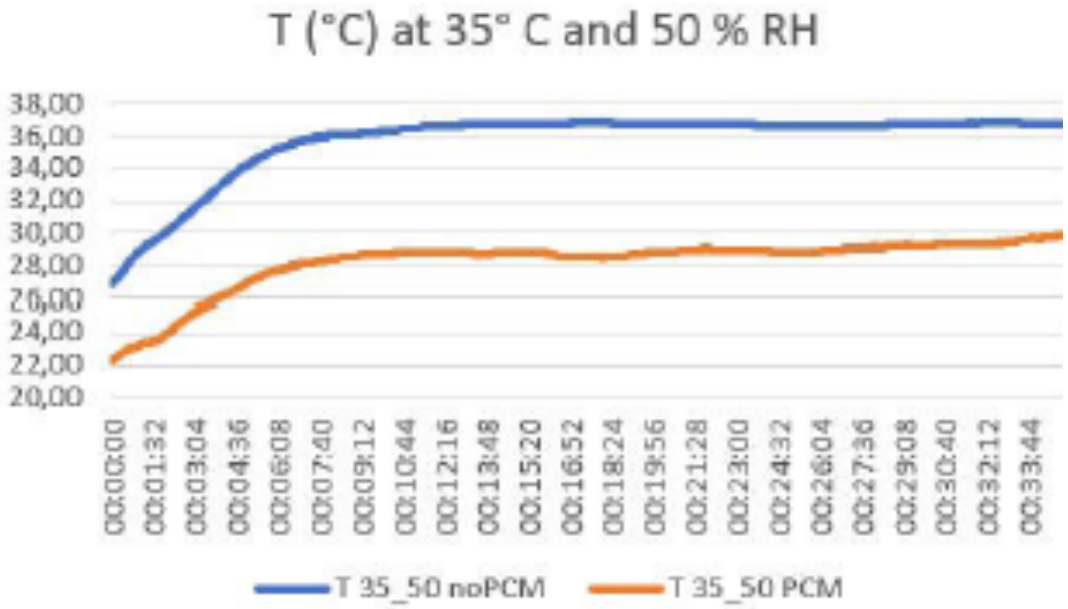
no PCM = 26,89 g/kg

PCM = 22,81 g/kg

Full protection suit at 30° C and 50% RH

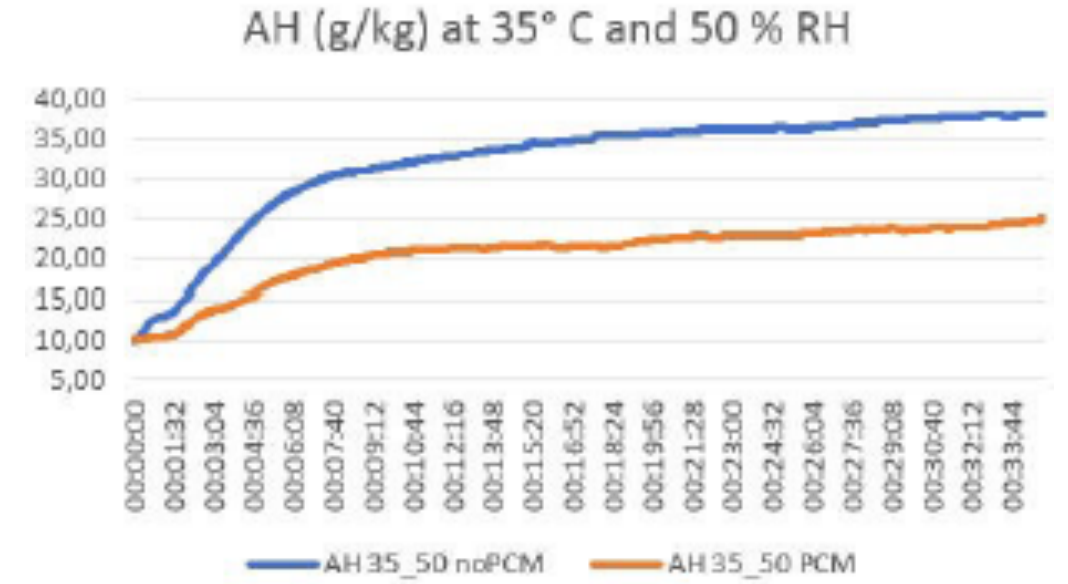


Results INUTEQ bio-based PCM 21C tested in full protection suit at 35C - 50% RH



no PCM = 35,73° C

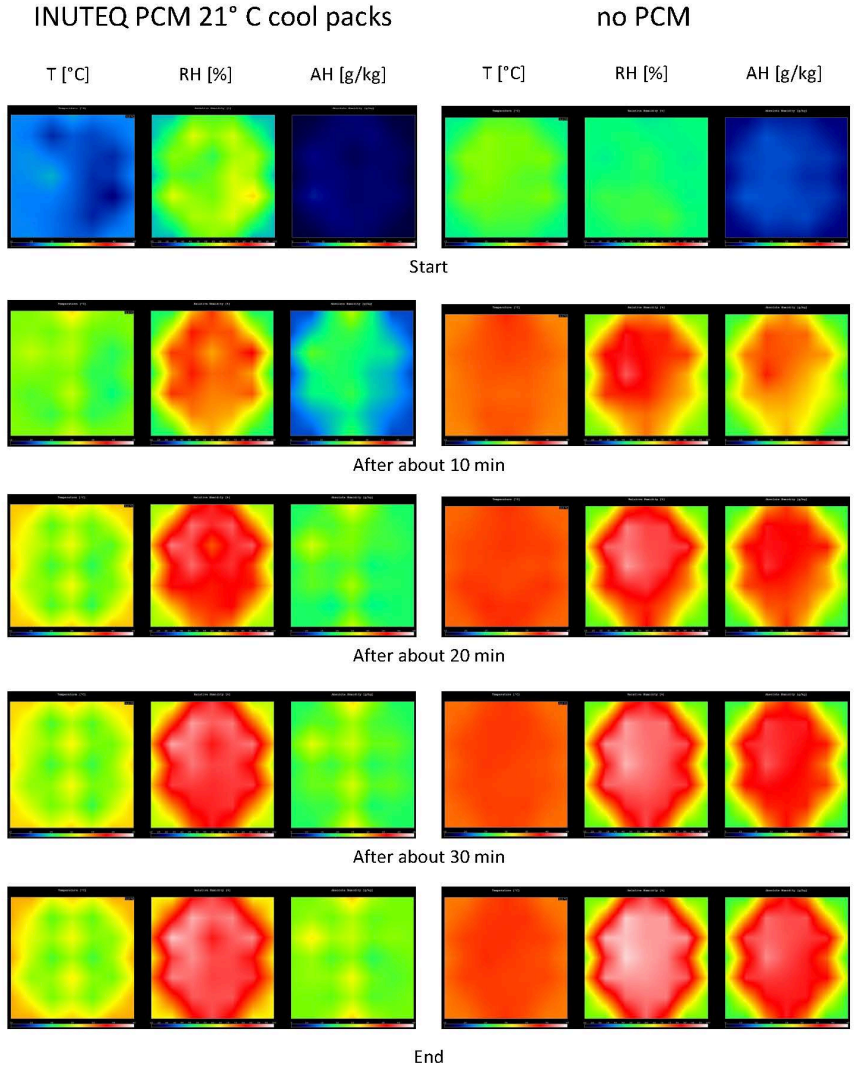
PCM = 28,20° C



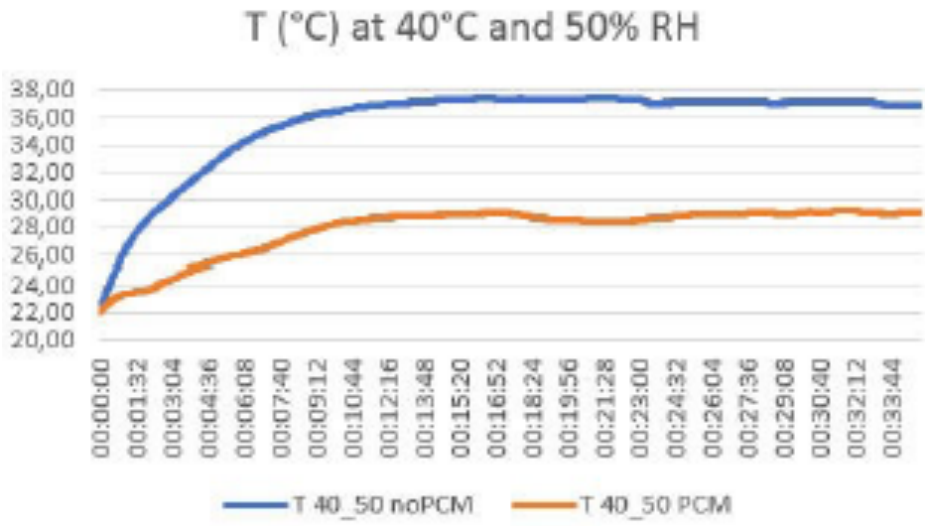
no PCM = 32,32 g/kg

PCM = 20,69g/kg

Full protection suit at 35° C and 50% RH

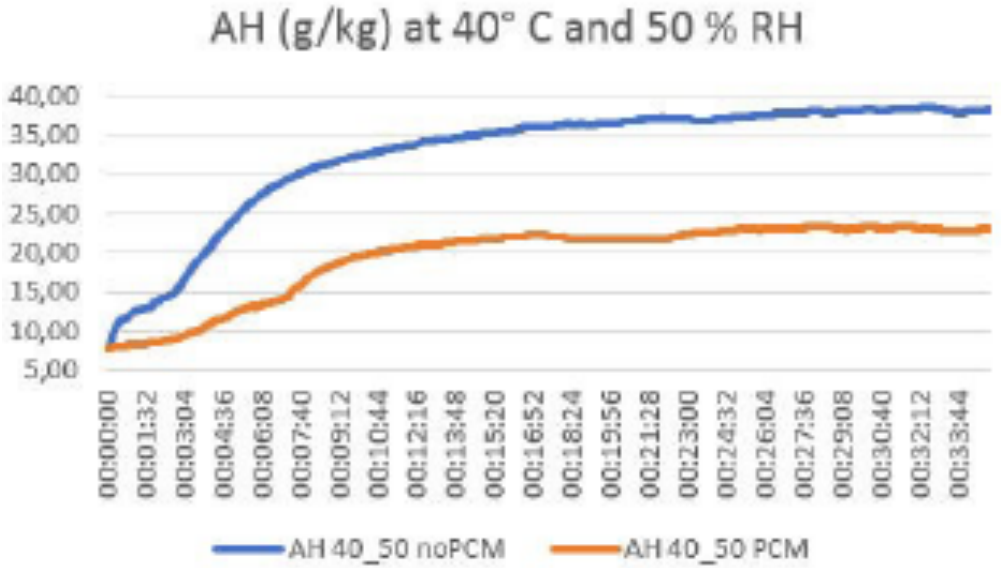


Results INUTEQ bio-based PCM 21C tested in full protection suit at 40C - 50% RH



no PCM = 35,66° C

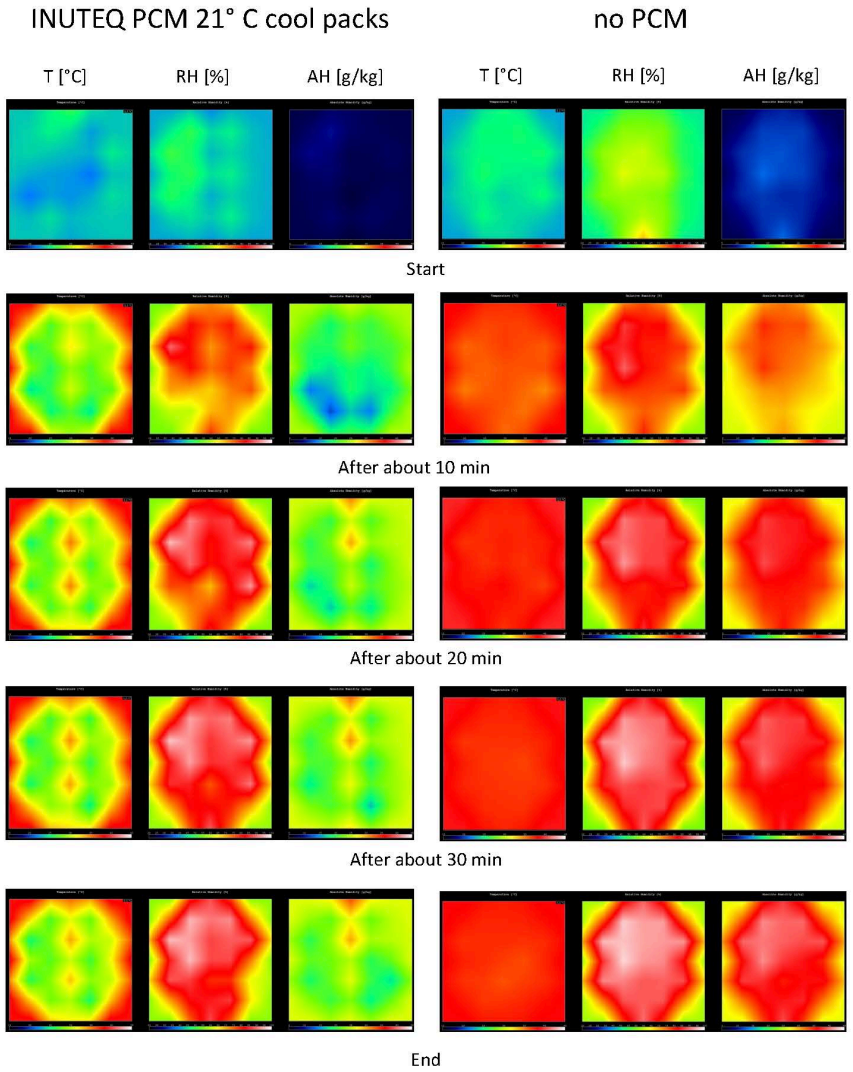
PCM = 27,90° C



no PCM = 32,62 g/kg

PCM = 19,49 g/kg

Full protection suit at 40° C and 50% RH



THG AreaView images overall-fully testing March 2018

Looking at the 4 sheets, the RH does not indicate any difference in neither of the comparisons. The T does of course, it is cooler with the PCM packs. And the AH provides evidence that this cooler T was appreciated by the occupant who could perform the same tasks with less physical burden, hence less sweating, less calories to burn.

With growing ambient heat the cooling PCM effect increased and the sweat burden always remained to stay lower as opposed to “noPCM”. All PCM aided setups were at least considerably better than “noPCM” which under the conditions can be viewed as a clear advantage. At no time the occupant felt cold. The lower heart rates in the PCM setups provide further evidence that less sweating points towards more comfort. Subjectively the occupant reported in all climate conditions that the PCM packs helped to feel cooler and did their job in making the 35 minutes easier to stand. All setups with “noPCM” became “too warm” and worth with increasing climate. The “PCM” aids were reported to have had an increasing “positive” effect with increasing ambient heat. “Positive” in the relative sense that the PCM eased the still difficult conditions.

COPYRIGHT 2020 INUTEQ®
ALL RIGHTS RESERVED