

## Supplementary Information

### Evaluation of the Seasonal Variation of VOC Surface Emissions and Indoor Air Concentrations in a Public Building containing Bio-Based Insulation

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**Tableau S1. Parameters for the Thermal Desorption-Gas Chromatography-Mass Spectrometry/Flame Ionization Detection (TD-GC-MS/FID) analysis**

Apparatus	Method
Thermal Desorber (TD): Perkin Elmer TurboMatrix 650	Tube desorption T = 220 °C
	Tube desorption time = 15 min
	Trap desorption T = 10 to 300 °C with heating ramp = 40 °C s <sup>-1</sup>
	Trap desorption time = 15 min Helium flow rate = 50 mL.min <sup>-1</sup>
Gas Chromatography (GC): Perkin Elmer Clarus 680	Oven program: 35 °C (5 min) heating to 250 °C with heating ramp of 2°C min <sup>-1</sup> , hold at 250 °C for 8 min
	Apolar capillary column (Agilent): 60 m x 0.25 mm x 1 µm
Mass Spectrometry (MS): Perkin Elmer Clarus SQ8T	Electron Ionization (EI): 70 eV 35-250 u
Flame Ionization Detection (FID)	Hydrogen flow rate = 45 mL min <sup>-1</sup> Air flow rate = 450 mL min <sup>-1</sup> Falme T = 250 °C

22 **Tableau S2. Limits of Detection (LOD,  $\mu\text{g m}^{-3}$ ) of some VOCs in TD-GC-MS/FID for 36 L of**  
 23 **sampled air**

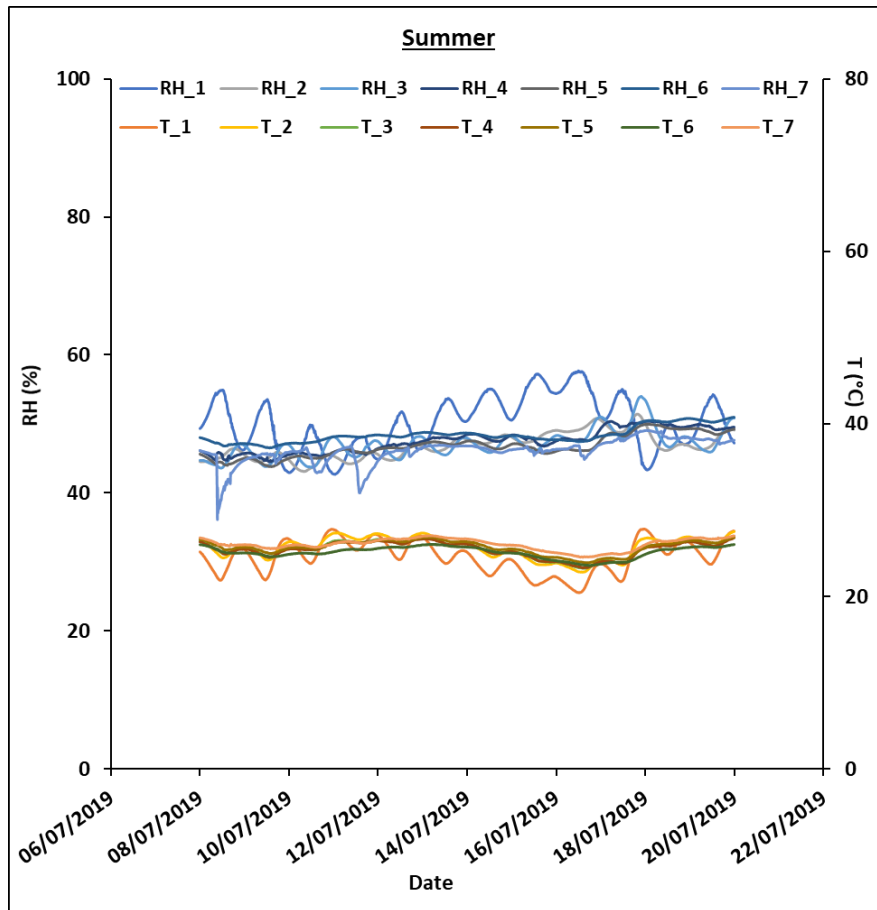
VOC	LOD ( $\mu\text{g m}^{-3}$ )
Toluene	0.002
Ethylbenzene	0.003
Styrene	0.002
m-Xylene	0.002
p-Xylene	0.002
o-Xylene	0.003

24 **Tableau S3. Parameters of the High-Performance Liquid Chromatography Ultraviolet**  
 25 **Spectroscopy (HPLC-UV) analysis**

Component	Condition
Mobile Phase	53% Acetonitrile and 47% Ammonium Acetate
Pump flow rate	0.4 mL min <sup>-1</sup>
Column	Acclaim RSLC Carbonyl (Thermofisher Scientific): 2.2 $\mu\text{m}$ , 2.1x150mm T = 28 °C
Detector	Ultraviolet-violet (UV) Spectroscopy: wavelength = 360 nm

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 28 **Tableau S4. The Limits of Detection (LOD,  $\mu\text{g m}^{-3}$ ) of the VOCs analysed by HPLC-UV for 36 L**  
 29 **sampled air**

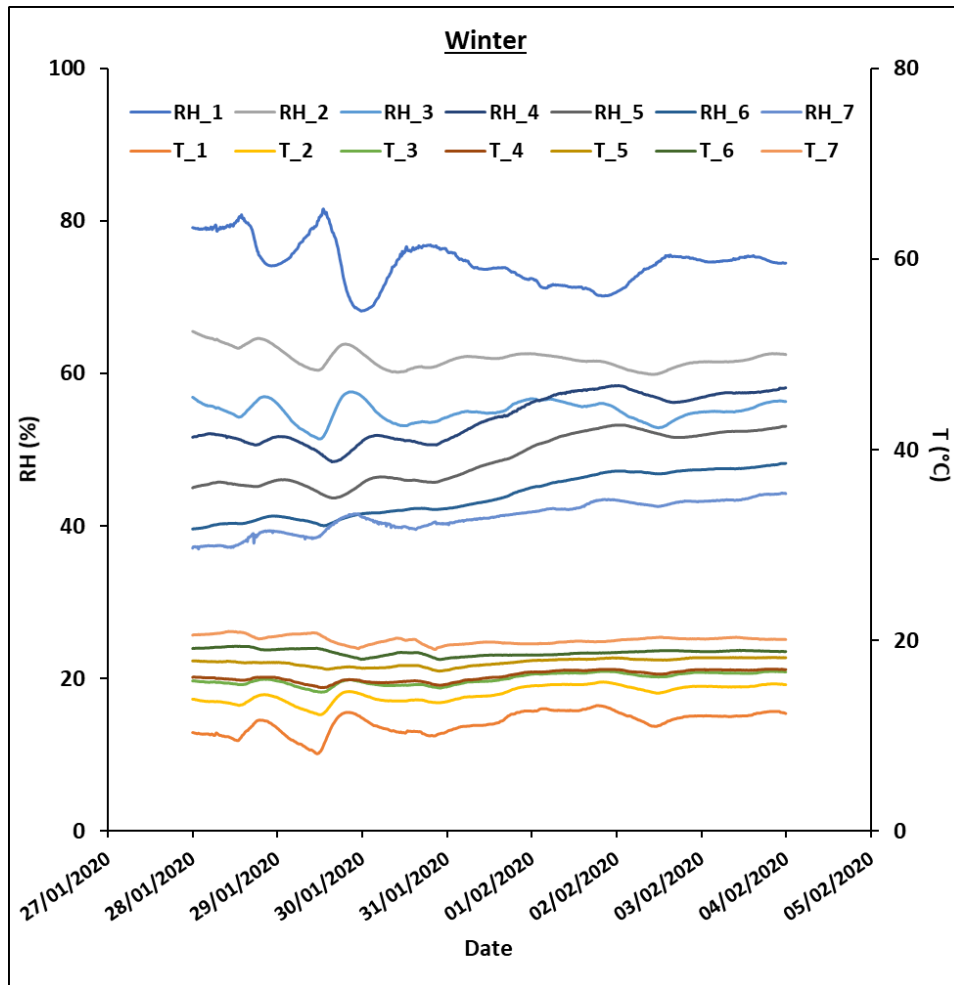
VOC	LOD ( $\mu\text{g m}^{-3}$ )
Formaldehyde	0.2
Acetaldehyde	0.3
Propanone	0.3
Acrolein	0.2
Propanal	0.3
Butanal	0.3
Crotanaldehyde	0.3
Benzaldehyde	0.4
Pentanal	0.3
Isopentanal	0.3
Tolualdehyde (o-, m-, p-)	0.3
Methylpropenal	0.3
Methyl Vinyl Ketone	0.3
Methyl Ethyl Ketone	0.3
Glyoxal	0.3
Methylglyoxal	0.3
Hexanal	0.3
2,5-Dimethylbenzaldehyde	0.3



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32 **Figure S1. Temperature (lower curves, right axis) and relative humidity (upper curves, left**  
 33 **axis) within the wall oriented Southeast (SE) during the summer campaign. The sensors are**  
 34 **placed within the wall in order from 1 (exterior) to 7 (inside the wedding hall) , as shown**  
 35 **figure 2 in the main text.**

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38 **Figure S2. Temperature (lower curves, right axis) and relative humidity (upper curves, left**  
 39 **axis) within the wall oriented Southeast (SE) during the winter campaign. The sensors are**  
 40 **placed within the wall in order from 1 (exterior) to 7 (inside the wedding hall), as shown**  
 41 **figure 2 in the main text.**

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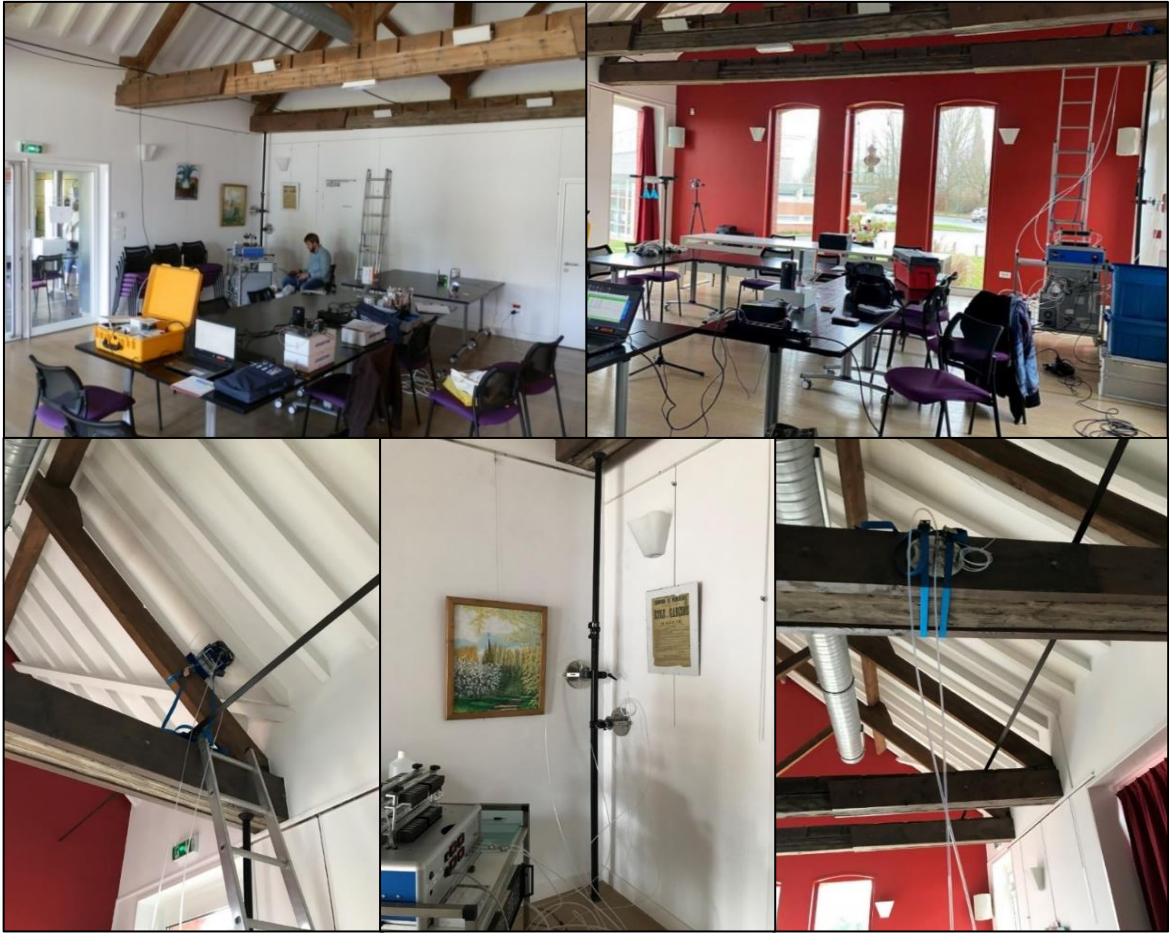
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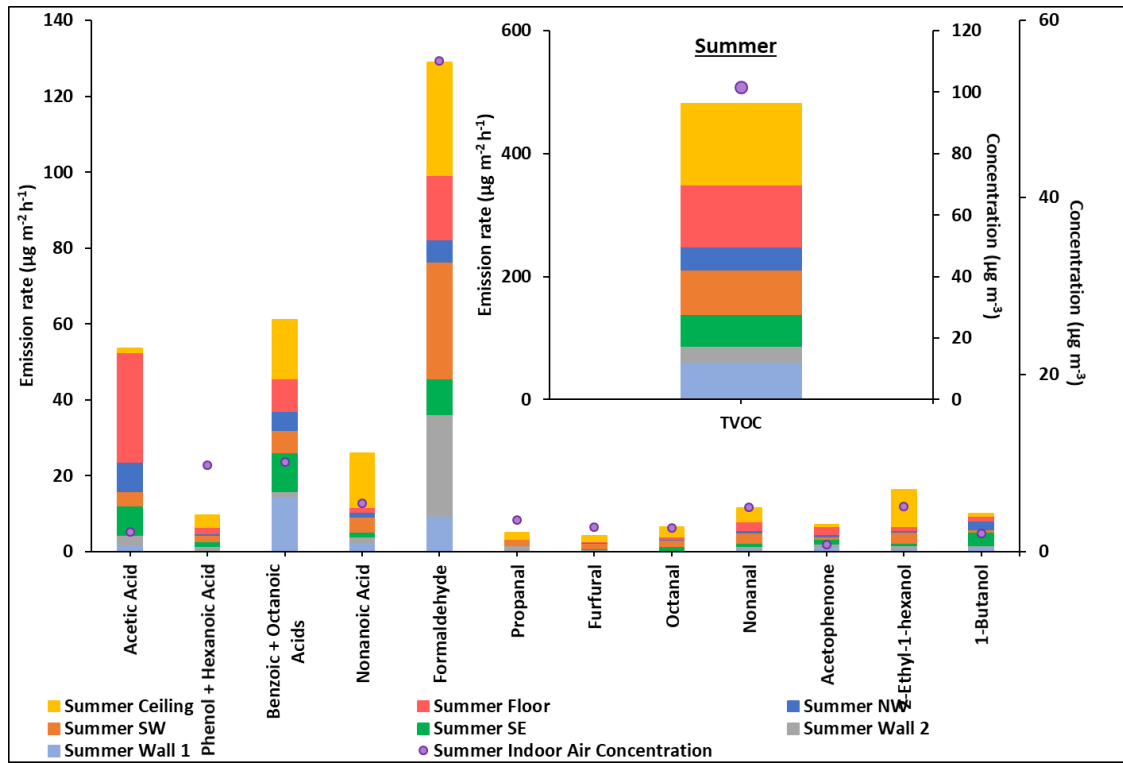
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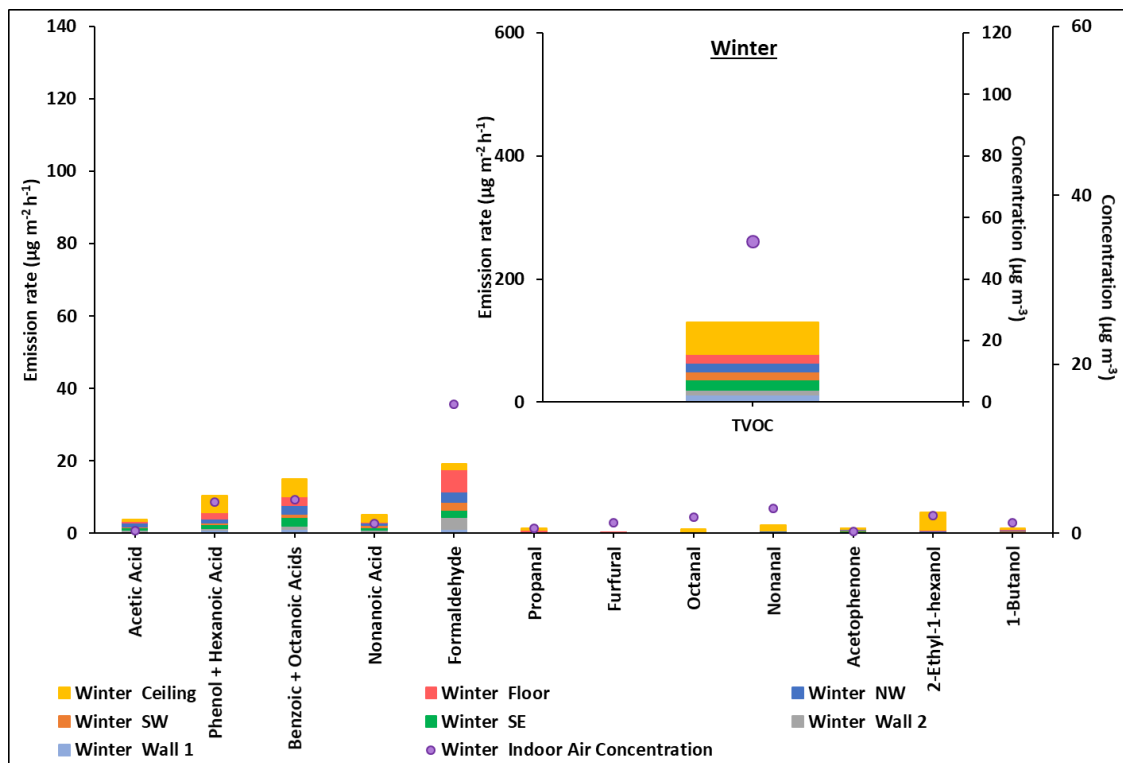


**Figure S3. Photos of the wedding hall and the FLEC installed on some surfaces (ceiling, walls, and beam) taking on-site during the conducted campaigns**

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79 **Figure S4. The indoor air concentration of the major VOCs quantified in indoor air (•, right**  
 80 **y-axis) and the corresponding emission rates (histograms, left y-axis) during summer and**  
 81 **winter. The different colors indicate the different surfaces.**