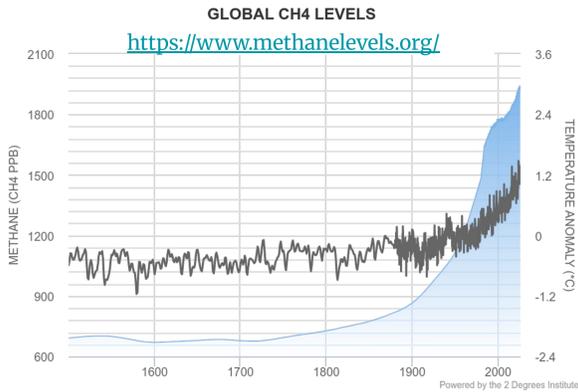


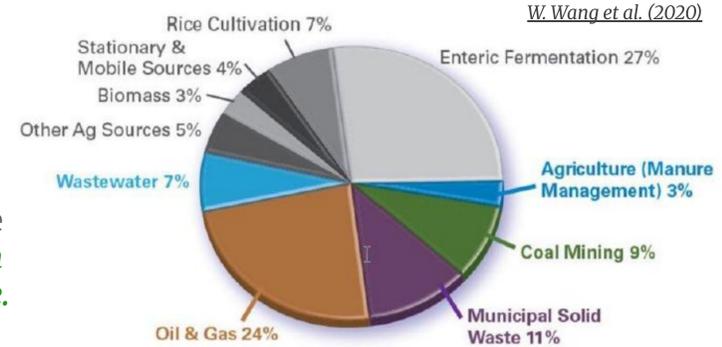
# CH4rLiE: Turning Detector Tech into Climate Action

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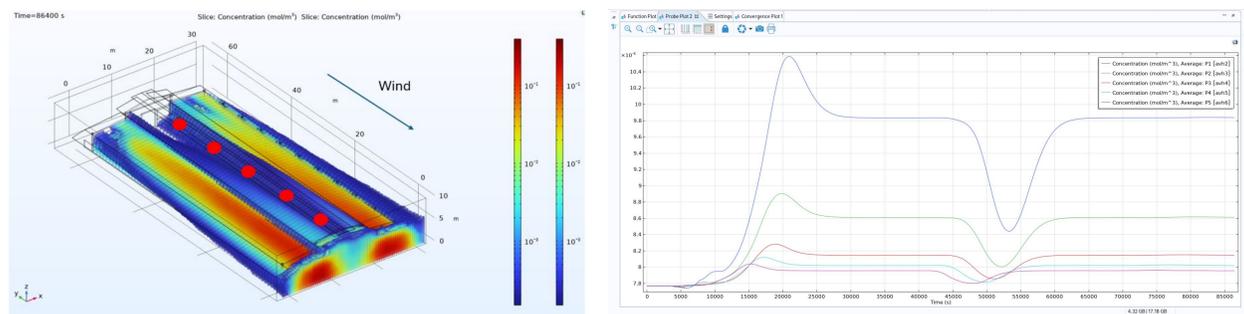
CH<sub>4</sub> is a high-impact greenhouse gas, with a Global Warming Potential over 100 years 28 times higher than CO<sub>2</sub>.

Among anthropogenic CH<sub>4</sub> sources, cattle enteric fermentation plays a relevant role: *in Italy, 32% of emitted CH<sub>4</sub> comes from agriculture.*

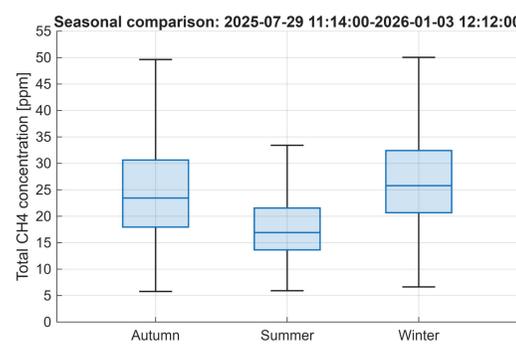
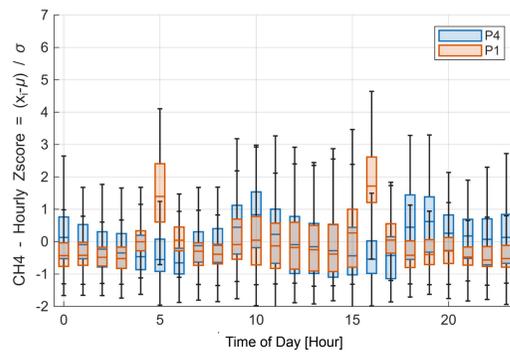
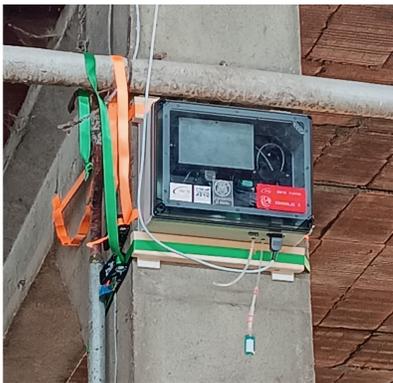


CH4rLiE<sup>1</sup>: CH<sub>4</sub> Livestock Emission project proposes to act on the methane already produced and diffused in the air, using a recovery system initially designed at CERN<sup>2</sup> to extract CF<sub>4</sub> and other components from gaseous detectors exhausted gas mixture.

1 Characterization of barn environment



COMSOL simulations are used to reproduce methane diffusion in the barn atmosphere



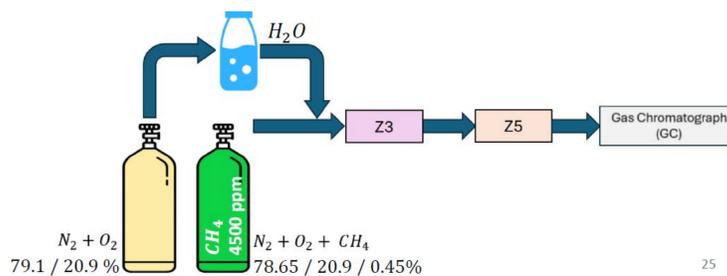
In collaboration with DISAFA  
UniTO & INFN TO

Custom monitoring stations are designed, developed and installed in the barn to monitor 24/7 CH<sub>4</sub> concentration and environmental parameters

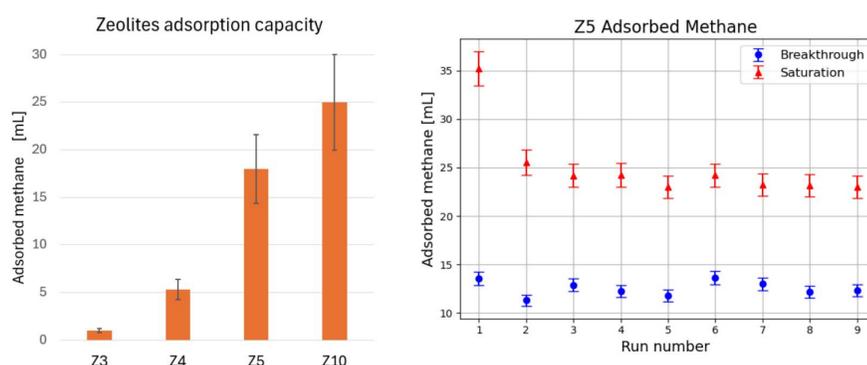
2 Optimization of CH<sub>4</sub> adsorbent

Adsorption tests are carried out with commercial zeolites and new materials to identify best adsorbent

In collaboration with Chemistry Dept. @UniPV & CERN EP-DT Group



A capture prototype is designed and tested in laboratory



In collaboration with CERN EP-DT Group

Strong contribution by INFN & DIP electronic and mechanical workshops



What to know more about CH4rLiE?

