



ADAPTIVE SMART (NATURAL) VENTILATION CONTROL FOR CATTLE HOUSING AND INTEGRATED CLIMATE SENSING

Natural ventilation is an increasingly popular approach to offer a good indoor climate without any aid of mechanical technology. Comparing with the mechanical ventilation, it has a very significant advantage of energy saving. However, the obvious defects such as the absence in the precise control of the air movement, the vulnerability to the persistent severe situation and the lack of adaptability restrict the natural ventilation receiving a much wider range of popularization. Therefore, innovative design and control are needed to improve its performance to ensure optimal indoor climate.

To achieve this goal, the knowledge on animal heat loss and thermal well-being influenced by air temperature, speed, radiation and evaporation effects in the room space is crucial.

The aim of this project is to develop an adaptive smart (natural) ventilated barn for cattle. The investigation of an integrated climate sensing methods and precision zone ventilation techniques will be conducted. Both experiment and numerical simulation methods will be applied in the project.

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