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**Correlations between CO₂ and Steam concentrations
Measured in 60 Occupied Housing Units**

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Within the framework of demonstration and industrial pilot projects in the energy sector supported by the Commission of the European Economic Communities, an important experiment has been dedicated to the HYGRO-ADJUSTABLE NATURAL VENTILATION (Contrat EE/166/87/FR).

The experiment took place on three sites :

Les ULIS (France), NAMUR (Belgium) and SCHIEDAM (the Netherlands).

A comparison has been made for each site between the ventilation flow rates and the quality of air in ten housing units fitted with hygro-adjustable natural ventilation equipment and ten equivalent housing units fitted with passive ventilation systems.

The flow rate of air discharged and the rise in CO₂ and steam concentrations internally emitted are known for each service room of a housing unit, namely the kitchen, bathroom or the lavatory. We deduct the amount of CO₂ and steam generated internally which are discharged through the ventilation ducts of service rooms.

The housing units involved being equipped with air intakes in the living rooms and air exits on the ventilation ducts in the service rooms, it is possible to deduce from information collected in service room, interesting information regarding the changes in CO₂ and steam flow rates in the living rooms.

Thus, when the wind is very low and the air change mainly ensured by the thermal draft ducts, the correlation's between the rise in CO₂ and steam contents at night in "blind" lavatories are a fairly good representation of the correlations in rooms occupied where the pollutants are generated;

Under the same conditions, the overall CO₂ flow rate internally generated and discharged from the service rooms enable the overall amounts of CO₂ generated in the living rooms to be assessed.

A comparison between the average correlations existing between the rise CO₂ and steam concentration in the three categories of service rooms, namely kitchens, bathrooms and lavatories enables the particular nature of their respective needs to be best known. We can note in particular that the growth in the CO₂ rate in the lavatories which only depends on that existing in the living rooms always comes concurrently with a proportional growth in the steam concentration whereas, in bathrooms and kitchens, though this relation exists during current periods of time, it becomes entirely different when particular activities (cooking, bath, clothes drying and so on) take place.

Lastly, comparative analyses of variations in CO₂ and steam rates enable the effects of water absorption by the materials to be assessed and best taken into account to evaluate the efficiency of Hygro-adjustable Natural Ventilation processes.

The correlations made between variations in CO₂ and steam rates for hygro-adjustable natural ventilation or passive ventilation systems are comparable ; they do not seem to be contingent upon the ventilation mode and can certainly be used in mechanical processes.