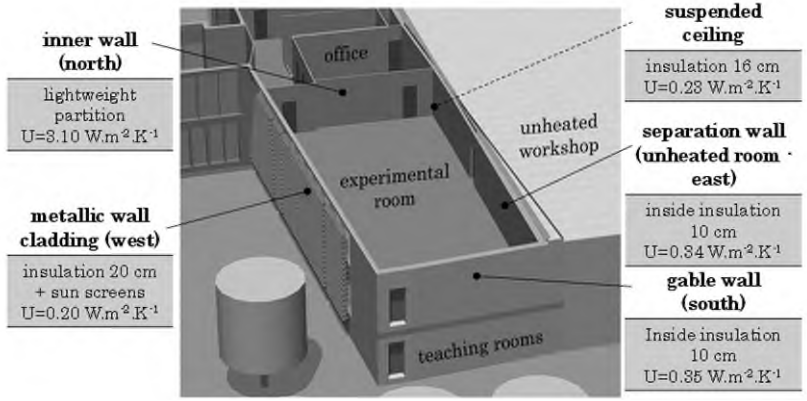
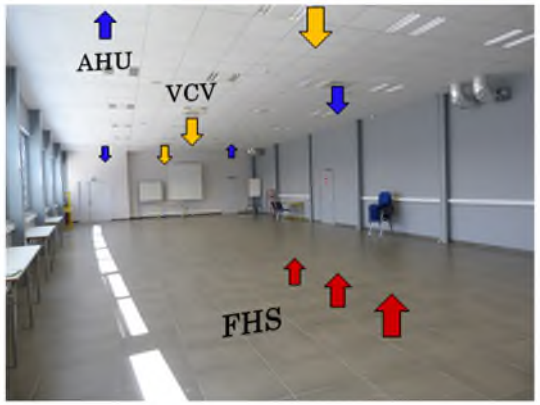
ENVELOPE AND SYSTEMS MODELLING USING MODELICA FOR THE BORDEAUX DEMO CASE

INTERNAL TRAINING/WORKSHOP WP2/WP5

DESCRIPTION OF THE NUMERICAL MODEL IN THE DYMOLA/MODELICA ENVIRONMENT

GOAL AND STEPS





OBJECTIVE ➔ to have a model to:

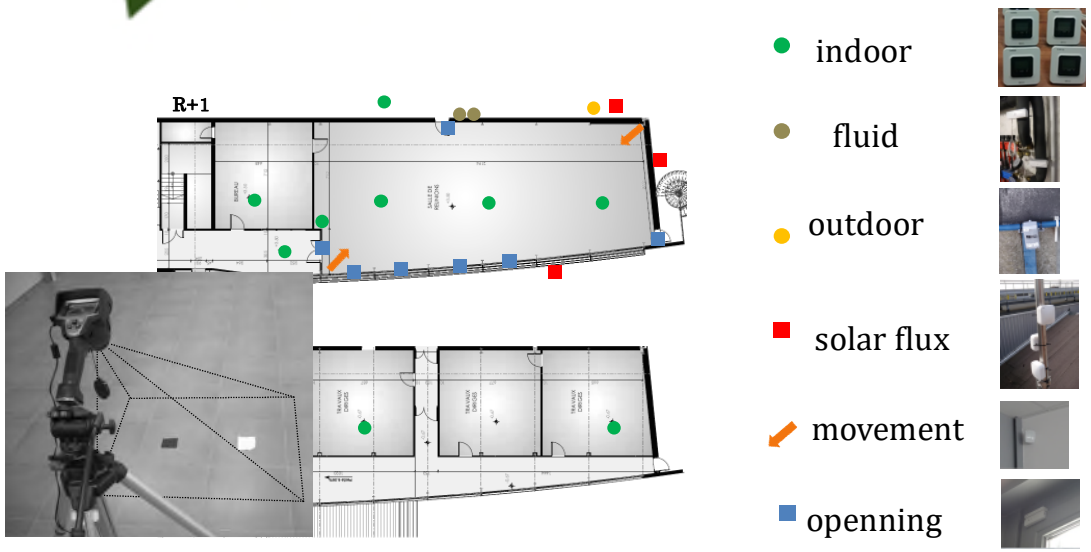
- perform tests during the design phase of the GEOFIT EGS/GSHP + help for equipment sizing;
- estimate and follow the behaviour/gains obtained after retrofit
- check the impact on energy consumption and thermal comfort after GEOFIT EGS/GSHP implementation;
- adjust piloting rules, test for advanced control strategies.

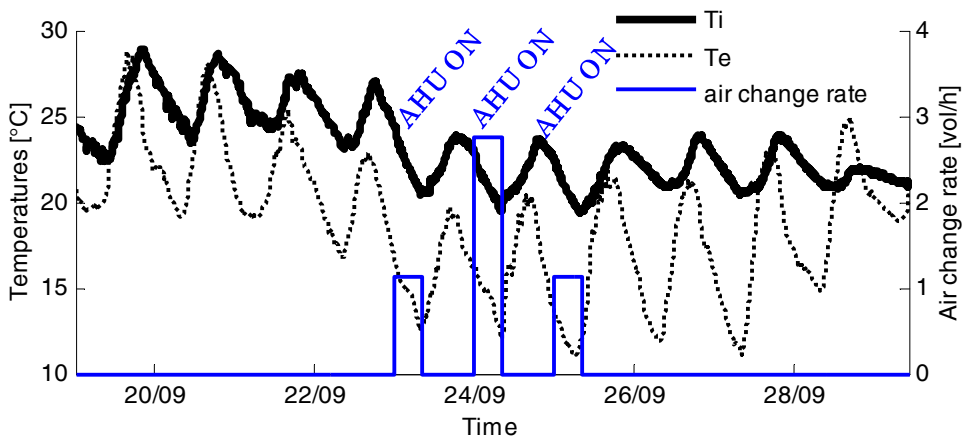
STEPS ➔

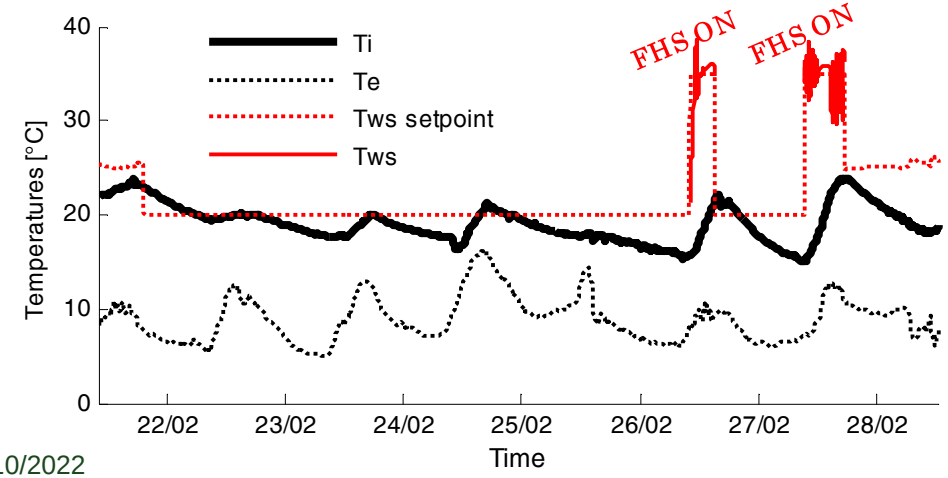
- have a model of the existing state
- calibrate it with measurements
- modify the model by replacing the existing energy production part (boiler) by EGS/GSHP

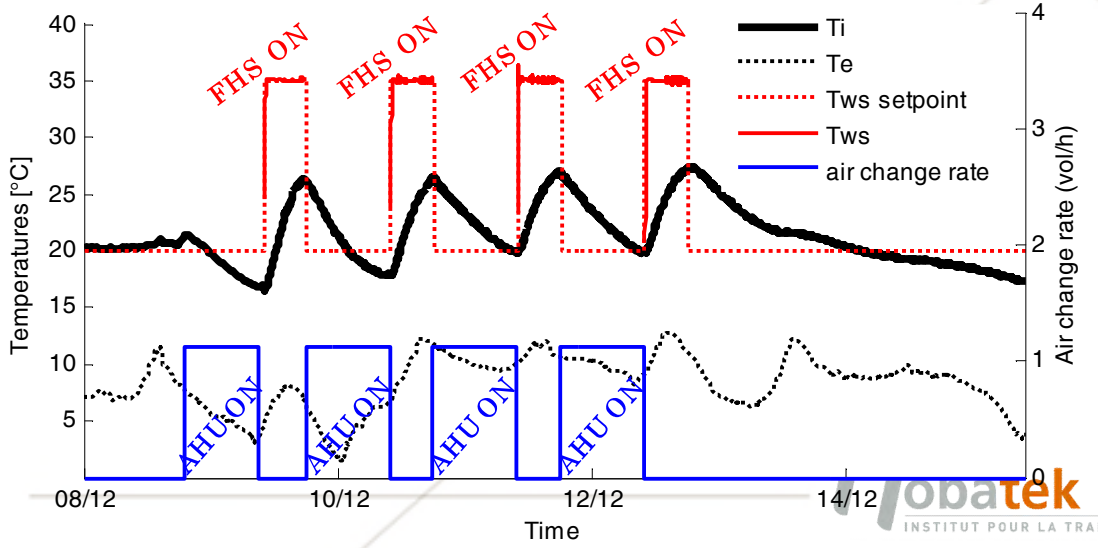
DESCRIPTION OF THE NUMERICAL MODEL IN THE DYMOLA/MODELICA ENVIRONMENT

MEASUREMENT SERIES FOR MODEL IDENTIFICATION



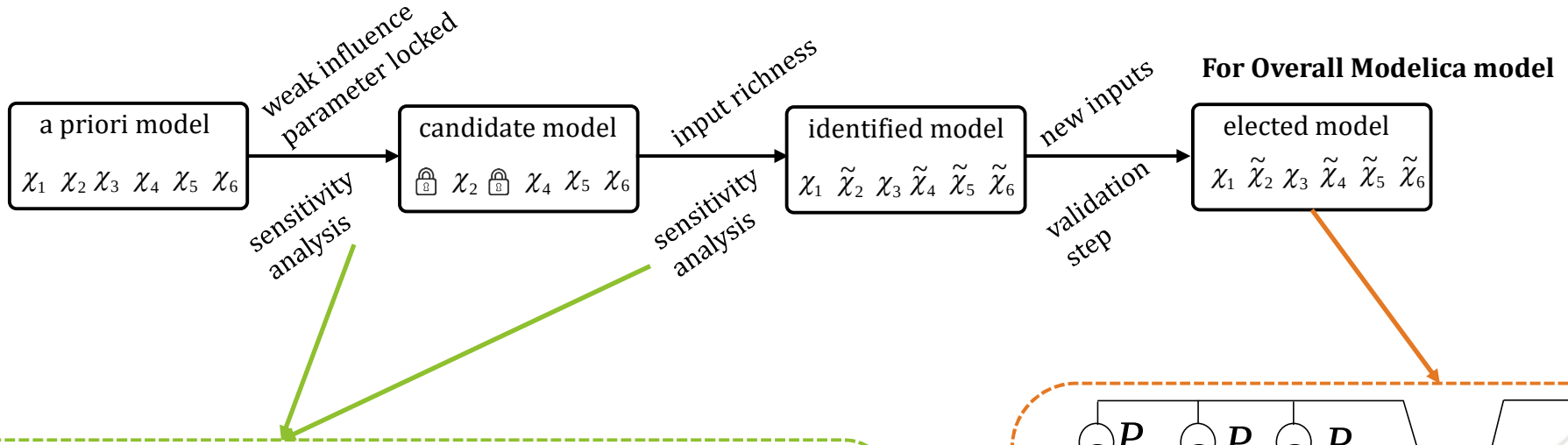


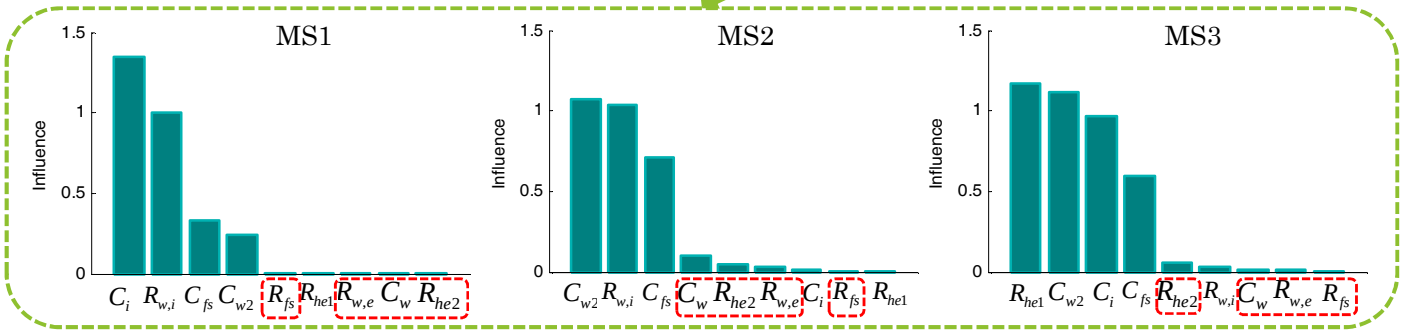


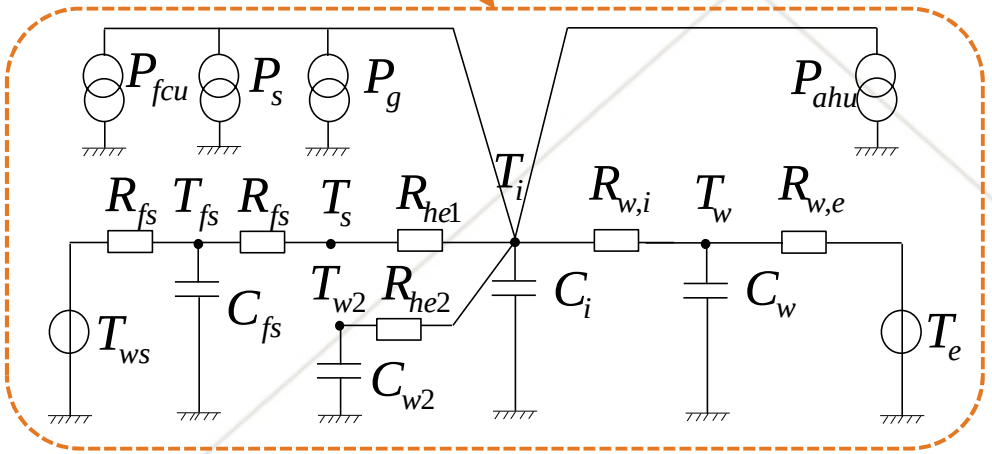


DESCRIPTION OF THE NUMERICAL MODEL IN THE DYMOLA/MODELICA ENVIRONMENT

CALIBRATED MODEL OF THE EXISTING STATE (ENVELOPE ONLY)

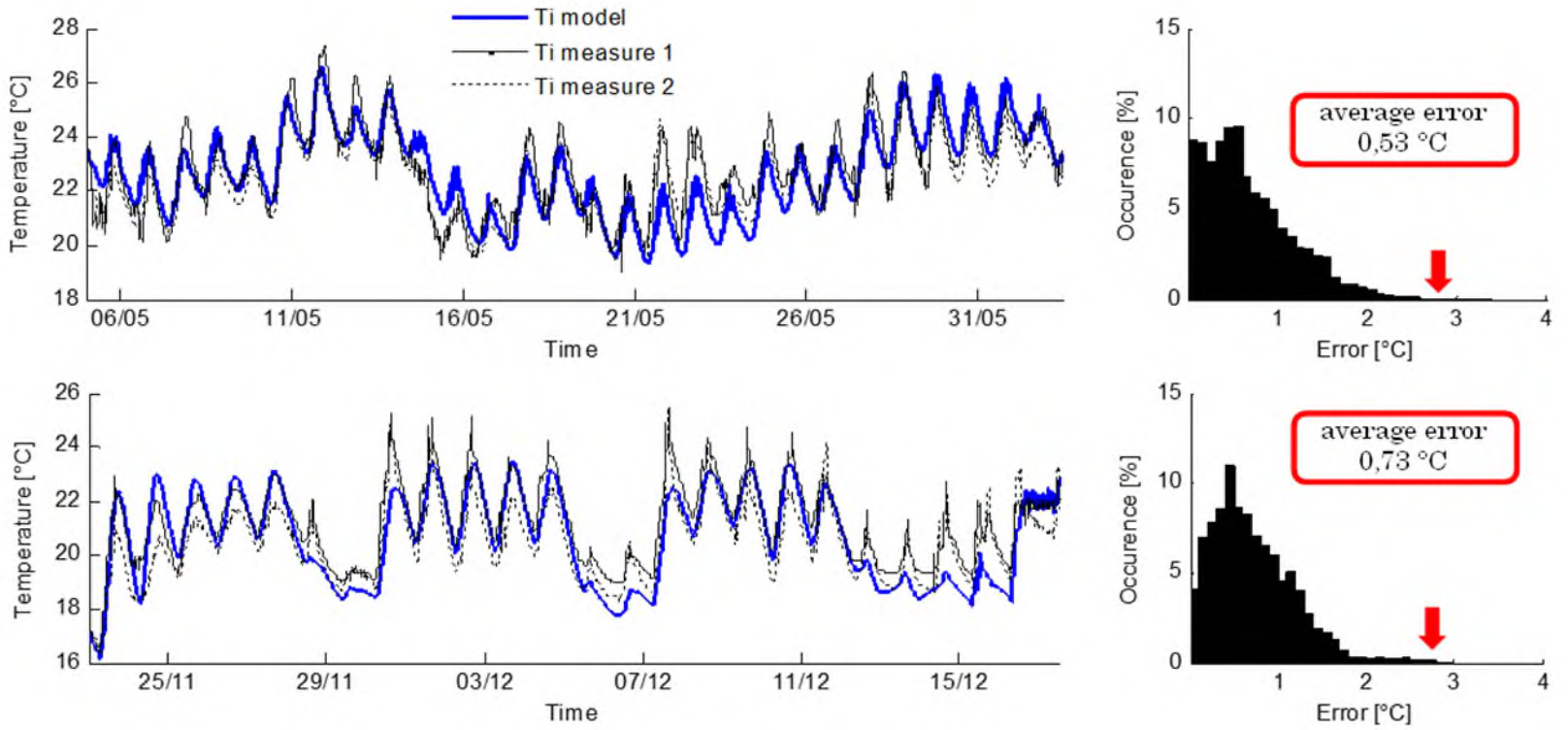






EXPERIMENTAL VALIDATION AND KPIS

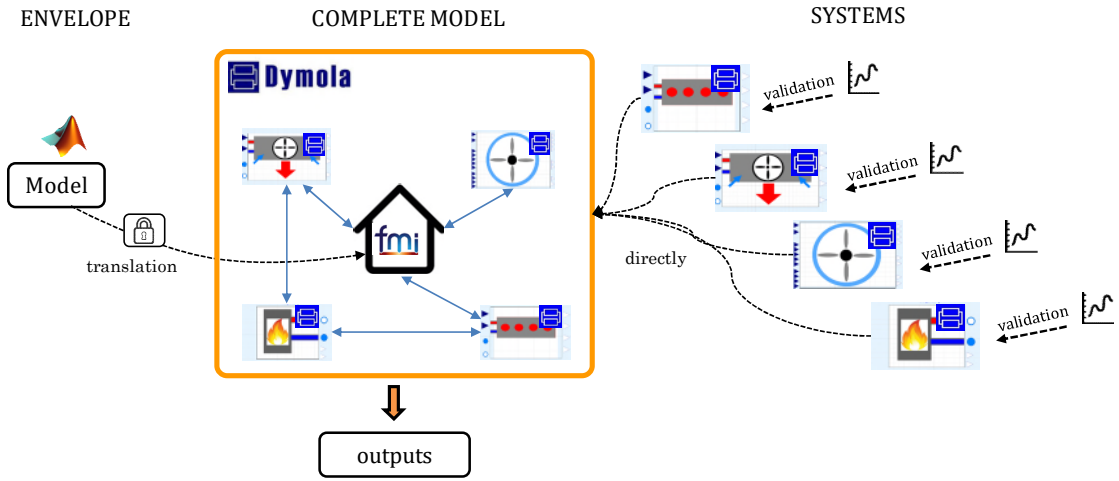
CALIBRATED MODEL OF THE EXISTING STATE (ENVELOPE ONLY) + VALIDATION

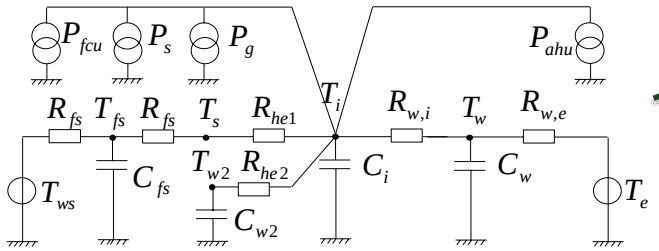


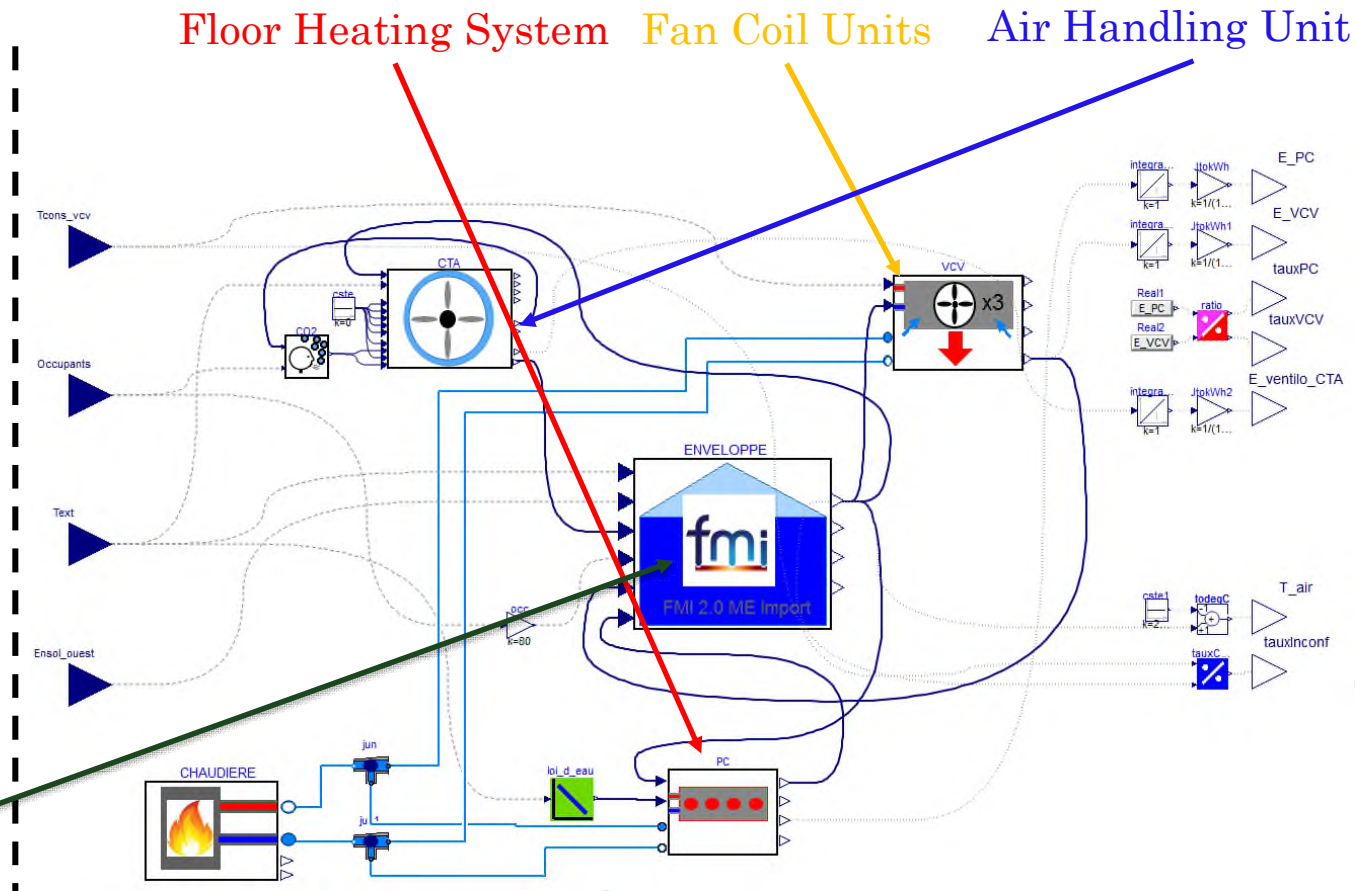
EXPERIMENTAL VALIDATION AND KPIS

ADD SYSTEMS WITH MODELICA COMPONED-ORIENTED APPROACH

- MODELICA oriented approach
- Model of the existing building (without EGS/GSHP)
- Calibration work with measurment series
- RC network for the building envelope

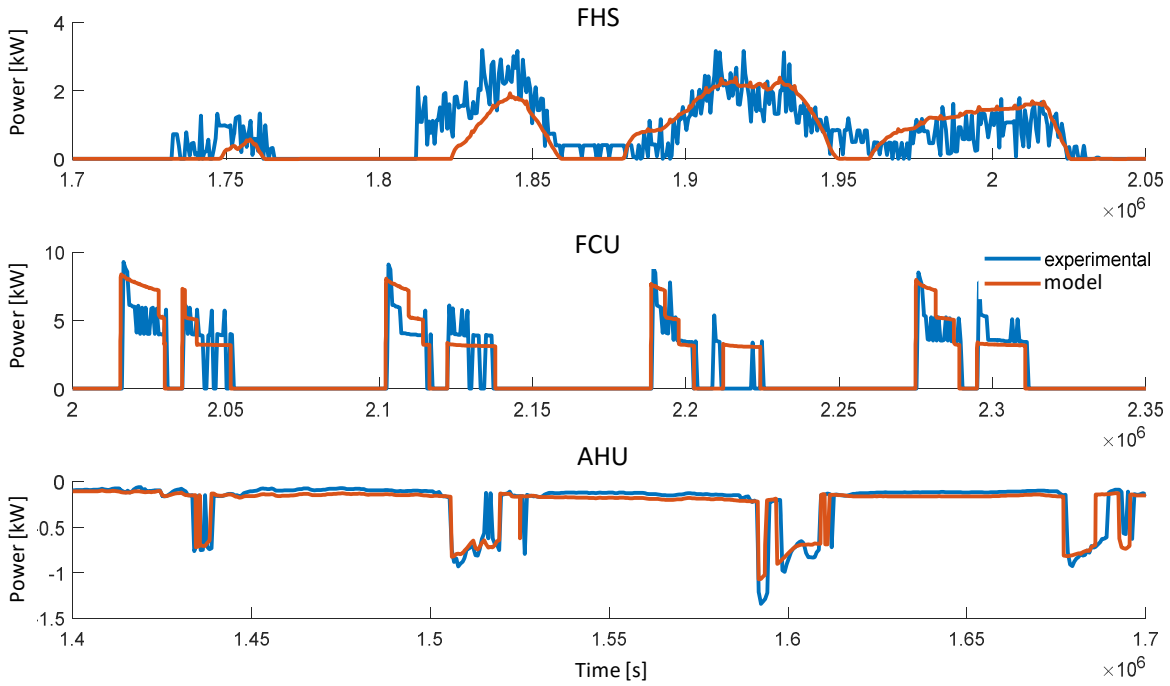


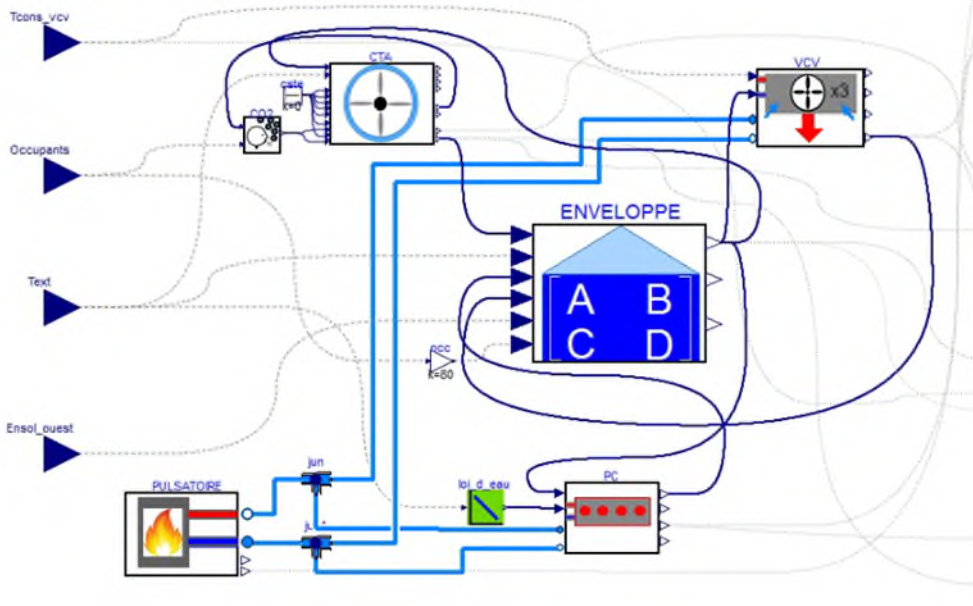




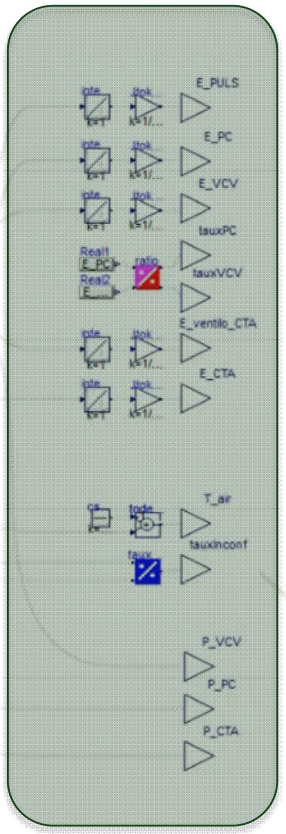
EXPERIMENTAL VALIDATION AND KPIS

ADD SYSTEMS WITH MODELICA COMPONED-ORIENTED APPROACH



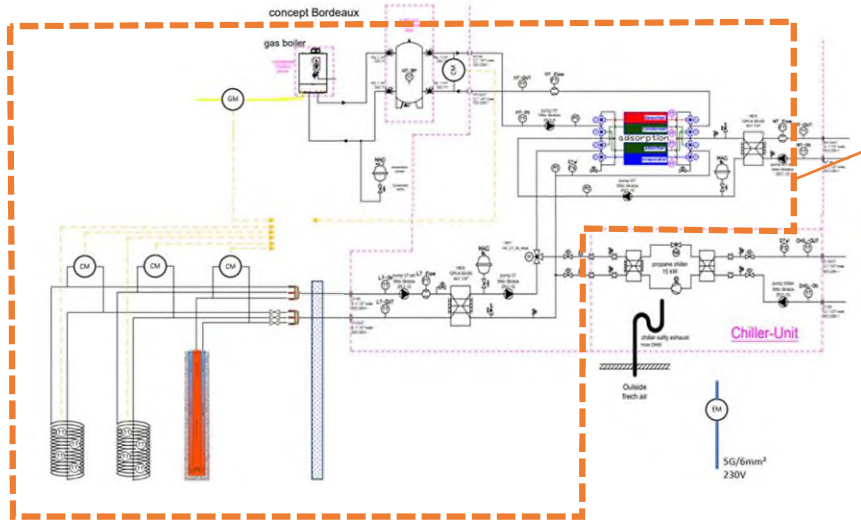


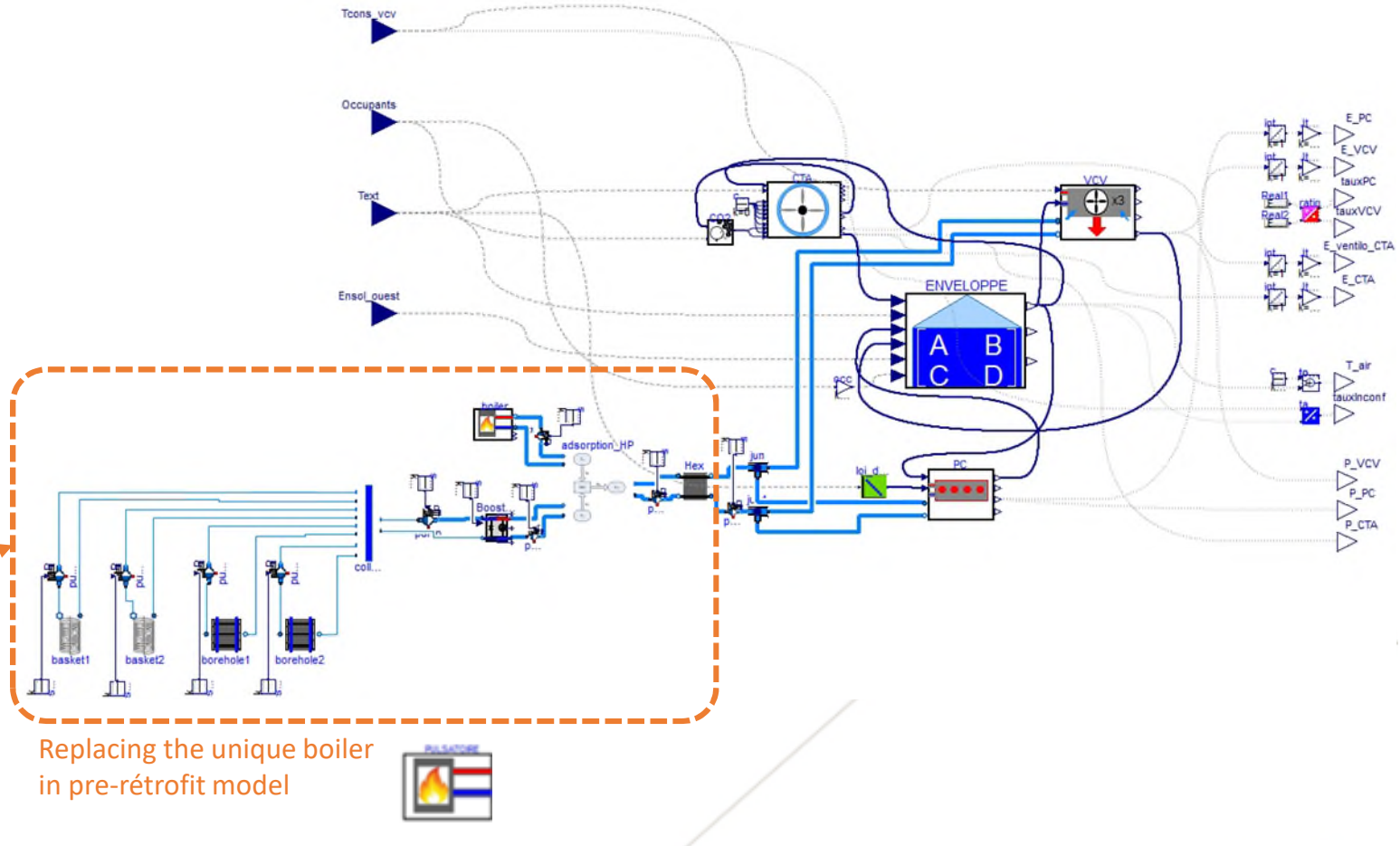
Indicators



EXPERIMENTAL VALIDATION AND KPIS

ADD SYSTEMS WITH MODELICA COMPONED-ORIENTED APPROACH





Replacing the unique boiler in pre-rétrofit model

Open discussions