EMPIRICAL MODEL VALIDATION

Based On Existing Control System Signals
IBPSA Nordic Q3, 2013
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TESTING, VERIFYING, & VALIDATING

- Analytic
- Empirical
- Comparative

IEA & ASHRAE Task 34/Annex 43
EMPIRICAL VALIDATION
FIFTY SHADES OF GREY!

KISTA ENTRÉ
DOUBLE SKIN FACADE
CALIBRATED SIMULATION APPROACH
IDA ICE

DRIVING DATA

Dry Bulb Temperature

Approximation

Sensor Data
Weather Data

01:00 08:00 11:00 14:00 17:00 20:00 23:00
Time

-2 0 2 4 6 8 10
Temperature DegC

01:00 08:00 11:00 14:00 17:00 20:00 23:00
Time

-2 0 2 4 6 8 10
Temperature DegC

Approximation

na spine
na std
na approx
DRIVING DATA

Carpet plots of dry bulb temperature for different locations on the building

RESULTS

Level 4

Cross correlation between measured DBT and simulated for level 4

Overlay plot of measured DBT and simulated DBT for level 4
RESULTS

Level 11

Cross correlation between measured DBT and simulated for level 11

Overlay plot of measured DBT and simulated DBT for level 11

ANALYSIS

Periodogram of DBT in level 4

Cross wavelet diagram between measured DBT and simulated DBT in level 4
ANALYSIS

An overlay of Cross wavelet diagram and coherence wavelet diagram between measured DBT and simulated DBT in level 4.

Thank you!

Any Questions?