FLEXINet

Multi-carrier coupling and system aggregation

Joel Alpízar-Castillo

TUDelft
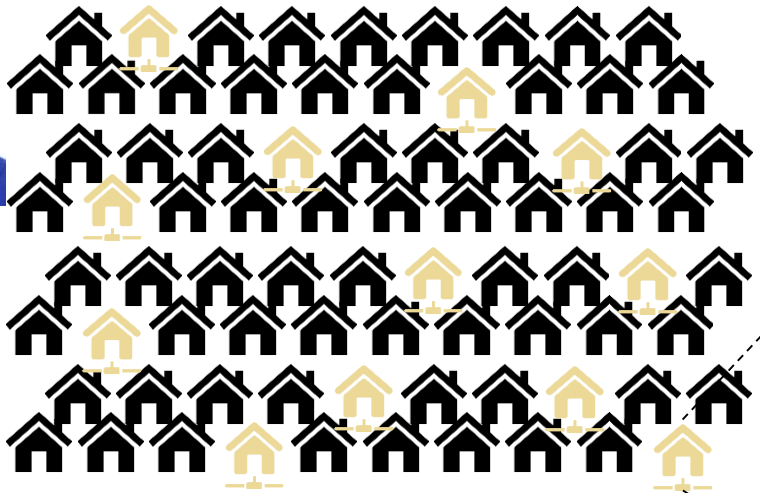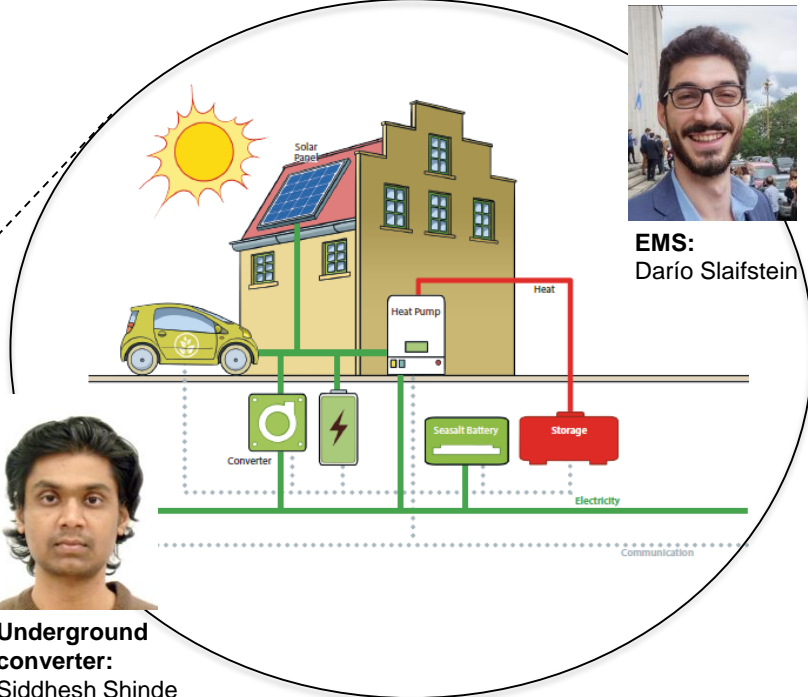
Multi-carrier coupling and system aggregation

Overview

Aggregation:
Joel Alpízar-Castillo

Underground converter:
Siddhesh Shinde

EMS:
Darío Slaifstein

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How ancillary services correlate to grid issues
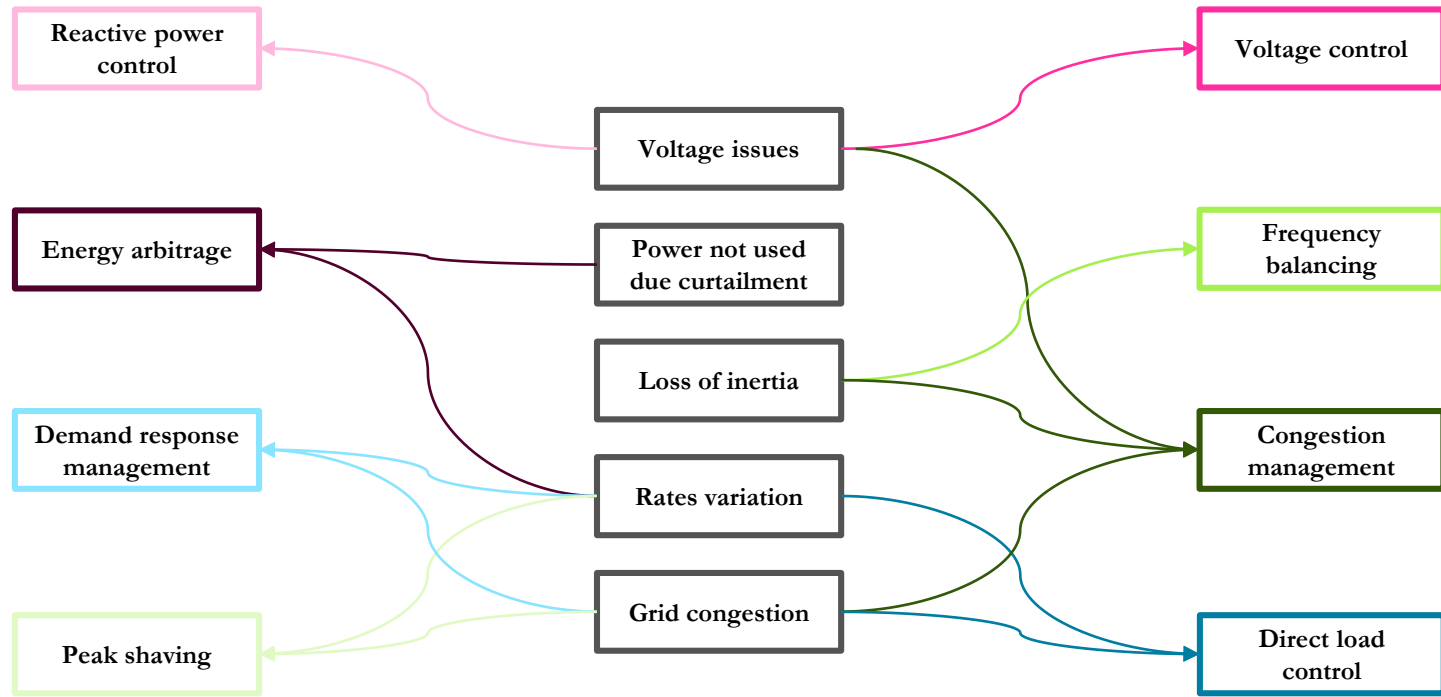
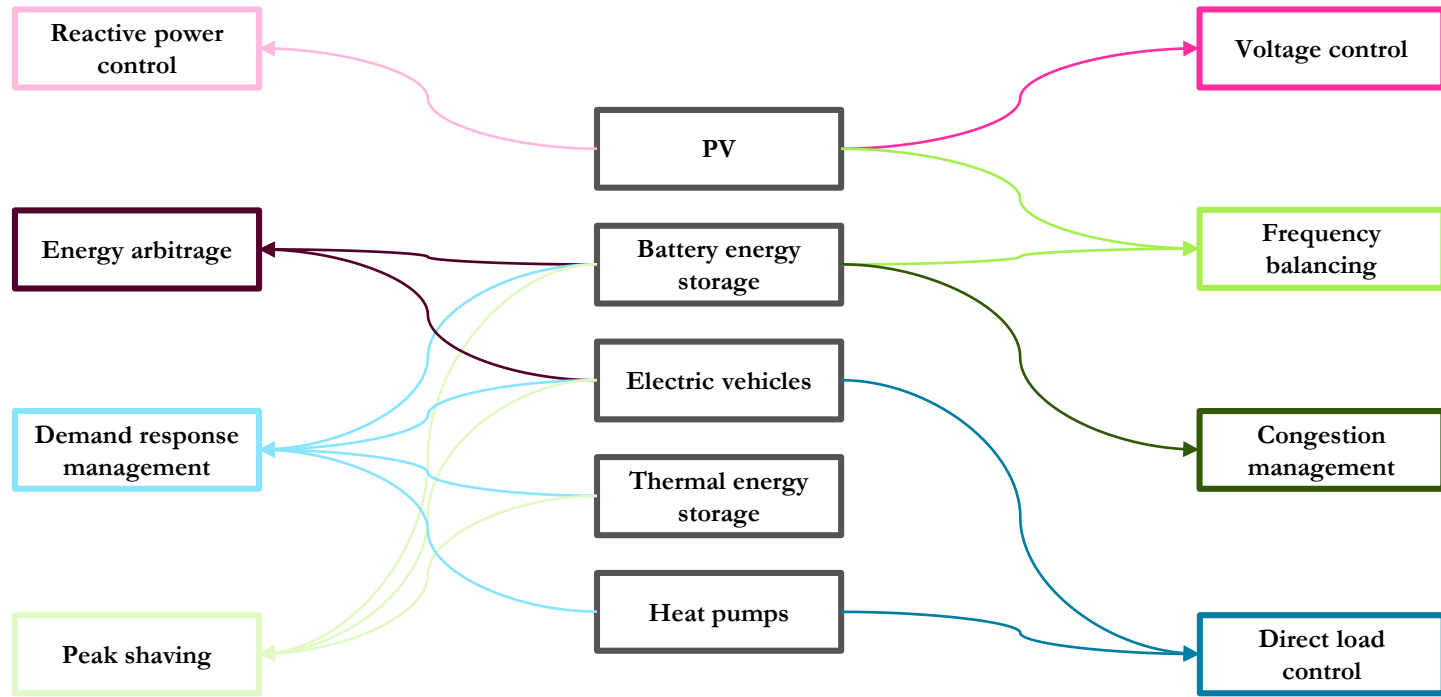| Voltage issues |
| --- |

Power not used due curtailment

Loss of inertia

Rates variation

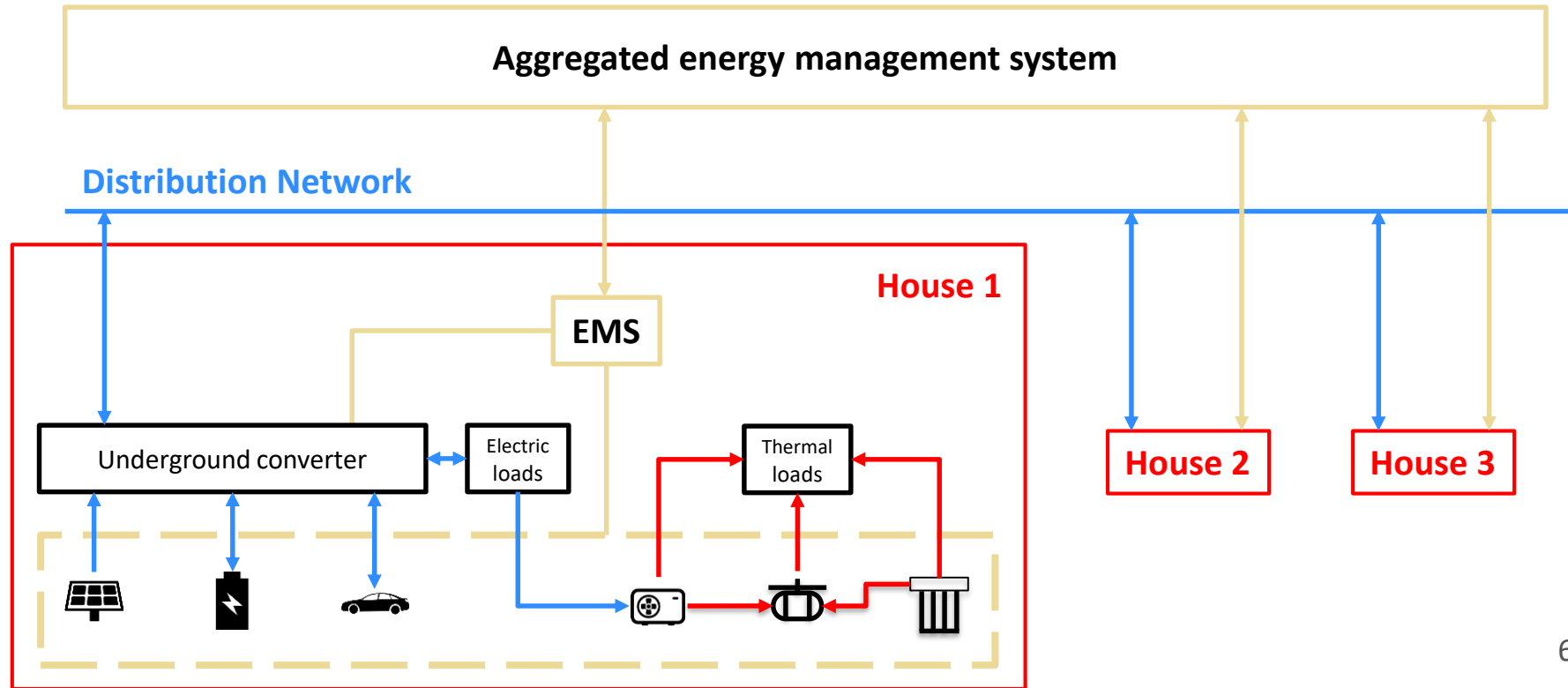| Grid congestion |
| --- |

How ancillary services correlate to grid issues

Ancillary services FLEXINet can provide

Control architecture

Aggregated energy management system

Distribution Network

House 1

EMS

Underground converter

Electric loads
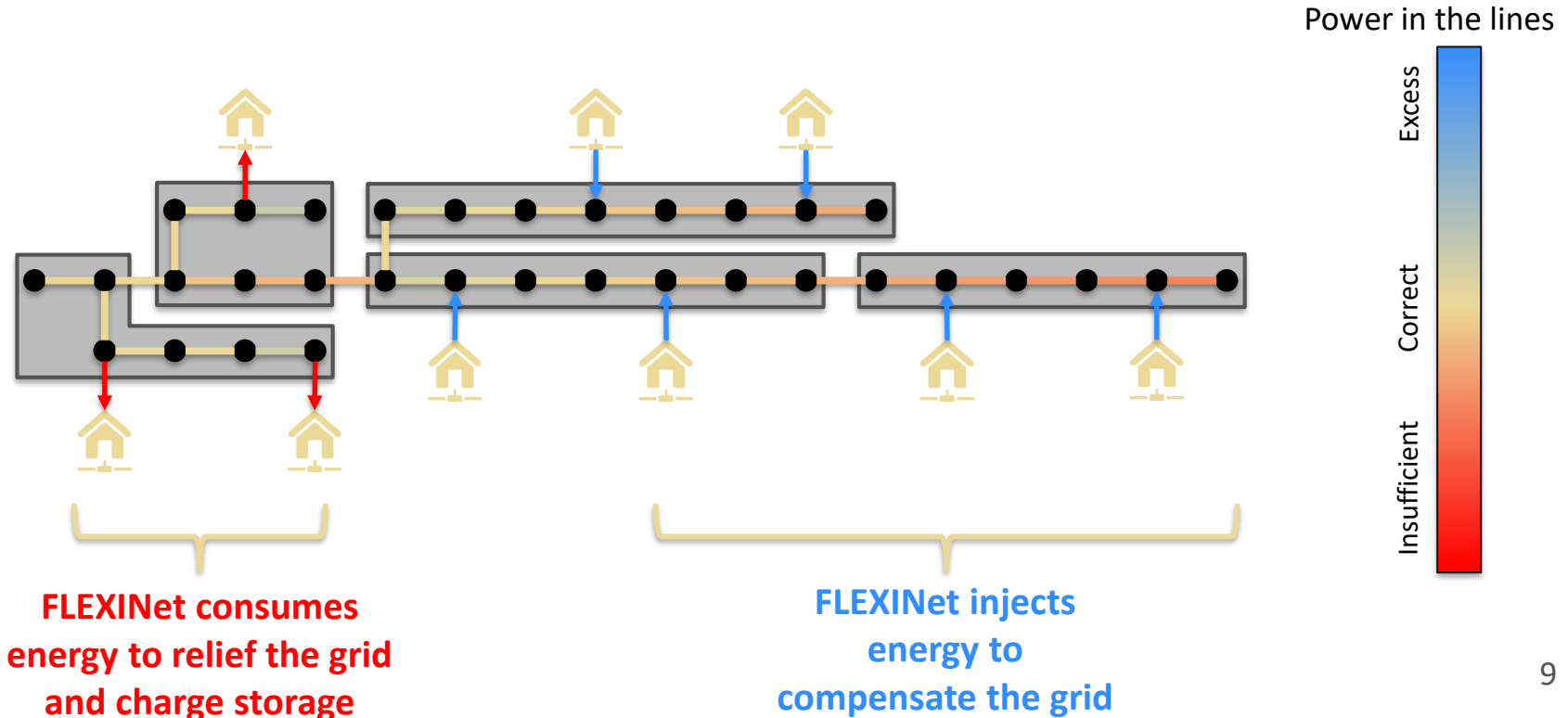
Thermal loads

House 2

House 3

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How FLEXINet can provides flexibility

TUDelft

How FLEXINet can provides flexibility

Power in the lines

Excess

Correct

Insufficient

Distributed RES inject too much energy

High power demand

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Multi-carrier coupling and system aggregation

How FLEXINet can provides flexibility

Power in the lines

FLEXINet consumes energy to relief the grid and charge storage
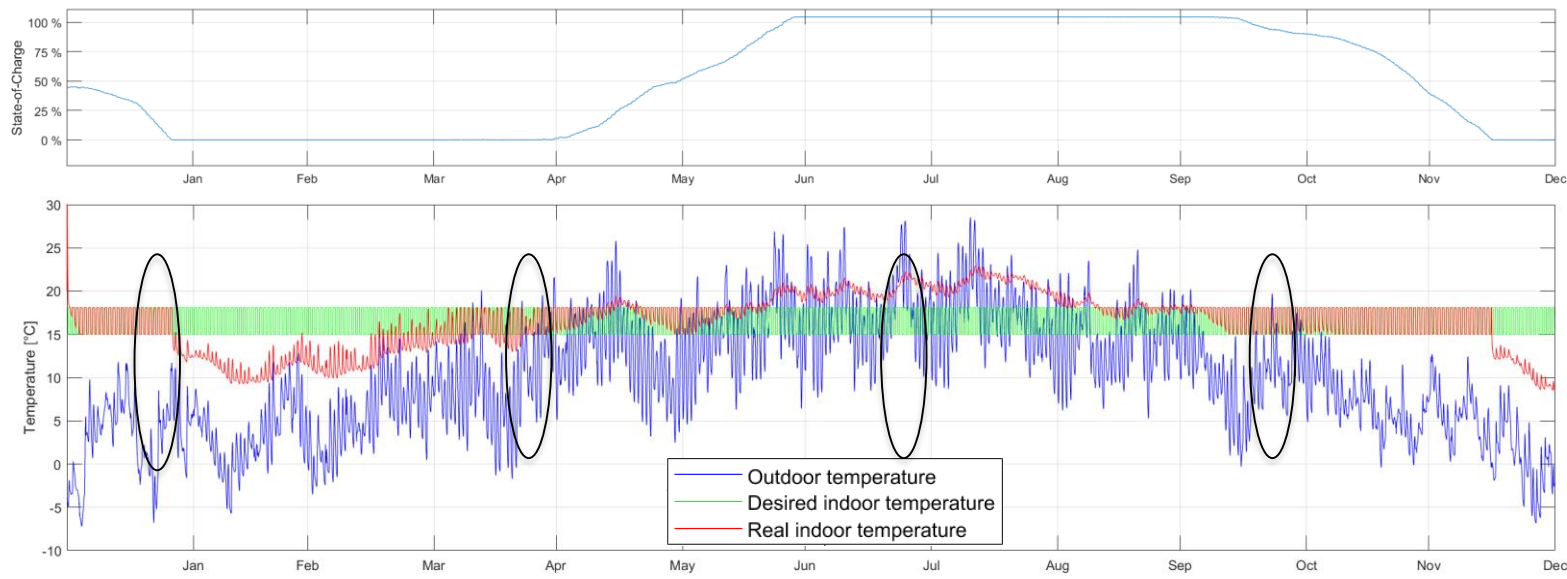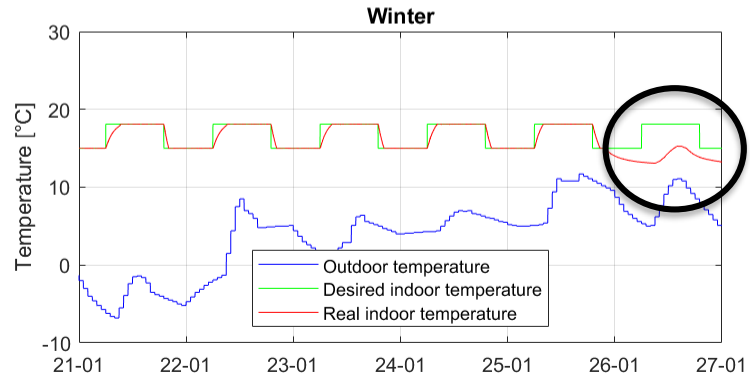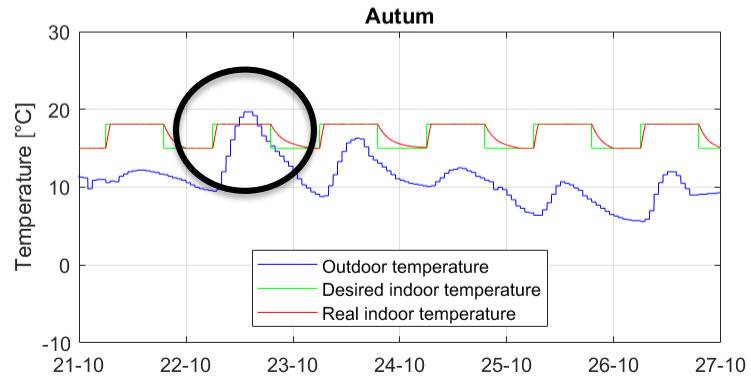
FLEXINet injects energy to compensate the grid

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Why couple different energy carriers?
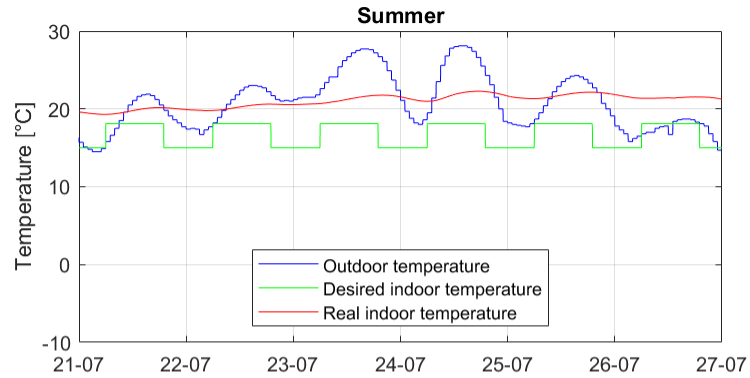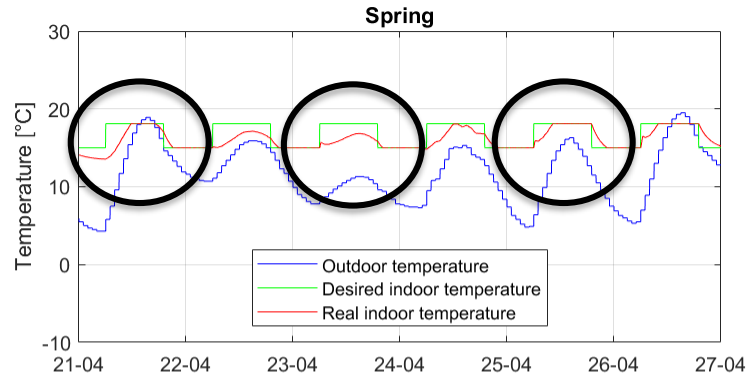
Distribution Network

EMS

Underground converter
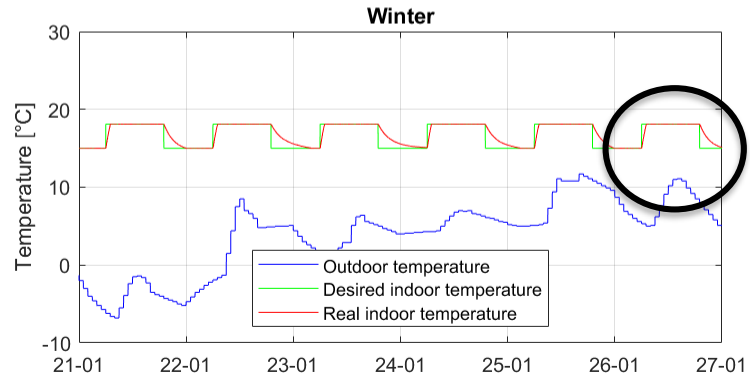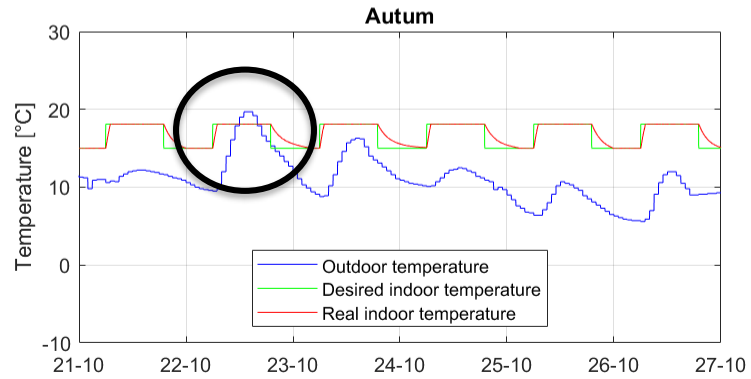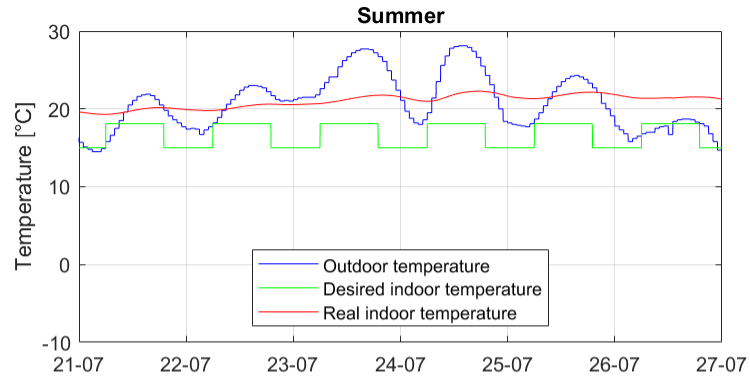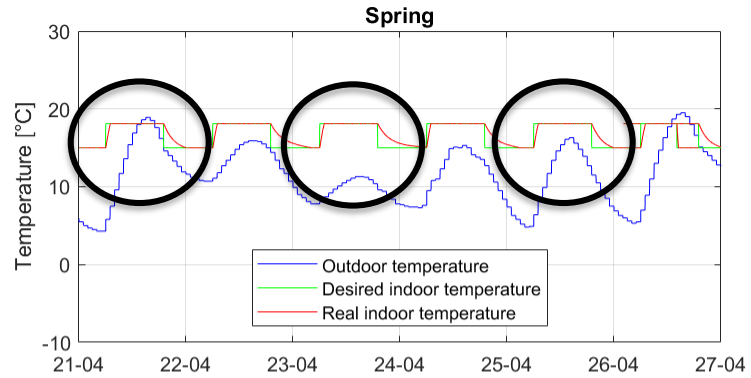
Electric loads

Thermal loads
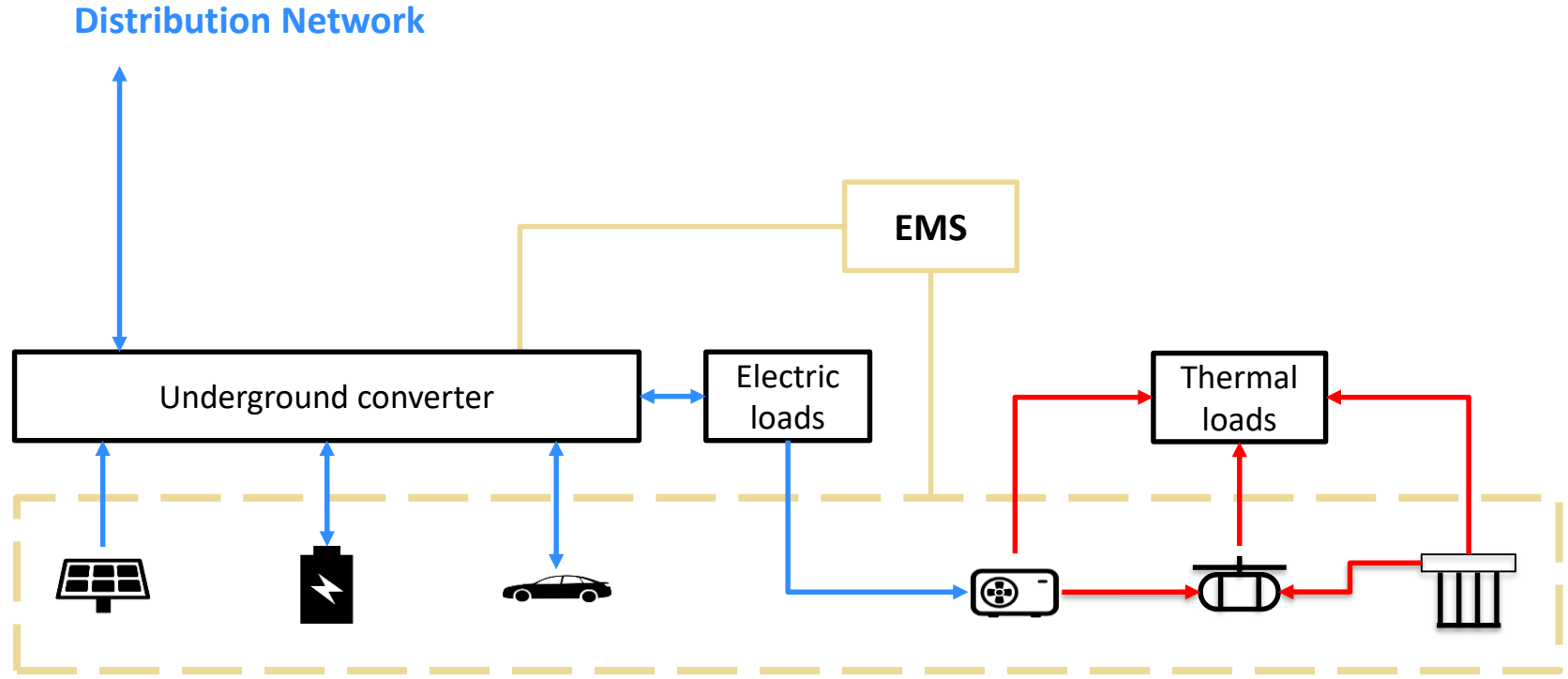
Why couple different energy carriers?
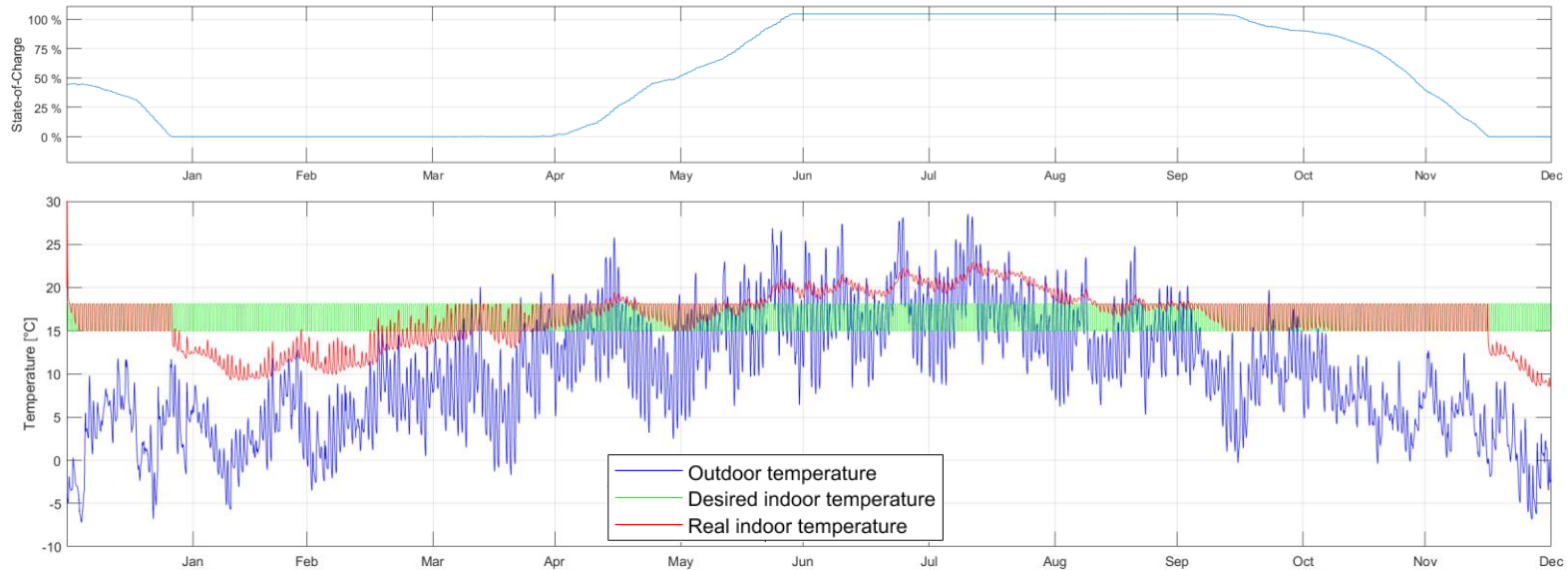
Why couple different energy carriers?

Without any additional heat source

Coupled with a heat pump

Acknowledgements

Discussion