

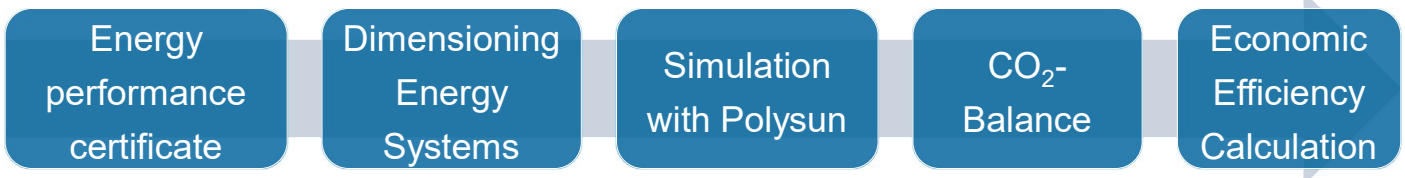
# Decarbonization of a multi-story existing building with different usage

Author: Anikó Illés, ee20b074@technikum-wien.at; Supervisor: Jens Leibold MSc., jens.leibold@technikum-wien.at

## 1 Aim of the work

The aim of the work was to develop a comprehensive renovation strategy within different variants, which is cost effective and reaches the NetZero building standard.

## 2 Methods



## 3 Object and Results

Table 1: Results of thermal refurbishment and gross floor area (own representation)

	Residential	Office	Sales area	Total
Spec. HD Pre renovation [kWh/m <sup>2</sup> a]	105,6	229,7	237	140,6
Spec. HD Post renovation [kWh/m <sup>2</sup> a]	23,9	30,5	52,1	28,6
Gross floor area [m <sup>2</sup> ]	852	163	158	1.173

Figure 1: Considered building (google maps)

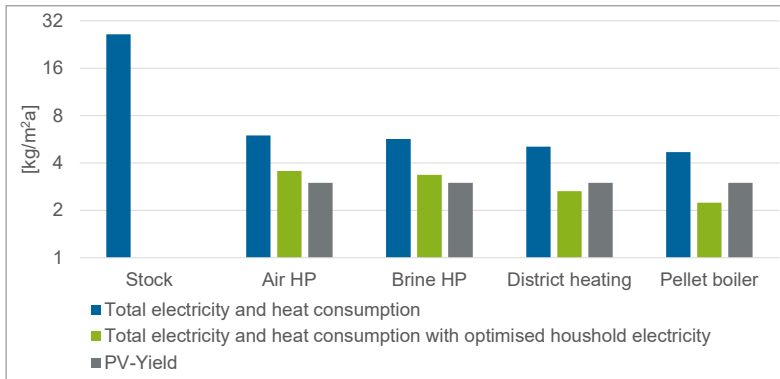


Figure 2: Comparison of CO<sub>2</sub> emissions (own representation)

### 3.2 CO<sub>2</sub>-emissions:

- Reduction of CO<sub>2</sub>-emissions of approx. 75% to stock variant
- NetZero: only with optimised household electricity

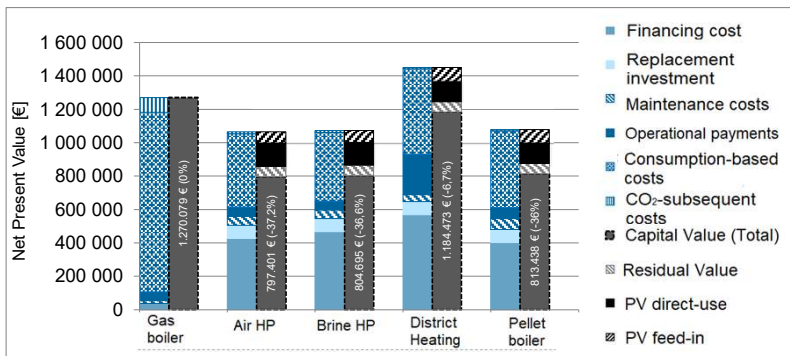


Figure 3: Present Value comparison for 30y (own representation)

### 3.3 Net Present Value comparison:

#### Investment

- Pellet boiler +
- District Heating -

#### Energy

- Brine HP +
- District Heating -

## 4 Conclusion

The investigation of the individual variants led to the result that the variants with district heating and pellet boiler have the lowest CO<sub>2</sub>-emissions and are therefore the most ecological variants. In the comparison of energy costs, the heat pumps are the most economic choice.