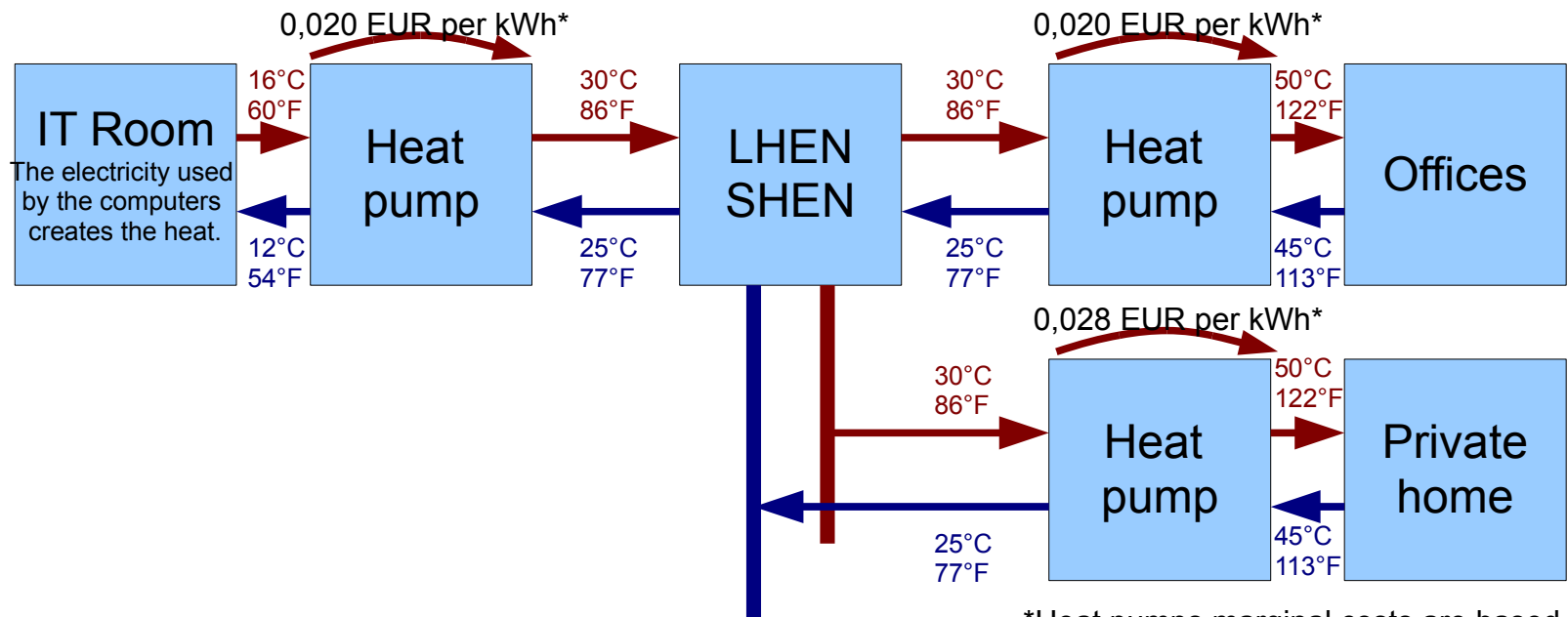


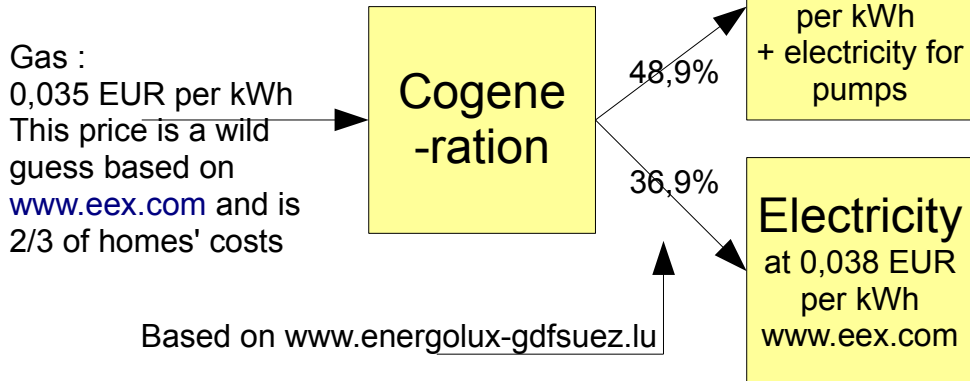
Marginal costs for LHEN/SHEN and for Cogeneration



Marginal cost to get heat from the IT room to the offices :
 $0,020 + 0,020 = 0,040$ EUR per kWh

Marginal cost to get heat from the IT room to a private house :
 $0,020 + 0,028 = 0,048$ EUR per kWh and electricity for SHEN pumps.

*Heat pumps marginal costs are based on 15 years old machines because new models have too many parameters that makes cost calculation difficult. Efficiency has improved and real costs are lower.
 Electricity costs used are 0,130 EUR for private homes, and 0,083 EUR for businesses (2/3 of homes' costs)



Based on www.energolux-gdfsuez.lu

Cogeneration has a similar heat marginal cost than the LHEN/SHEN solution, but :

- the IT rooms need cooling – costs could be shared with IT company.
- heat pumps' efficiency has improved so cost are lower.
- heat pumps don't need much maintenance.