

The Position of Gas Heat Pumps in comparison with other energy options

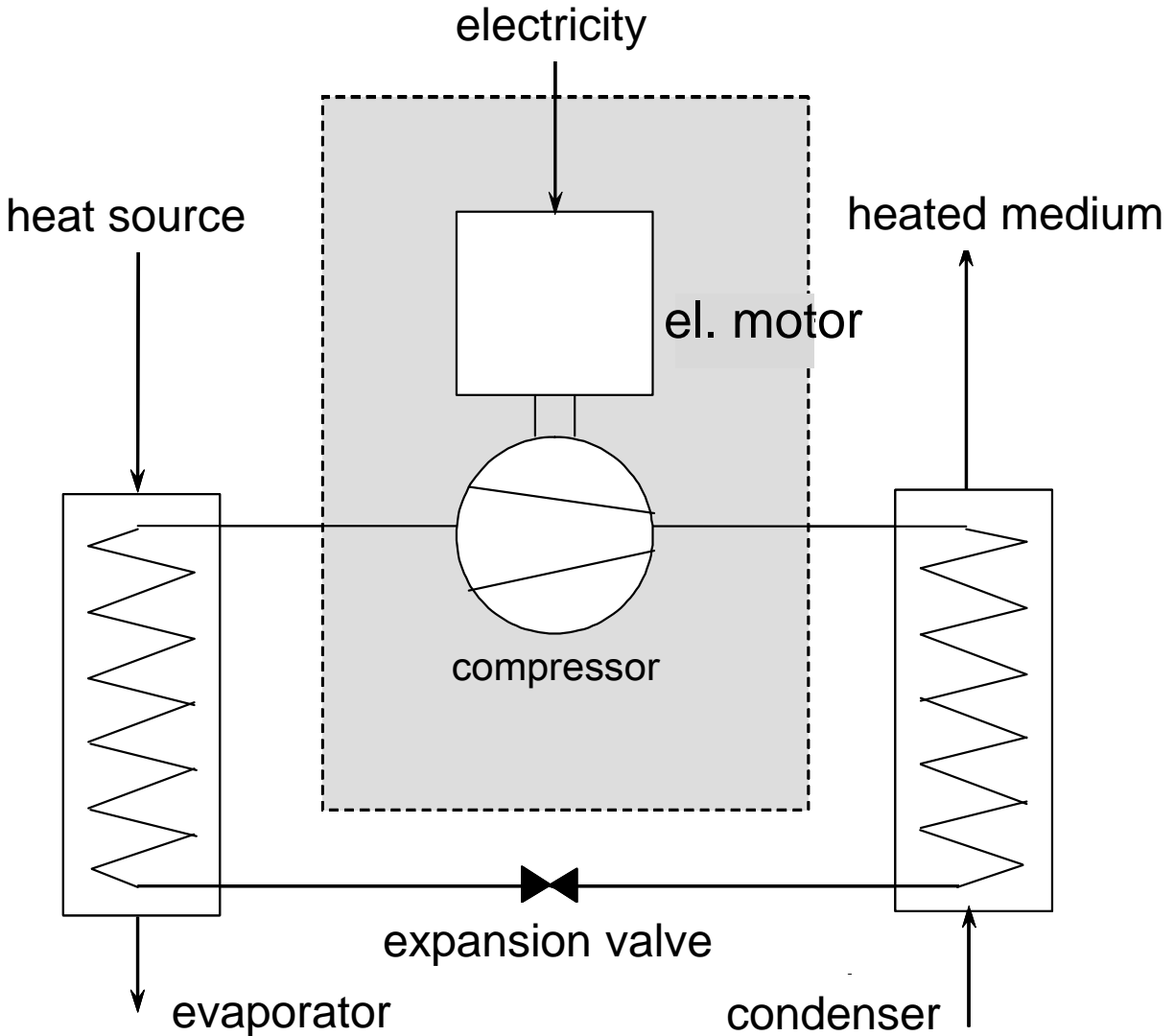
Gas heat Pumps Workshop

Paris, 1-2 december 2011

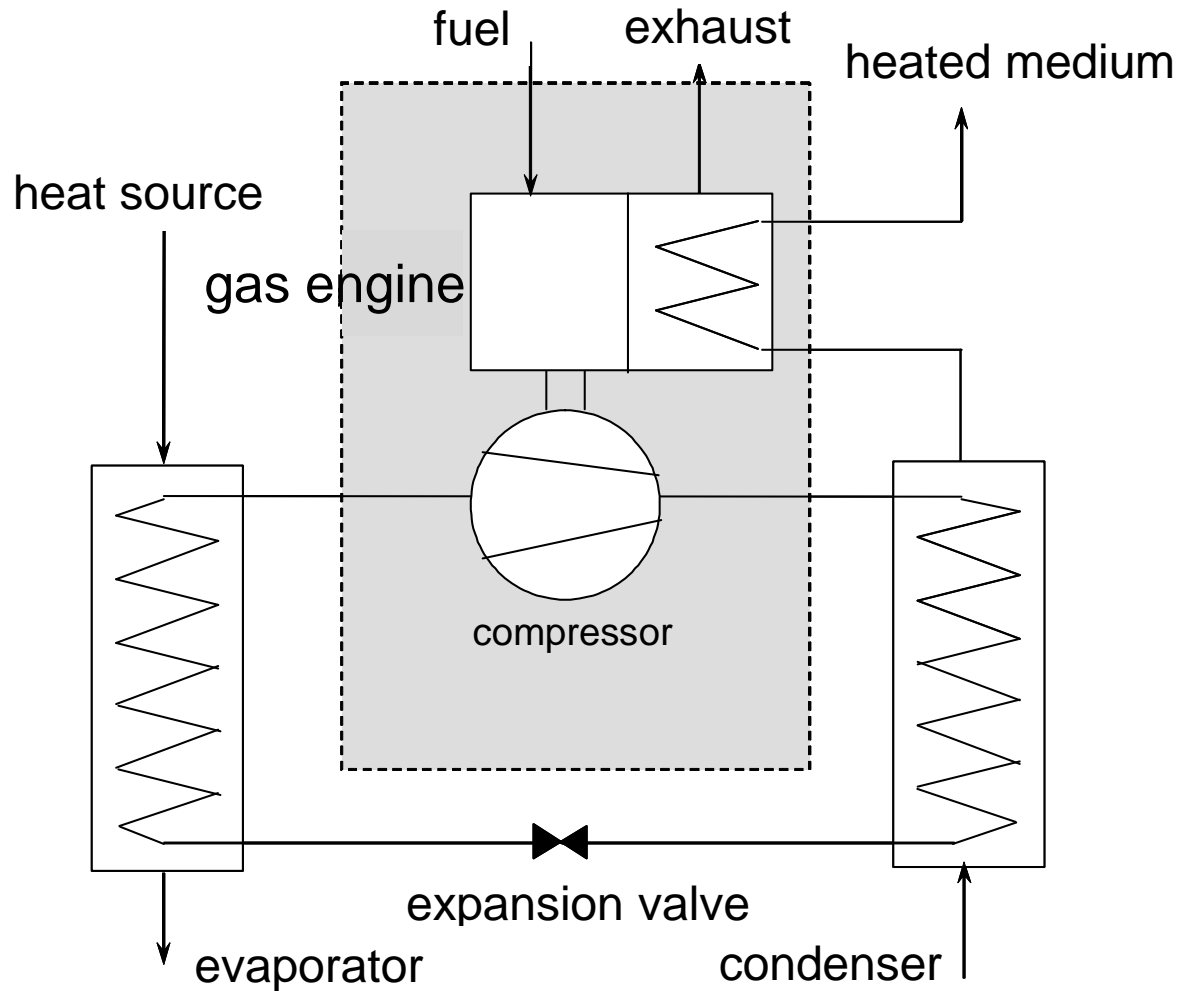
Peter Oostendorp
Smart Cooling Foundation



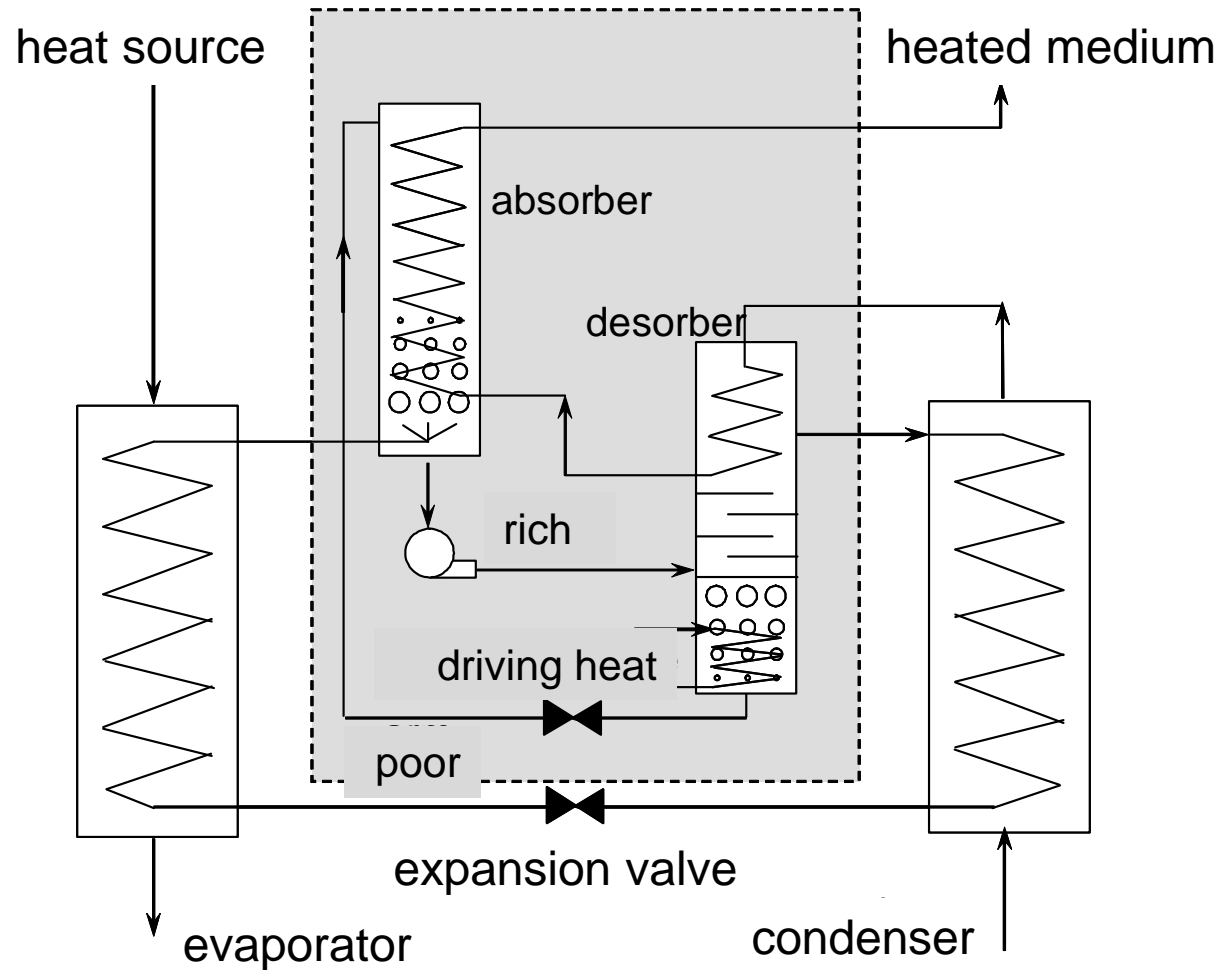
Electric Heat Pump



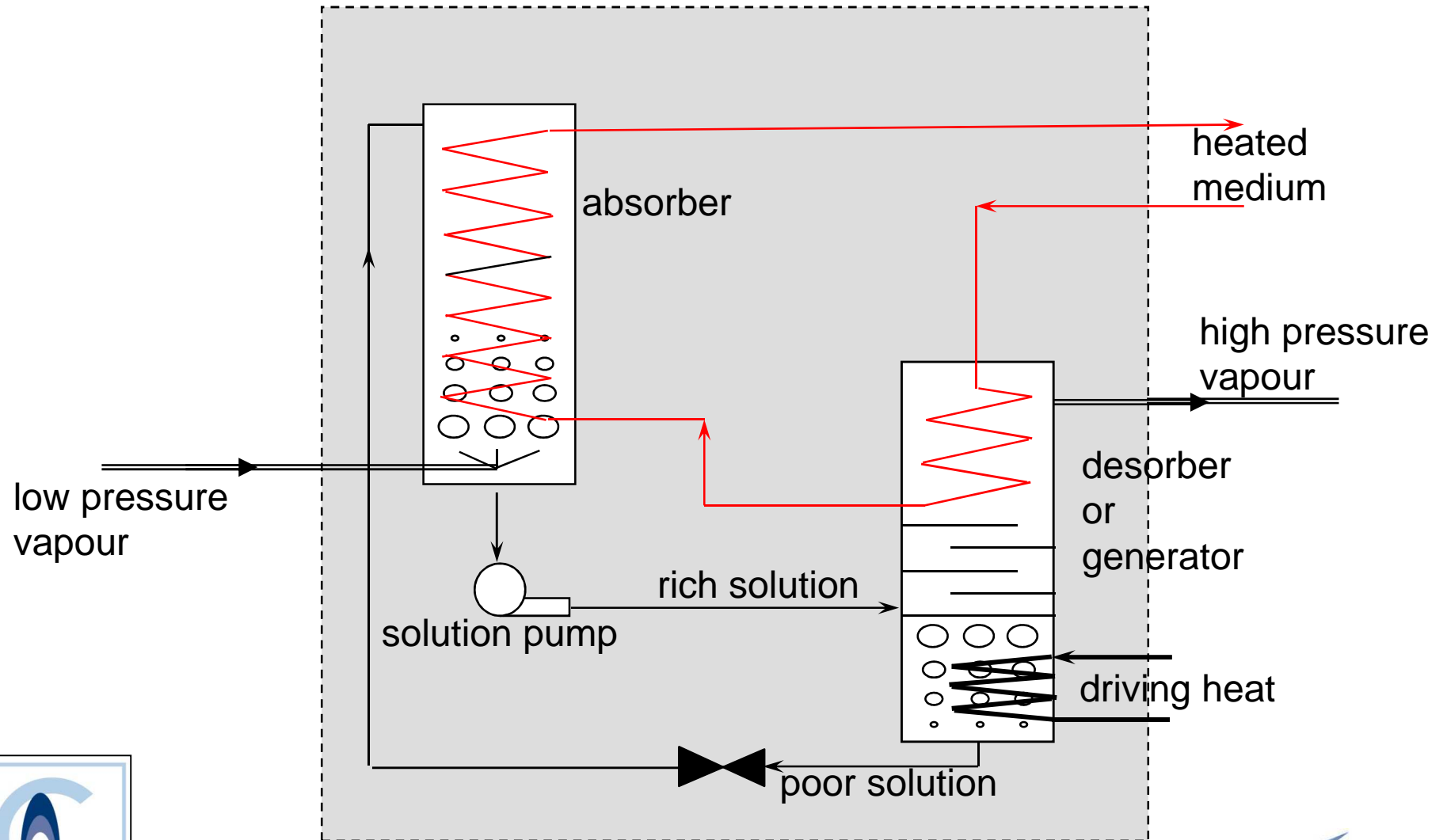
Gas engine driven heat pump



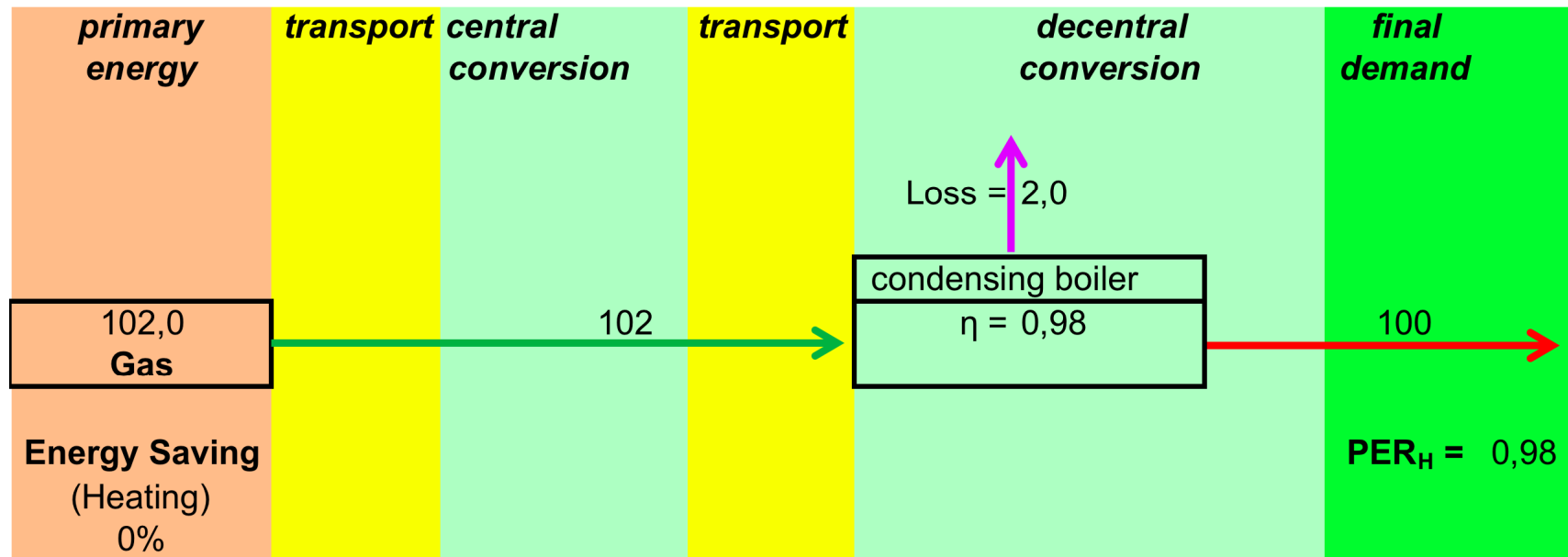
Absorption heat pump



Thermal compressor (zoom)



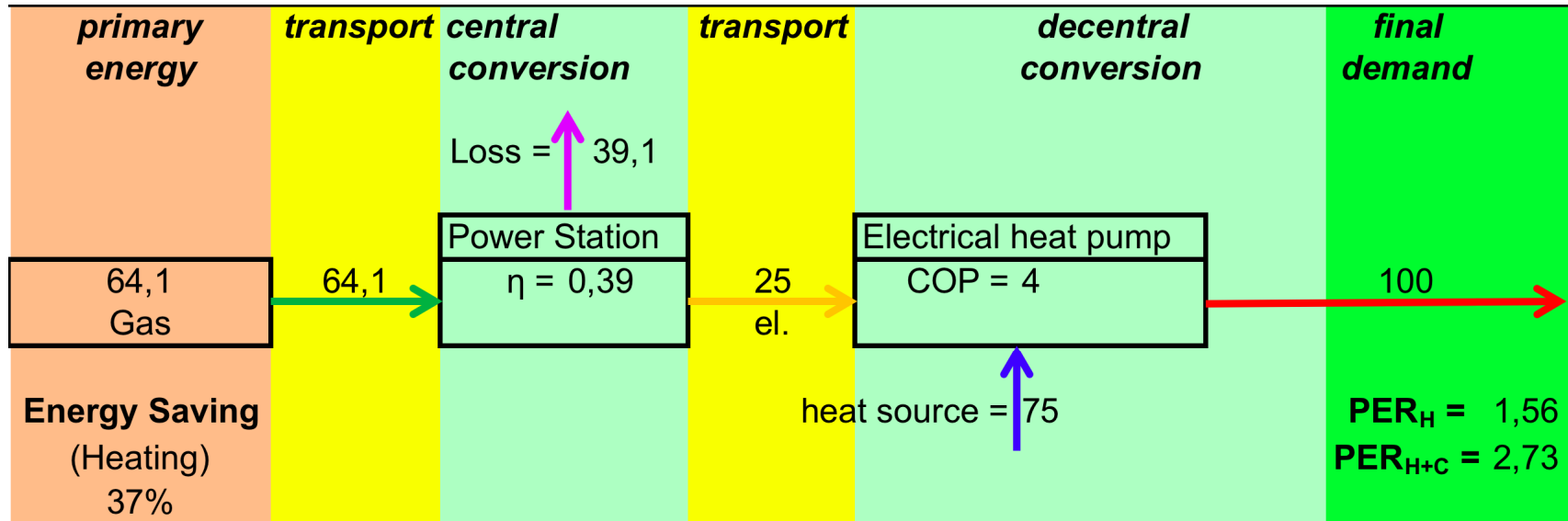
Reference case: Condensing boiler



- Gas
- Electricity
- Shaft power
- Heating
- Heat source/cooling
- Loss



Electric heat pump

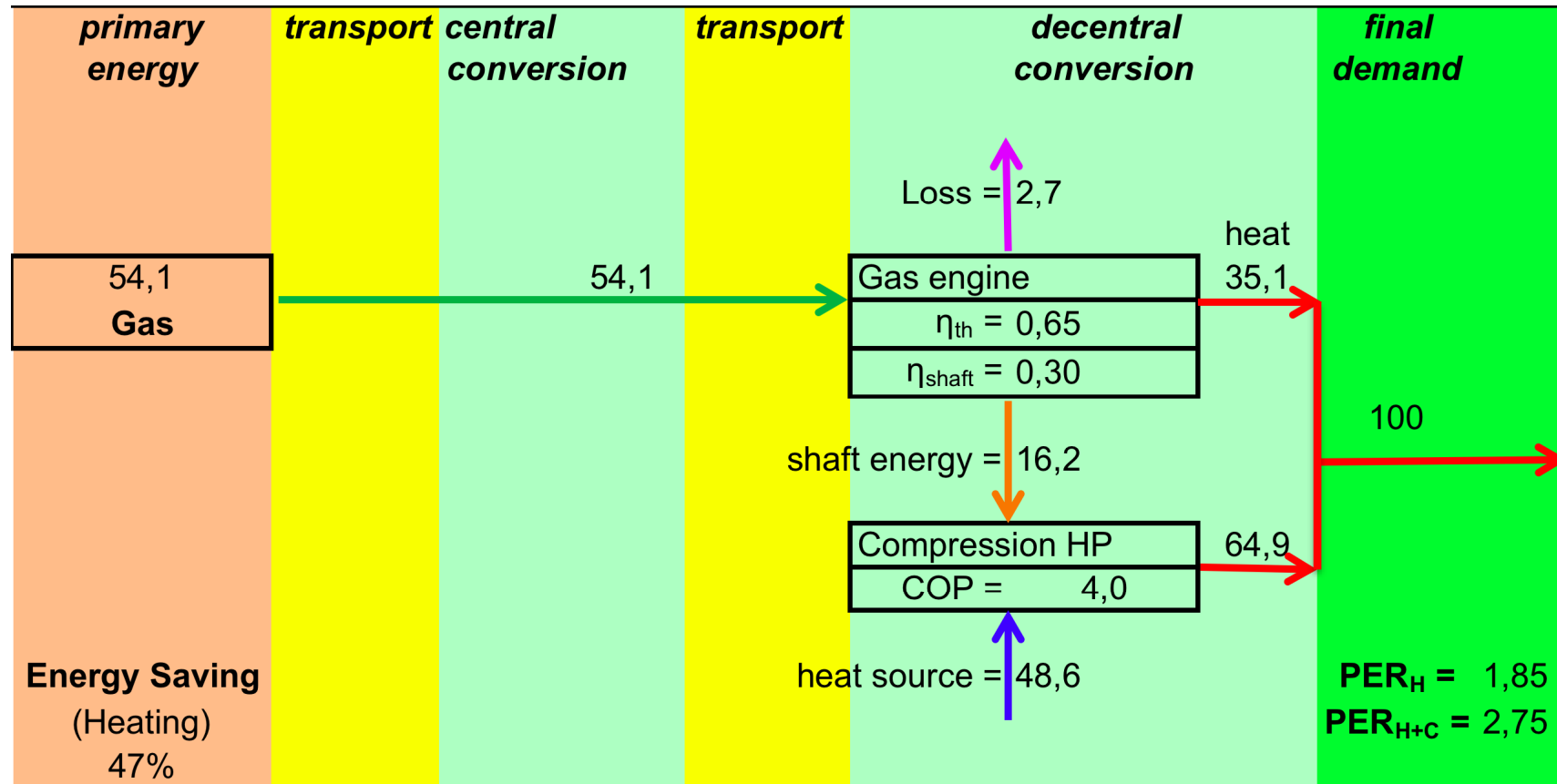


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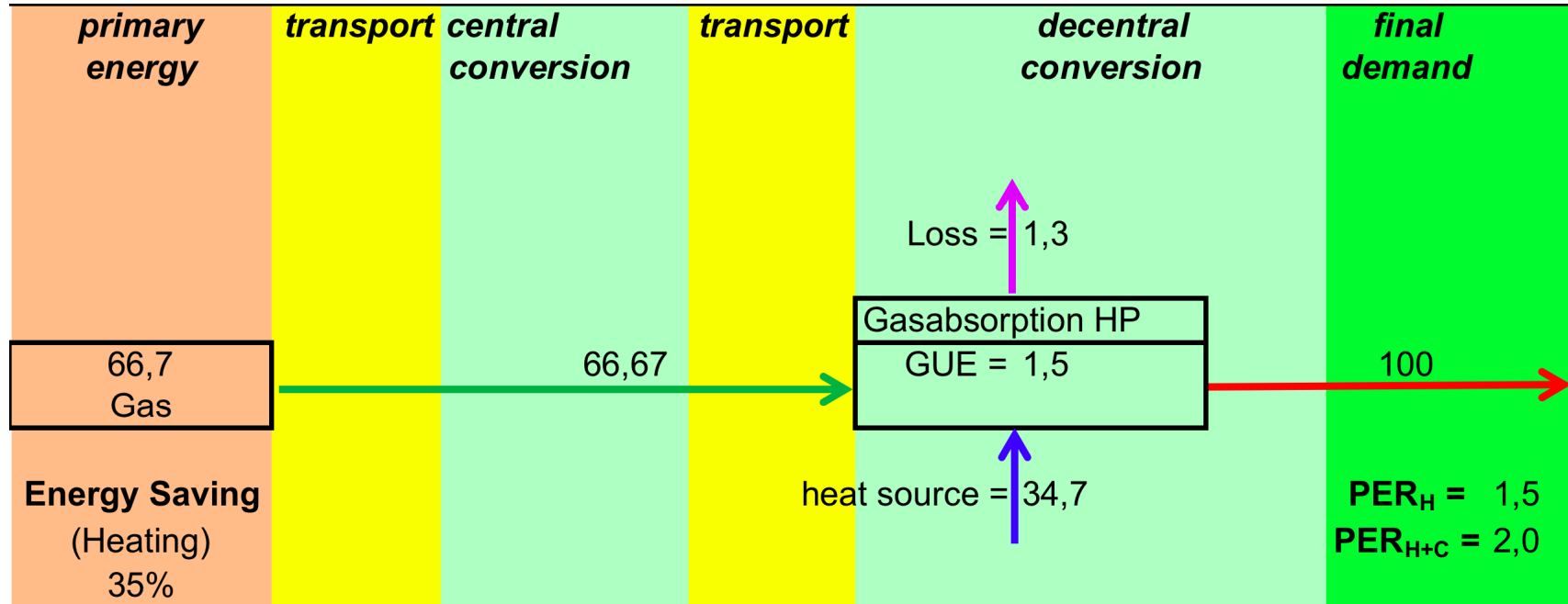
Gas engine driven heat pump



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Gas absorption heat pump

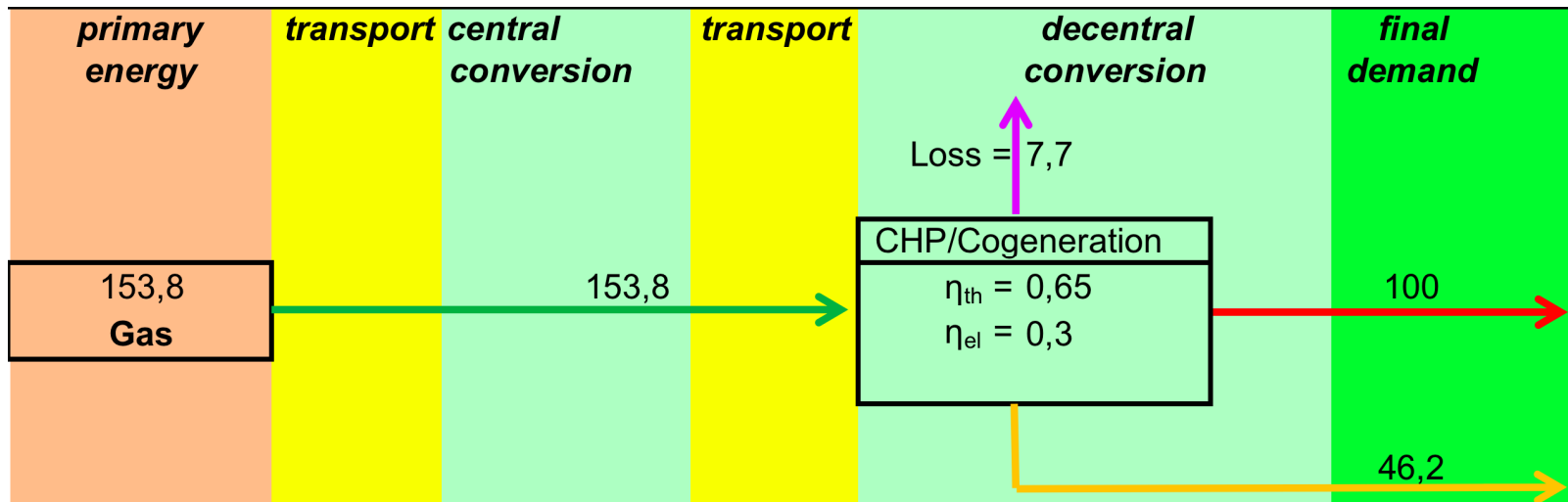


— Gas
— Electricity
— Shaft power

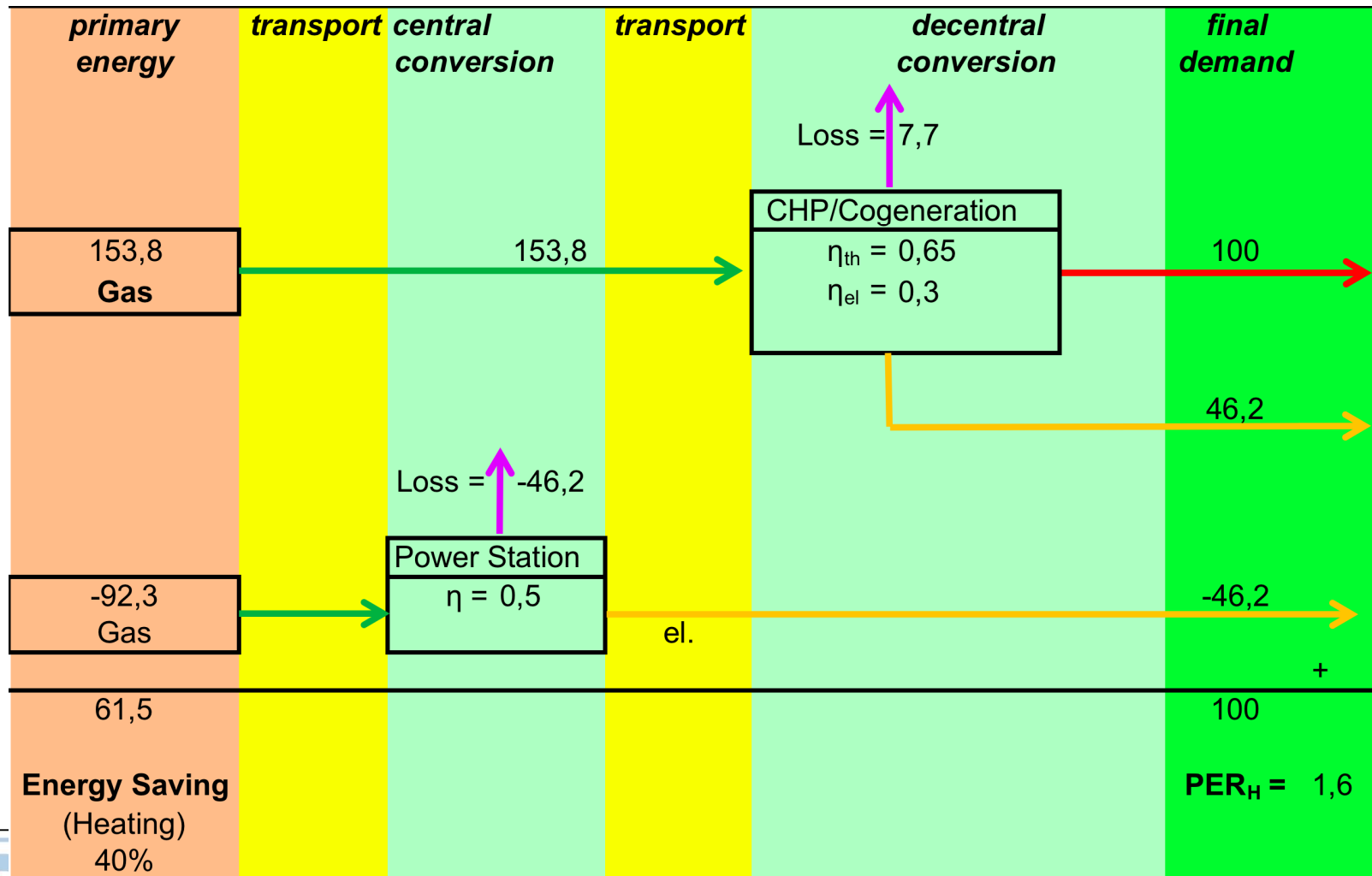
— Heating
— Heat source/cooling
— Loss



Cogeneration-1



Cogeneration-2



Conclusions

- Gas heat pump systems show PER values that are *grosso modo* comparable to electric heat pumps
- Their application will depend on non energy-saving related issues like:
 - Electric grid capacity
 - Price ratio between gas/electricity
 - Ratio in heating/cooling capacity
 - Noise level allowed
 - PER less dependent on source temperature

