ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

# Laboratory of Renewable Energy Science and Engineering

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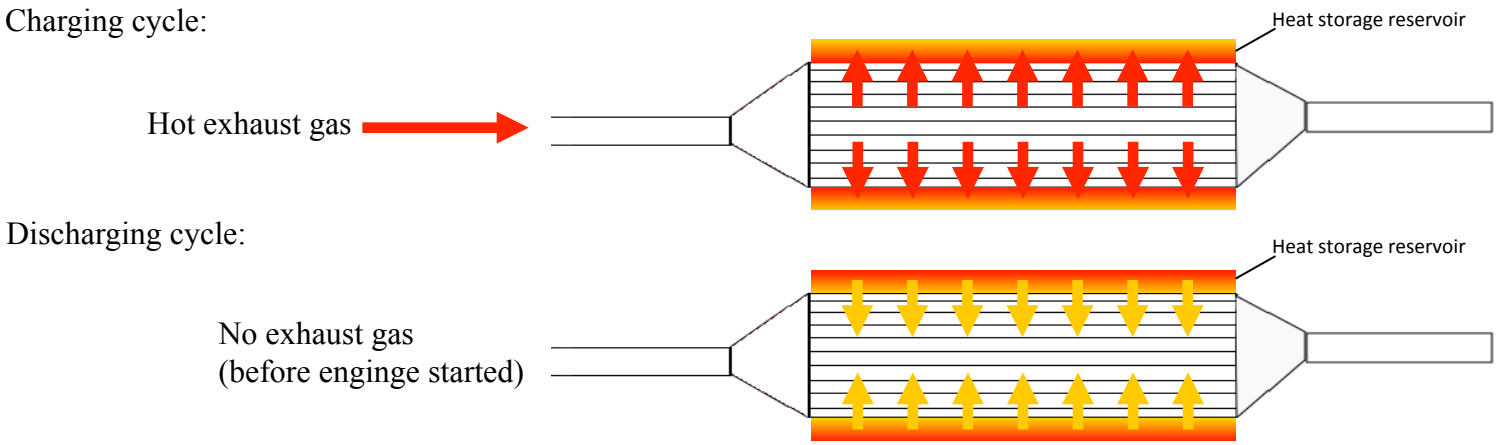
# Preheating of an automotive catalytic converter

Prof. Sophia Haussener

Institute of Mechanical Engineering, EPFL, Switzerland

# LRESE

- Project d'ingénierie simultanée
- **Preheating of an automotive catalytic converter**
- *The catalytic converter in a car must be preheated in order to minimize the emissions of the engine after a cold start. The charging and discharging behavior of a high-temperature heat storage reservoir comprising a phase-change material delivering the required heat shall be investigated by a simplified computational model.*
- Teams: 2 teams of 3 students
- Scheme:



# LRESE

***Tasks:***

- Engine and catalytic converter: exhaust gas mass flow and temperature range
- Driving cycle: check of different driving scenarios
- Implementation of computational model: Simulation of charging and discharging behavior of high-temperature heat storage
- Sensitivity analysis: Study of influence of parameters as exhaust gas mass flow and temperature, charging/discharging cycle, material and size of heat storage reservoir …
- Cost analysis: check of potential cost savings…
- Competing systems: Compare to commonly used electric preheater …