

THE COMMUNITY GREENHOUSE

SOCIAL INNOVATION AND FARMING COMMUNITY

Situated on community land the greenhouse is a place for social cohesion, bringing villagers and visitors together around social innovation and farming.

GREENHOUSE PRINCIPAL

Shortwave solar energy is transmitted through glass and air but absorbed by interiors and plants. Heat is transferred via radiation, conduction and convection.

TEAM MEMBERS

Christian Stenqvist
Jennifer McCormack
Michal Mitro

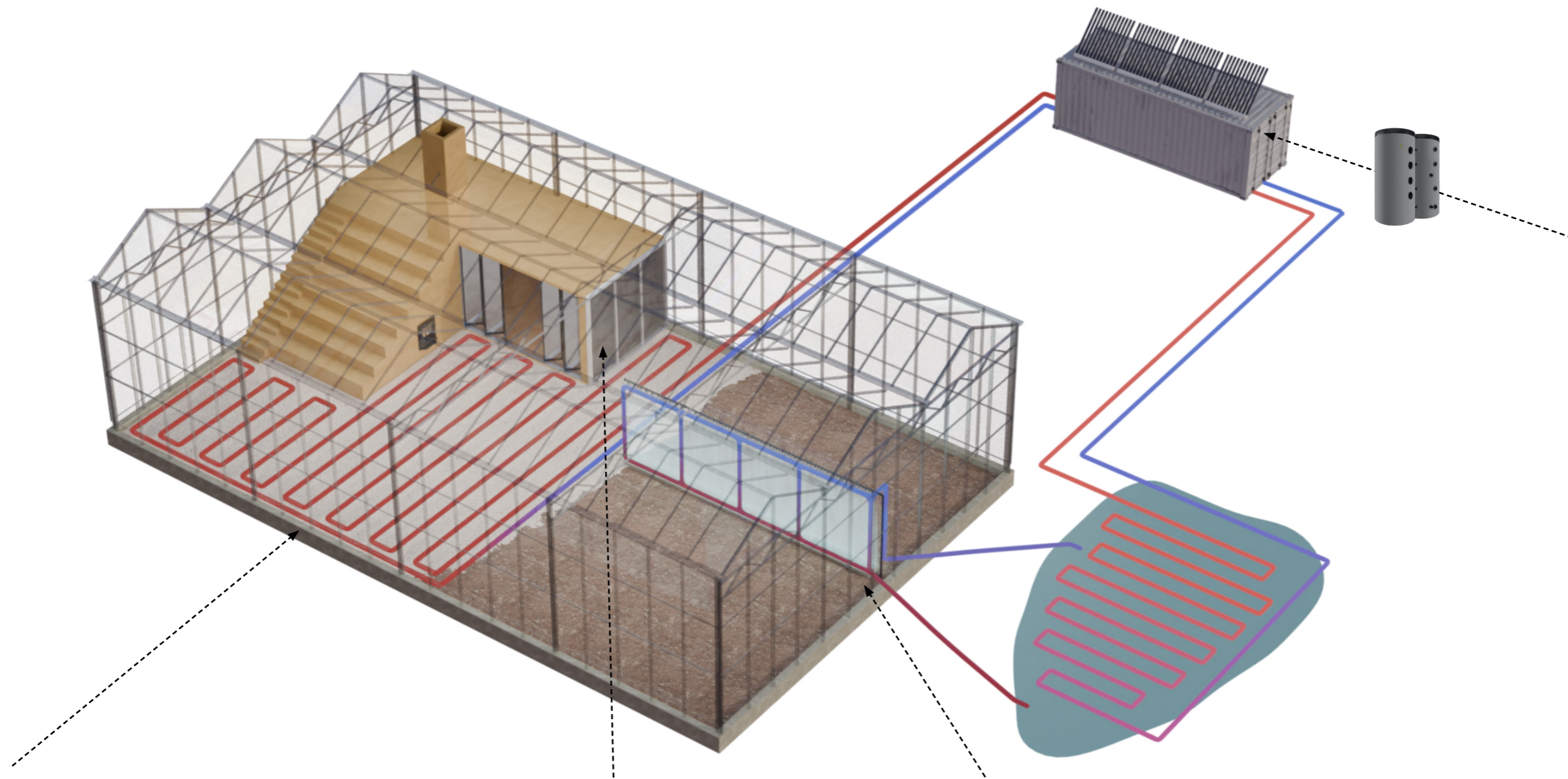
ILLUSTRATIONS AND VISUALS

Reffstang Studio





LOW TECH SOLARDESIGN SOLUTIONS



SAND BATTERY

A water based underfloor heating system is installed within an isolated thick layer of sand. Low temperature heat is stored and transferred creating a comfortable and consistent temperature in the social area.

TROMBE WALL

A high thermal mass wall with a glazed facade is oriented towards south. Trapped air is heated and convection creates a draft that ventilates and heats the building. High thermal mass wall then radiates heat during night.

DROPLET CURTAIN

Warm humid air in the greenhouse is condensed on cold water droplets. Temperate water is channeled to an outdoor basin where heat is recovered with a water-to-water heat pump. Cooled water circulates back to droplet system. System controls over-temperature and humidity-levels; reduces the need for ventilation, heating and CO2 supply.

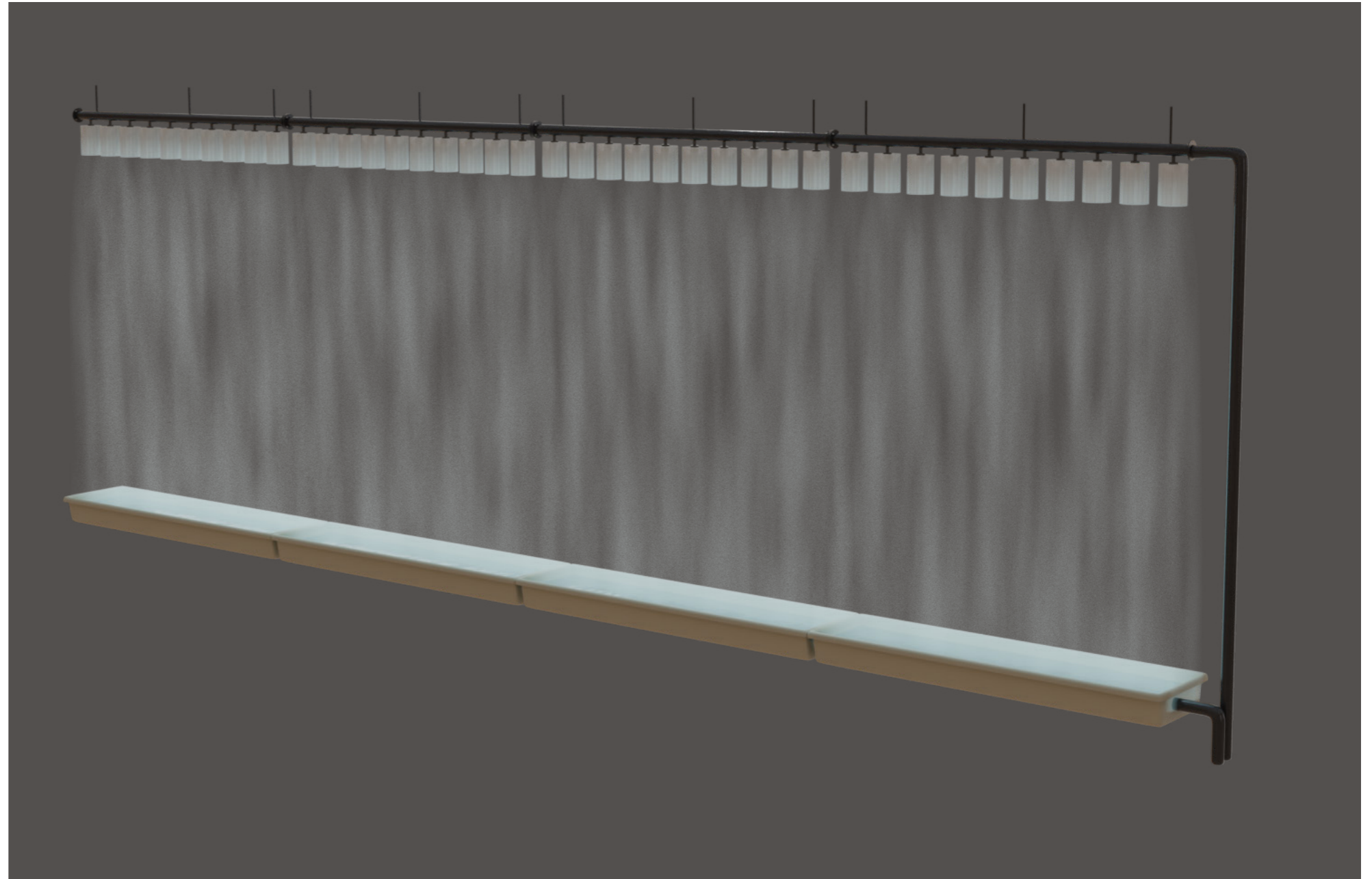
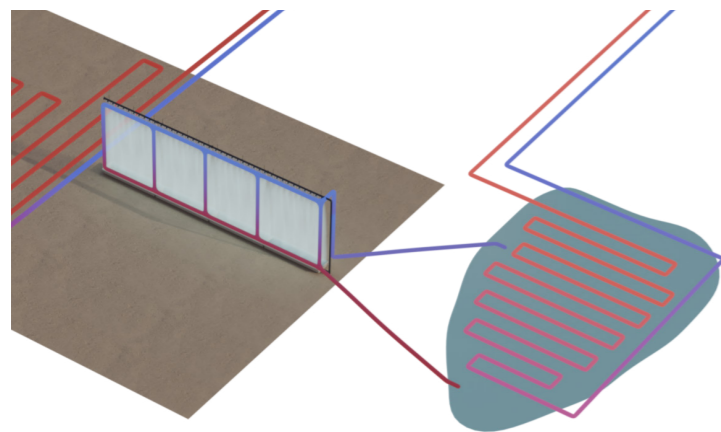
ACCUMULATOR TANKS AND HEAT PUMP

Heat and warm-water demand is supplied from accumulator tanks storing heat from multiple sources: solar collectors, heat pump, water-jacked mass oven.

COOLING AND DEHUMIDIFICATION

DROPLET CURTAIN

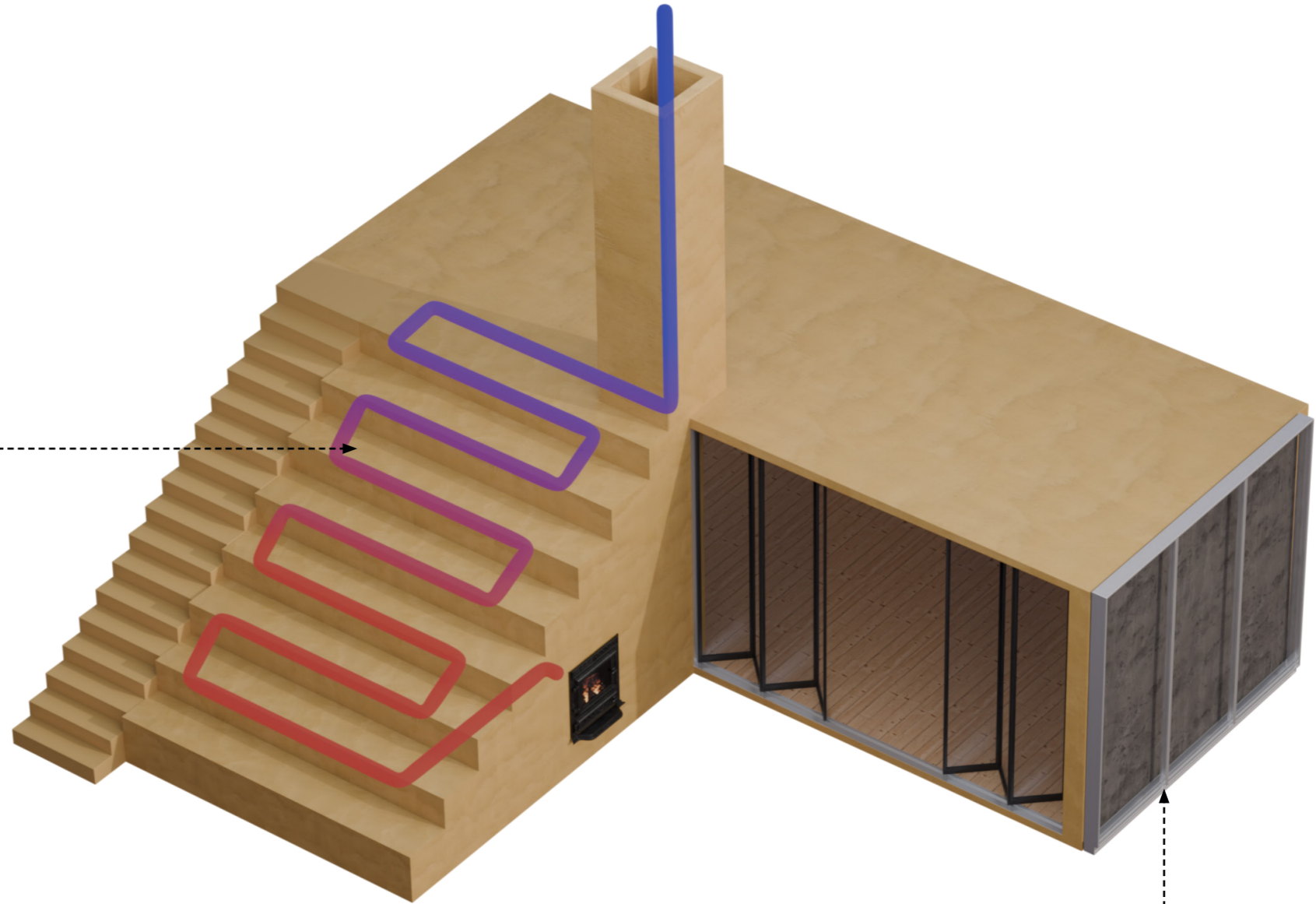
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PASSIVE SOLAR HEATING AND THERMAL STORAGE

MASS OVEN

A high thermal mass oven is fired with fuel wood. Before leaving the chimney flue gases are ducted through to heat the combined staircase and cosy seating space of the auditorium. Mass oven is also apt for cooking, pizza and bakery oven. Being water-jacked it also exchange some heat to the storage system.



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HEAT RECOVERY AND DISTRIBUTION

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