Project site

Mountain slope site with urban area and river in the south

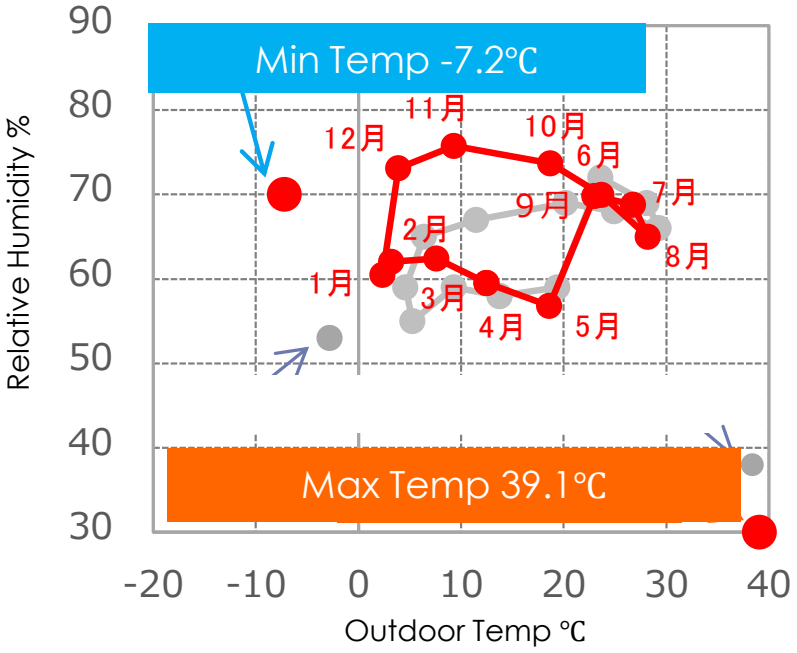


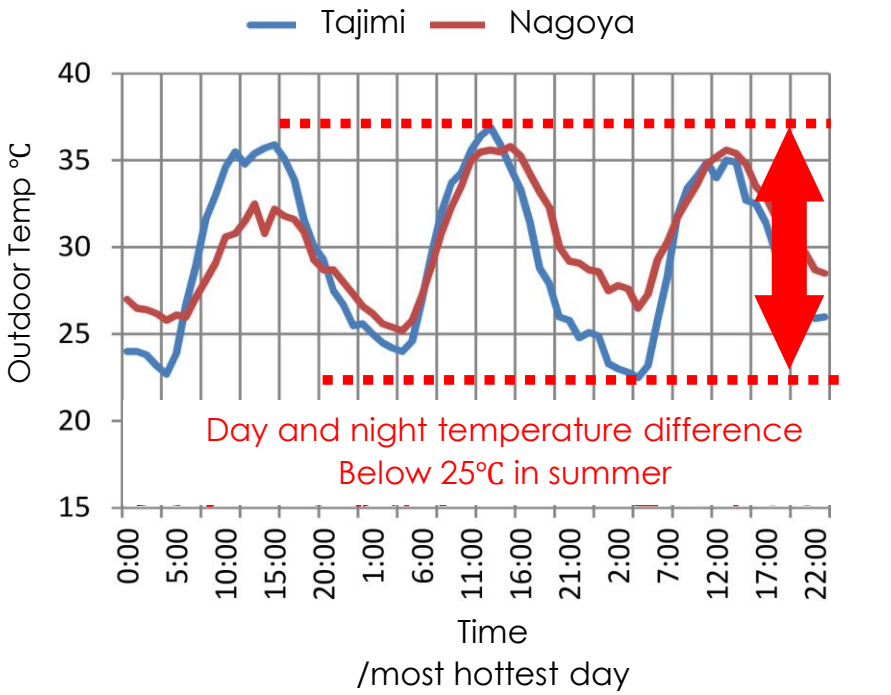


Climate conditions of the site

The site is a basin sandwiched between mountains.

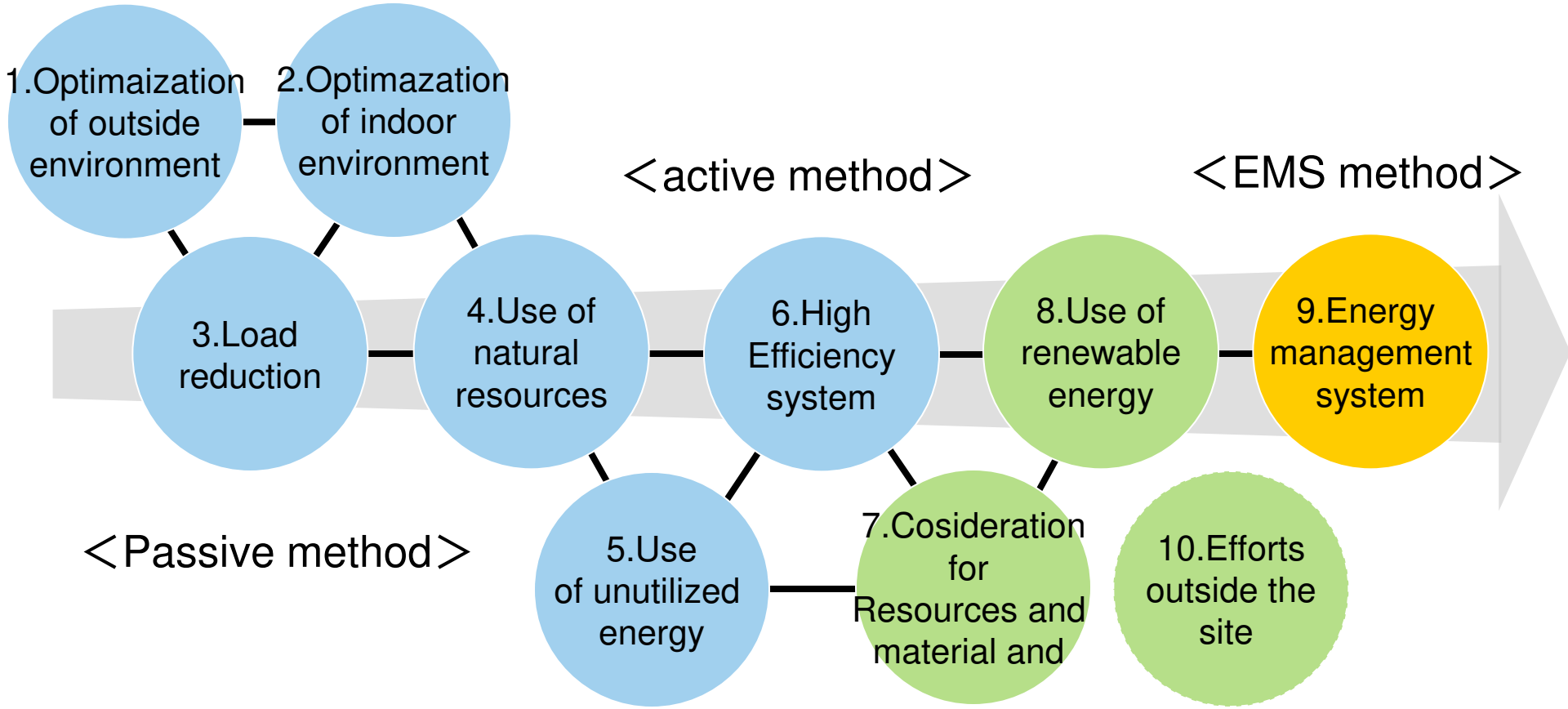
High temperature and day and night temperature difference in summer.



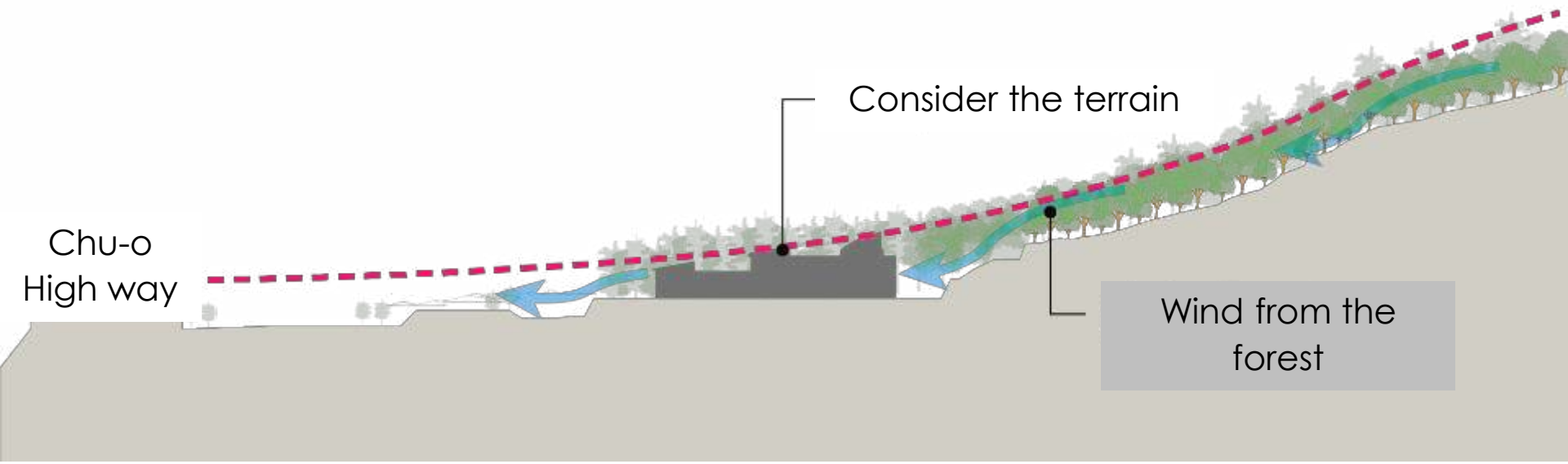


Source: Extended AMEDAS Weather Data 2002

Design process of achieving zero energy

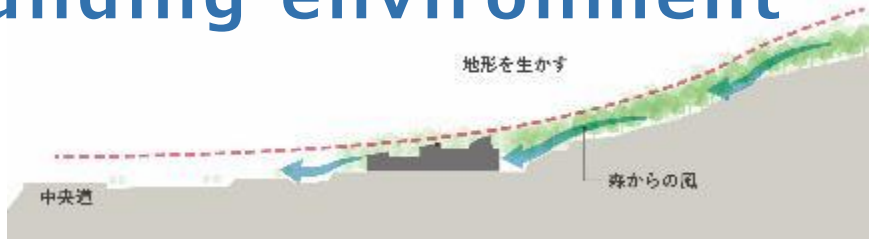


Placement of building along ridgeline of mountains



Familiar with the surrounding environment

Arranged along the slope of the
mountain facing the south,
the building height was kept low



Familiar with the surrounding environment

From any classroom you can have a view to the city





Familiar with the surrounding environment

The School building with a horizontally spreading mountain back



Exterior view from the main gate



Courtyard surrounded by the building



Enclosed in rich greenery

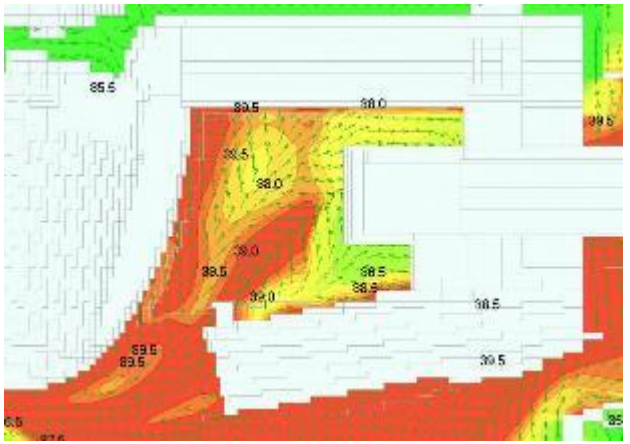
Two type of forest leading “Breeze” and “Sunlight“



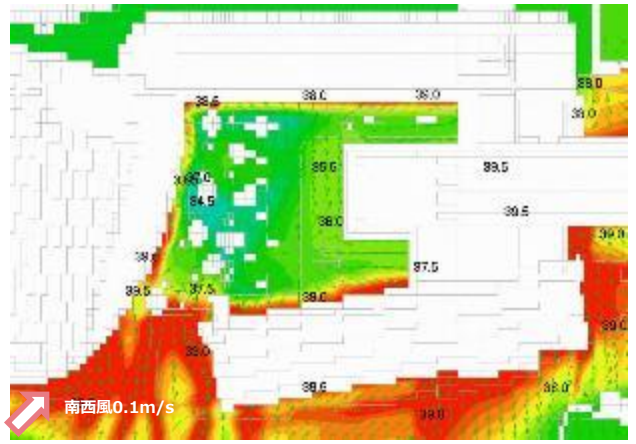
Planting with tall trees

- Reduction reflection from the ground with the shade.
- Reducing the heat environment of the courtyard by lowering the surface ground temperature.
- Lower the air temperature from the outside to the classroom in the summer





<In the case of tiles>



<In the case of lawn and trees>

High comfort classroom

A classroom that feels warm, making use of wooden beams

Bright classroom with both north and south Daylighting using gradient roof





Multipurpose room utilizing wooden beams

Facing the “Breezing” Forest, a place surrounded by greenery



Utilizing the materials of the local area of Mizunami

Tiles



Produced at the factory in the city from the soil in the vicinity of Mizunami

Hinoki plywood



Utilizing plywood of Hinoki from Gifu Prefecture as a wall finish

Cedar/ Hinoki Flooring

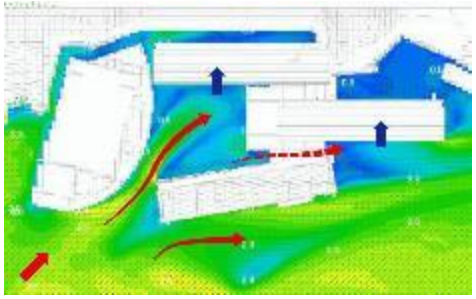


Use cedar from Gifu prefecture for consolidation flooring
Conference room only
Mizunami hinoki

Spiral staircase with shellfish motif



Arrangement of the building leading the wind



Wind to the courtyard goes through the whole school building

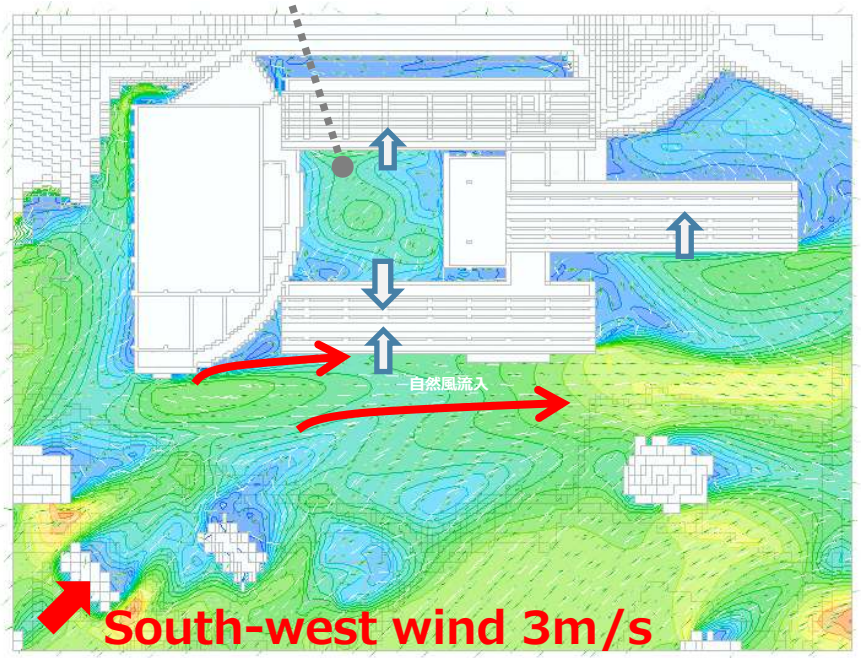
Arrangement of the building leading the wind

- Based on the wind flow simulation, the building layout of the South wing was tilted by 10 degrees.
- We curved the outer wall of the indoor playground.



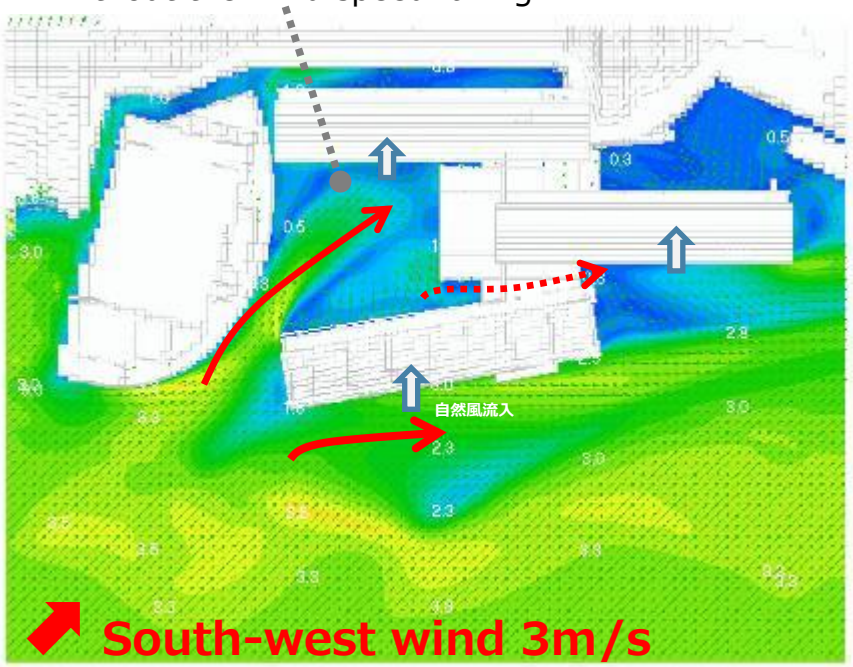
No tilt

Since natural wind is not blown into the courtyard, wind speed is small and natural ventilation is not promoted.



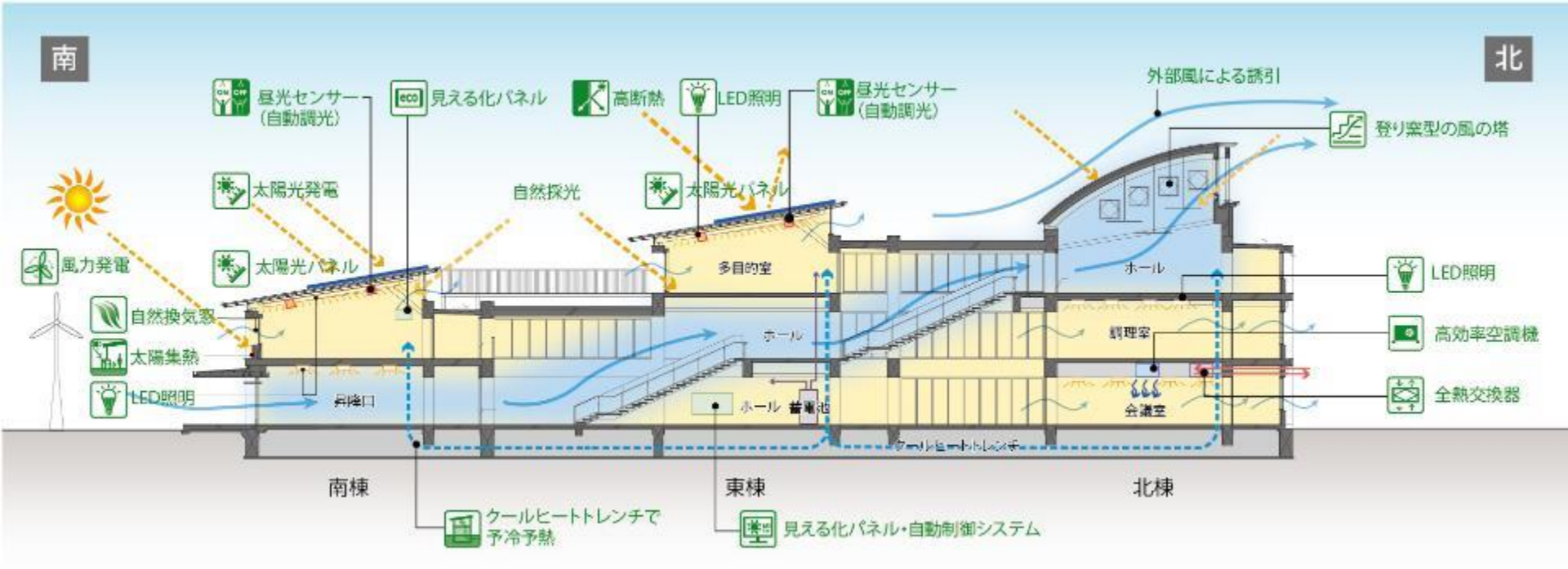
Tilted by 10°

Wind flowing down the inner courtyard without the wind speed falling



Cross section of the building and technology for ZEB

Natural ventilation system passing through the hall



Indoor playground like a whale shape



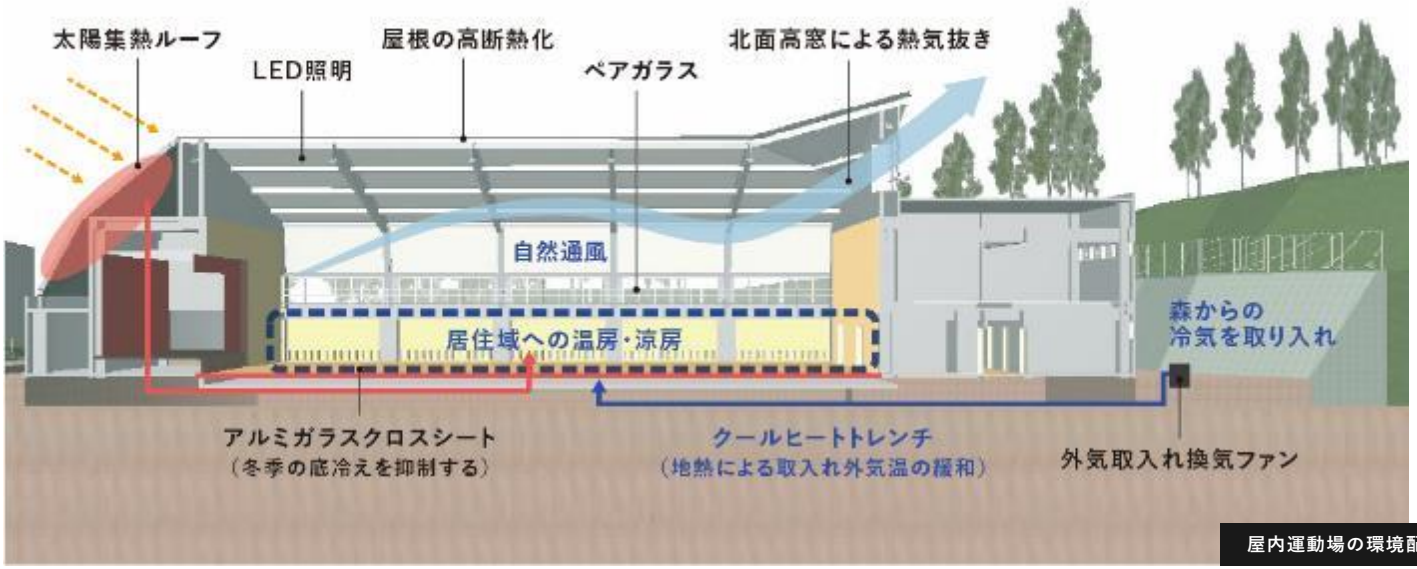
NIKKEN

Solar collector roof

Collect solar energy and warm air. Send to arena.



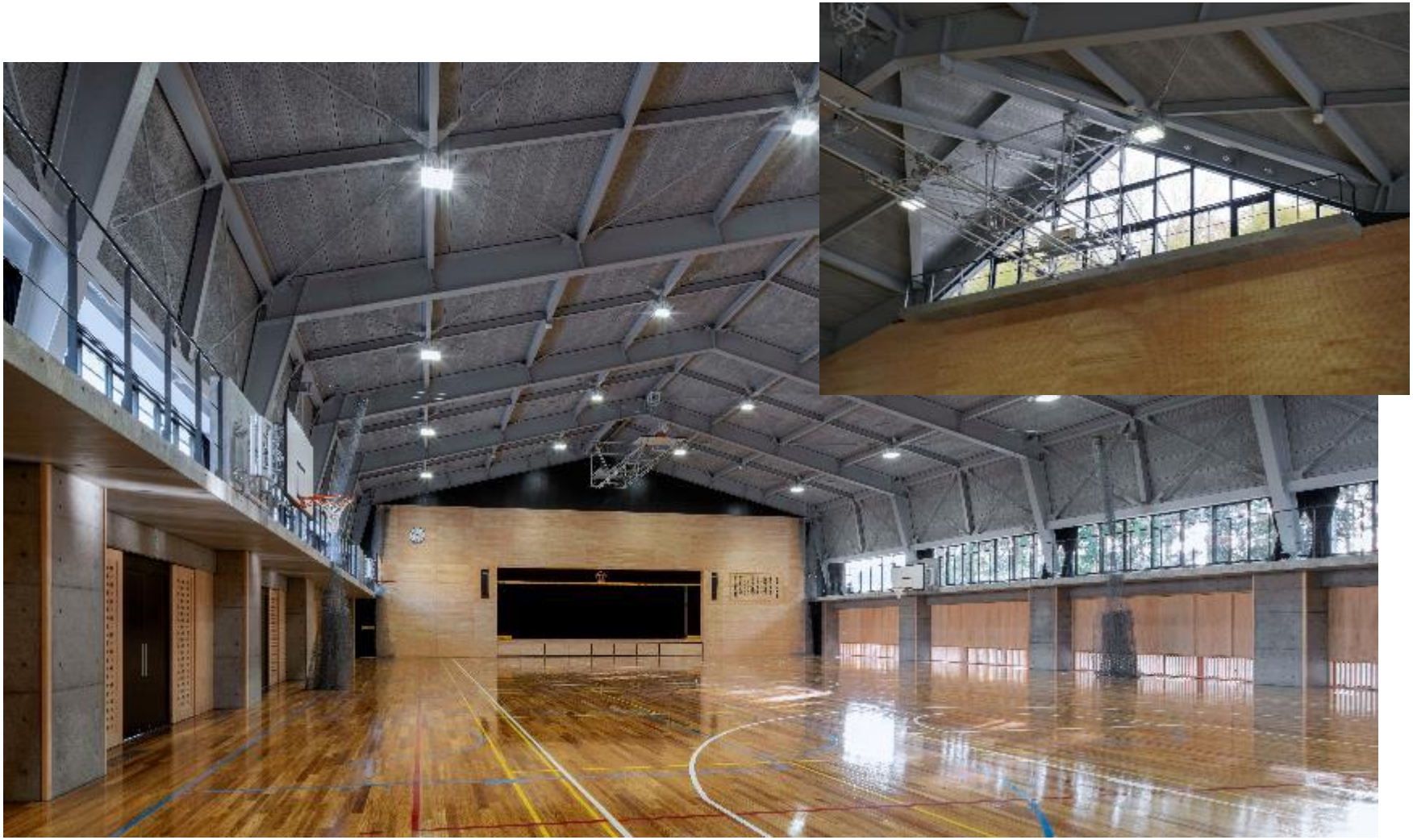




屋内運動場の環境配慮イメージ

Natural ventilation window

Perform efficient hot venting from high windows



Light shelf

Guide light through the diffusion film into the classroom

Learn the changes in the sun altitude for each season on the scale of the science room



