Sections

Exising Factory Hall

Final Design

Section Concept

Sections
1. ventilation

(The facade is 4 meters high, while the roof starts at a height of 7 meters. By not connecting the facade to the roof, outdoor air is free to move through the building. In this way the working space is continuously provided with fresh air.)

2. thermal comfort

(In climates with high temperatures and high humidity levels, air movement helps the body to cool down. By designing a facade that exists out of operable panels, the factory workers can open the facade on warm days to allow extra air movement through the building. This will help to keep the indoor temperature low and to keep the work environment comfortable.)

3. visual comfort

(In general it can be said that people find it pleasant to (be able to) look outside. If a building has no windows, people can feel disoriented and disconnected from their environment. So windows in the facade give the factory workers a view to the outside.)

**Building Element 1 | Facade - Operational Windows**

**Detail 1**

- Bambusa bamboo
- Window
- Window frame
- Bangkirai wood
- Window handle

**Detail 2**

- Bambusa bamboo
- Window
- Window frame
- Bangkirai wood
- Window handle
**Building Element 1 | Facade - Operational Windows**
BUILDING ELEMENT 2 | FACADE - FIXED WINDOWS
**Building Element 3 | Acoustic Indoor Walls**

**Horizontal Section | 1:20**

**Elevation | 1:20**
**Building Element 3 | Acoustic Indoor Walls**

- **Bambusa bamboo**
- **Banana fabric**
- **Bangkirai wood**
- **Concrete floor**

**Details**

**Detail 3 | 1:5**
- **Vertical Sections | 1:20**

**Detail 4 | 1:5**
- **Steel pin**
- **Concrete base**
- **Concrete column**
- **Natural coconut fibers**
- **Cocoboard**
- **Natural coconut fibers**
- **Frame**
- **Bangkirai wood**
- **Steel pin**

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**Notes**

- Bambusa bamboo: 30 mm (dyed with turmeric)
- Banana fabric: 100 mm acoustic insulation
- Cocoboard: Natural coconut fibers
4. rainwater harvesting

Another important function of the roof is to collect rainwater, which then can be stored in the pond located on the east side of the factory building. In the pond the water will be purified by the plants: Lotus Nelumbo Nucifera, Lemongrass Vertiver and Reed. The pond can also function as a playground and swimming pool for the children of the Kampung.

3. energy production

Because of all the machines needed for the production process of clothes, the factory's energy demand is high all year round. The implementation of solar panels is an effective and sustainable way to produce energy in a country with a high solar radiation like Indonesia. Designing the factory roof in a way that a large area is available for pv-panels, sufficient energy can be produced.

1. providing daylight but keep direct sunlight out

The factory building is both long and wide, so windows in the facade are not enough to provide the indoor space with sufficient daylight. Openings in the roof are needed. Also, since the solar radiation is strong, direct sunlight must be blocked to prevent high indoor temperatures. The roof shape and a dynamic shading system (fabric solar blinds) together provide direct sunlight to enter the building.

2. hot air escape

Both the factory workers and the machines produce heat. Together with the heat produced by the sun, the indoor air temperature will increase during the day. Warm air rises all the way up to the ceiling. Openings in the roof make it possible for the warm air to leave the building. Wind moving over the building will stimulate this air flow by the effect of under- and overpressure.

BUILDING ELEMENT 4 | ROOF WINDOWS

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BUILDING ELEMENT 4 | ROOF WINDOWS