

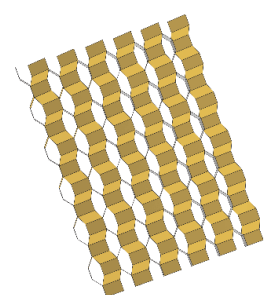
THE KIRI SHADE


AN AUTOMATED, EXPANDING AND COLLAPSING SHADING SYSTEM ACTIVATED BY THE HEAT FROM THE SUN AND MANUFACTURED BY MEANS OF ADDITIVE MANUFACTURING.

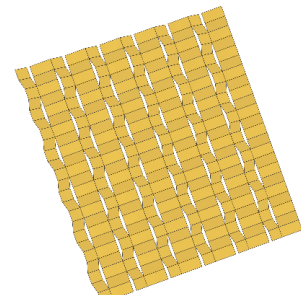
SARAH SMITH

WHAT IS IT?

The Kiri Shade is a shading system that is activated by an increase in temperature in a given space. At normal room temperature, the shade stays open to allow light in. When the shade senses a temperature increase, the shade closes to minimize heat gain.



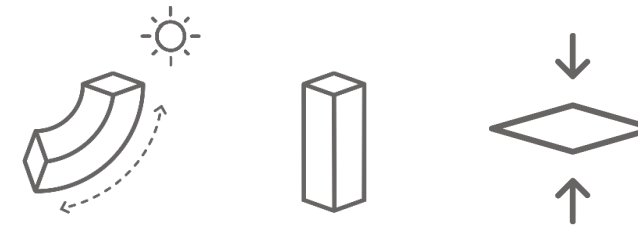
 AVERAGE TEMPERATURE



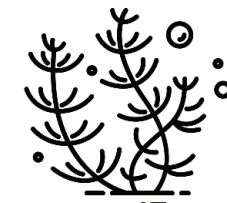
 INCREASE IN TEMPERATURE

HOW DOES IT WORK?

At normal room temperature, the hinges stay in a bent position, causing the tiles to open. When the temperature increases, the hinges straighten out, causing the panels to flatten out, and the openings to close.

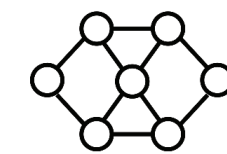


WHAT'S IT MADE OF?



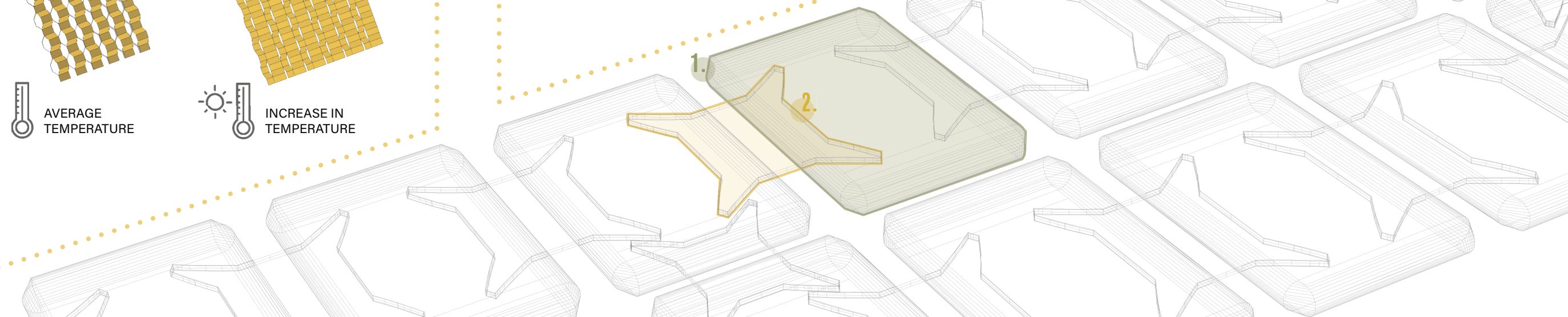
1 AGLAE-BASED PLASTIC

Designed by Dutch designers, Eric Klarenbeek and Maartje Dros, this form of bio-plastic is environmentally friendly and can be used in 3D printing.



2 2-WAY SHAPE MEMORY POLYMER

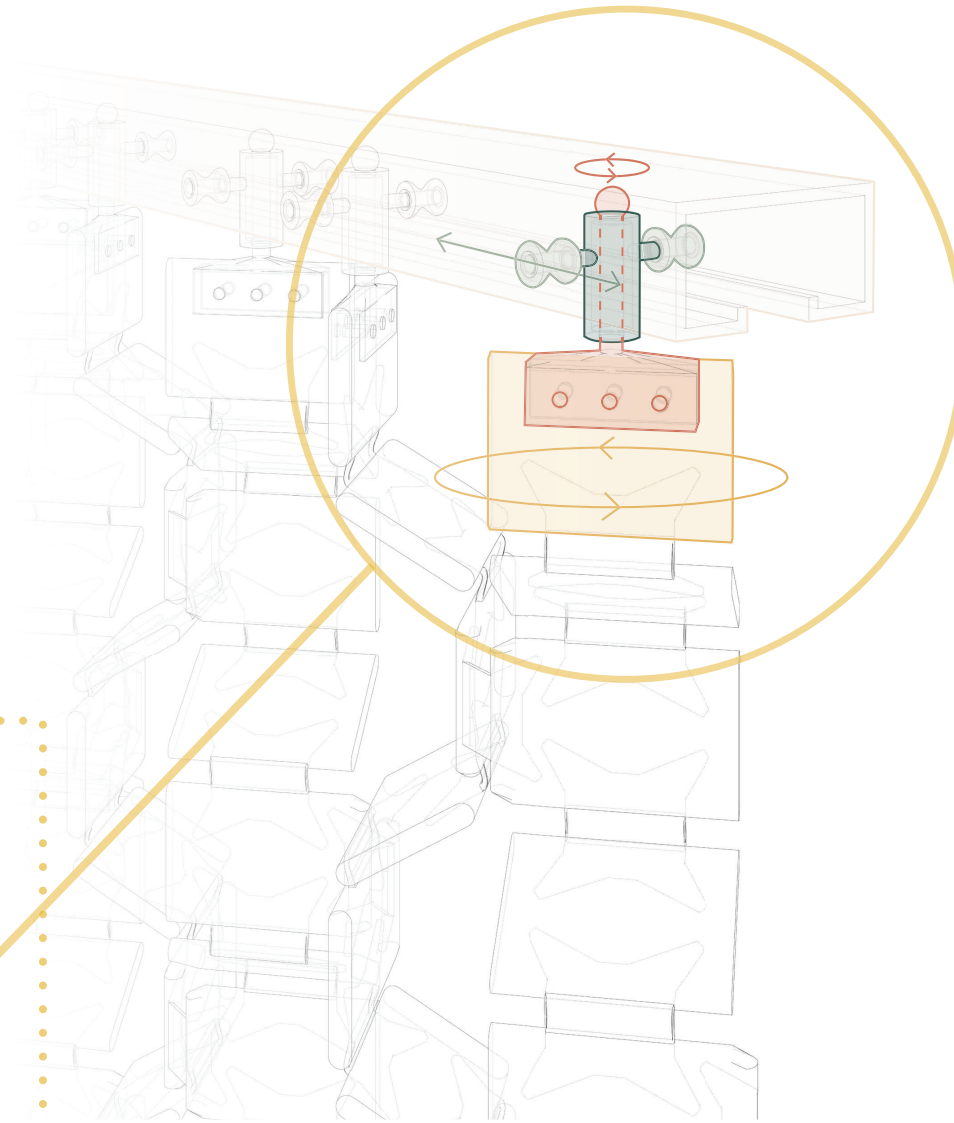
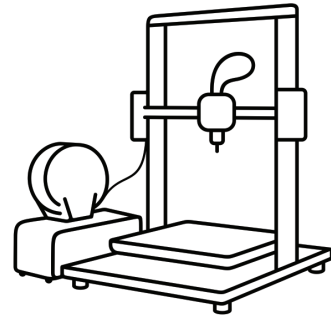
This SMP is activated by temperature and is acting like a hinge between the various tiles. It is 2-way in that when the temperature returns to normal, the shade will return to the open position.



HOW IS IT MADE?

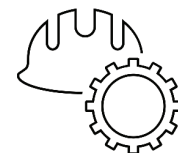
Since algae-based bioplastic and SMPs are 3D printable, the Kiri Shade is printed in place with a dual-nozzle printer. Therefore, several portions of the system can be printed at a single time, and then connected on site.

This makes the manufacturing process faster, and lessens the amount of individual moving parts.



HOW IS IT INSTALLED?

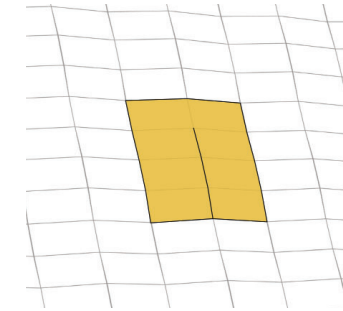
The Kiri Shade consists of a rail system that is installed into the ceiling of either a new or existing building. On the rail, there is a system of pins (red) and rollers (light green). As the hinges rotate the tiles into the "closed" position (see photo on left), the pins connected to the top tiles (yellow) will be pushed slightly apart in sets of two's. The shaft (dark green) and rollers allow for this rotation along a single axis.



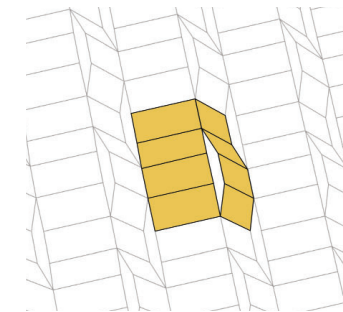
These small mechanical systems don't move far, but they give the shade the freedom to adjust accordingly on its own.

HOW DOES IT DEPLOY AND COLLAPSE?

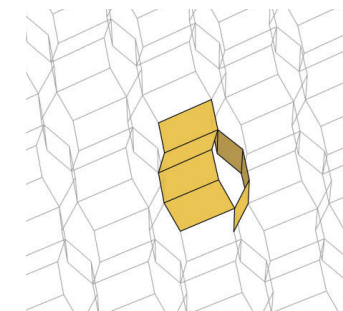
The Kiri Shade is based off of the traditional Japanese Kirigami Honeycomb Pattern. It is similar to Origami, except it introduces cutting along with the classic valley-ridge folding.



A single "cell" is comprised of 8 panels - all connected along the top and bottom seams, with one connected on the side.



The top and bottom seams fold every other panel, creating a corrugated texture.



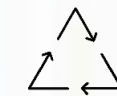
Then the side seams begin to fold every other, also causing a corrugated texture perpendicular to the first texture, which then forces the cell to open.

BUT, WHY?

The Kiri Shade is a sustainable approach to shading systems. On average, the US produces **25 BILLION POUNDS** of textile waste per year, and of that, **85% goes to our landfills.**

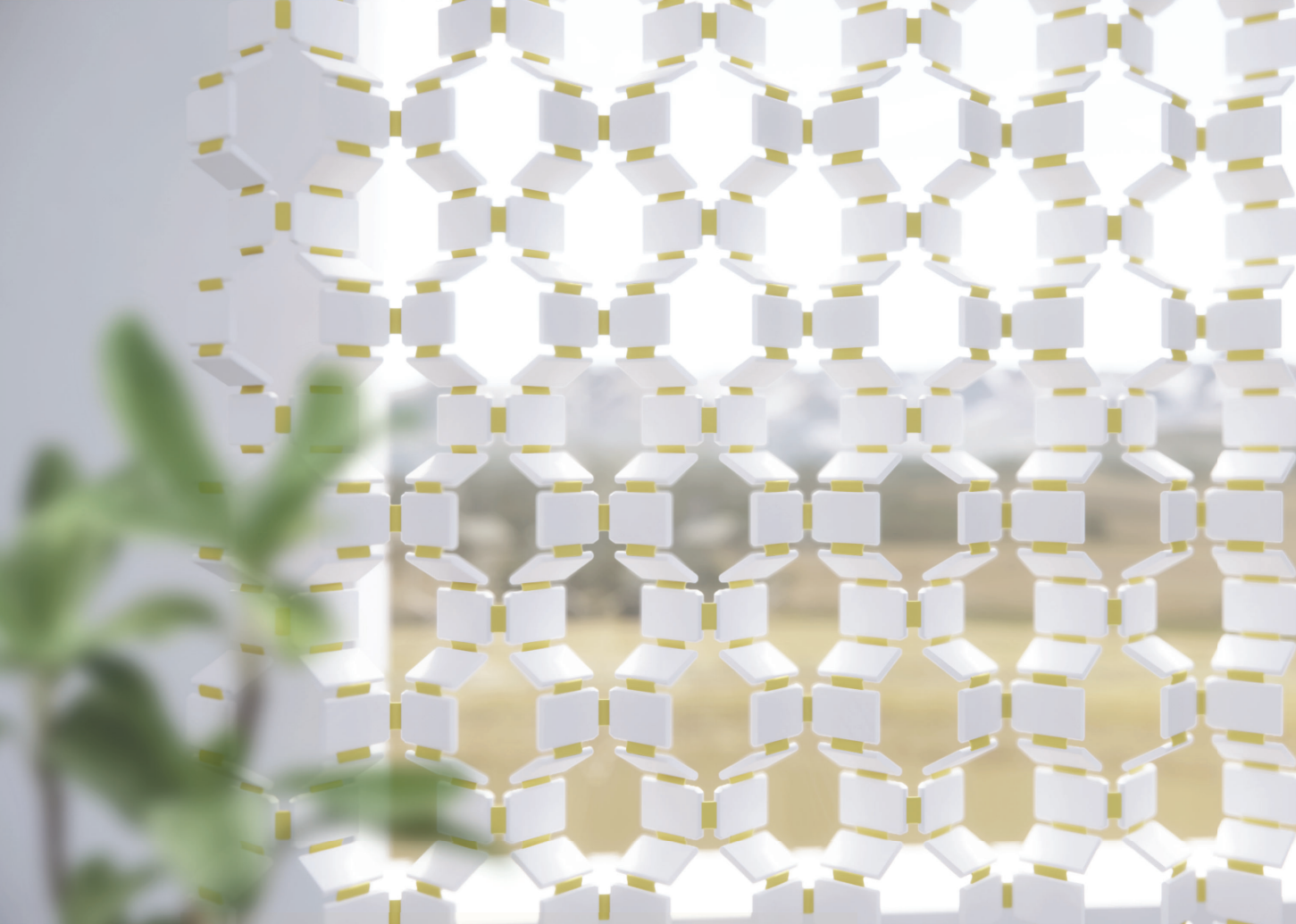


Algae-based bioplastic is incredibly durable and biodegradable. Depending on the local climate, it can **biodegrade in just 2 months during the summer, and 4 months in the winter.**



Also, the heat-activated system reduces heat gain from large glazed areas in the summer, but allows for it as needed in the winter. Leading to **healthier, more comfortable** spaces, and happier space occupiers.





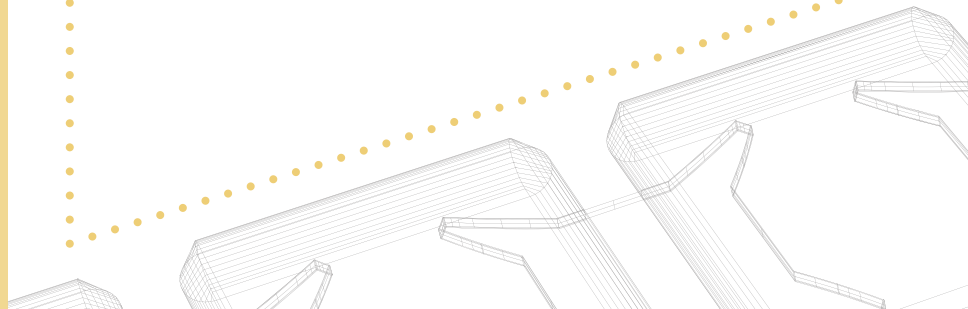
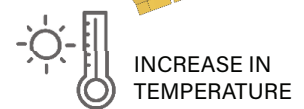
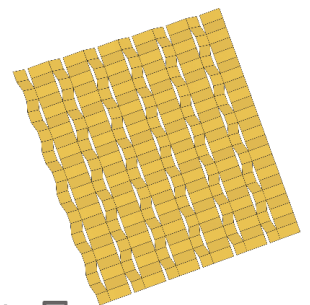
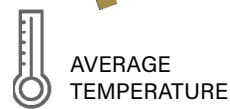
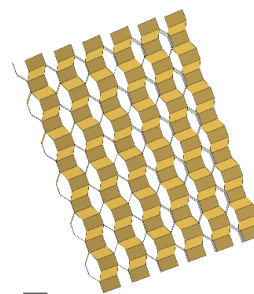
THE KIRI SHADE

AN AUTOMATED, EXPANDING AND COLLAPSING SHADING SYSTEM ACTIVATED BY THE HEAT FROM THE SUN AND MANUFACTURED BY MEANS OF ADDITIVE MANUFACTURING.

SARAH SMITH

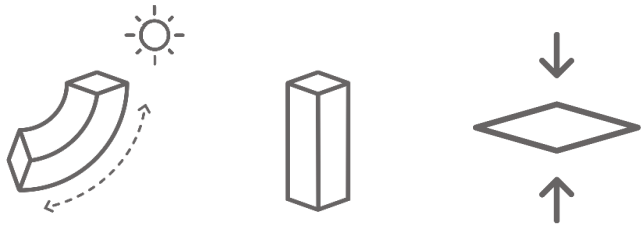
WHAT IS IT?

The Kiri Shade is a shading system that is activated by an increase in temperature in a given space. At normal room temperature, the shade stays open to allow light in. When the shade senses a temperature increase, the shade closes to minimize heat gain.

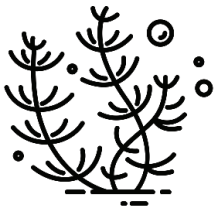


HOW DOES IT WORK?

At normal room temperature, the hinges stay in a bent position, causing the tiles to open. When the temperature increases, the hinges straighten out, causing the panels to flatten out, and the openings to close.

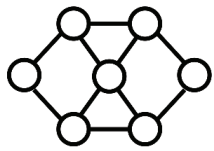


WHAT'S IT MADE OF?



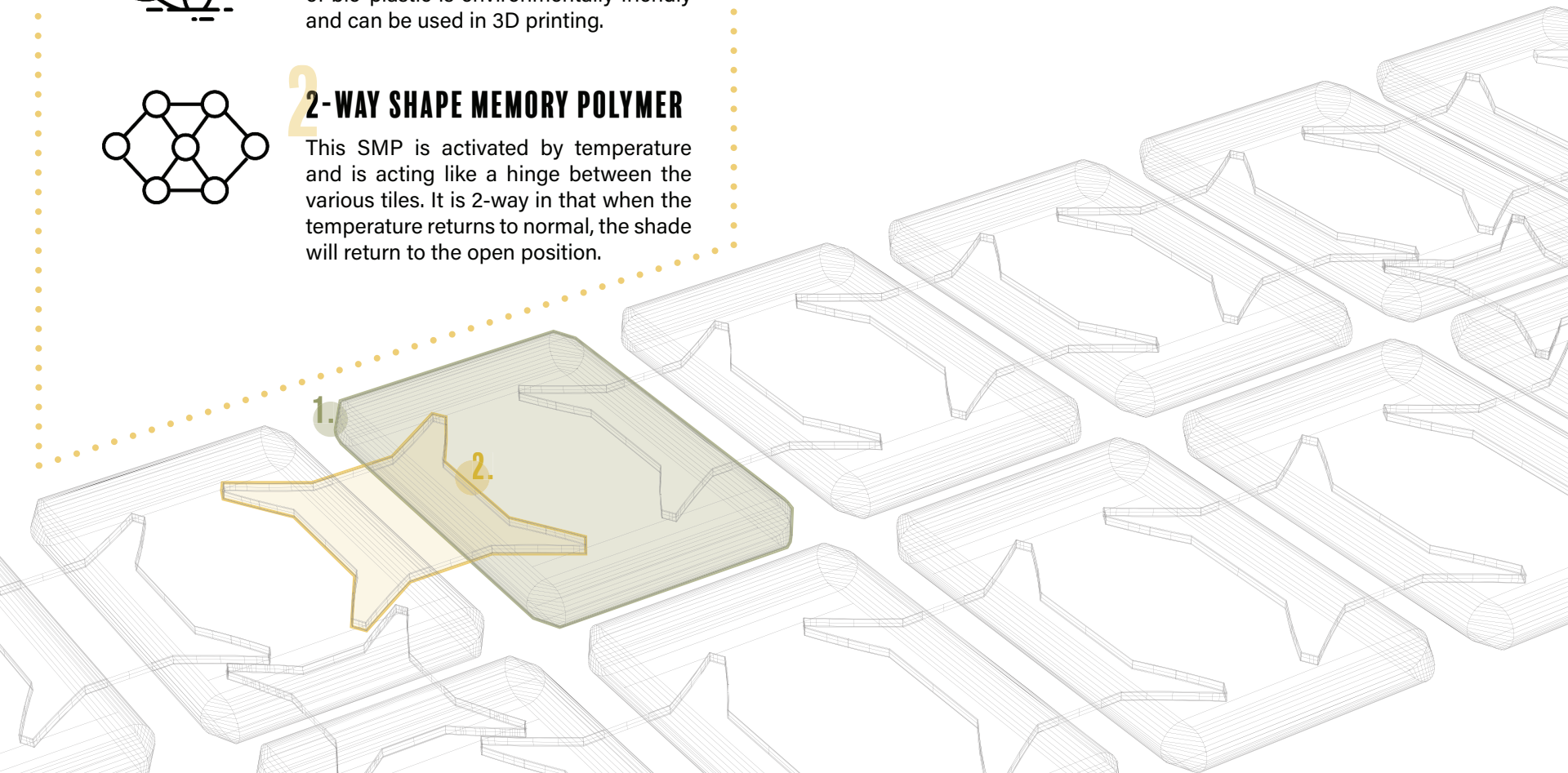
1 AGLAE-BASED PLASTIC

Designed by Dutch designers, Eric Klarenbeek and Maartje Dros, this form of bio-plastic is environmentally friendly and can be used in 3D printing.



2 2-WAY SHAPE MEMORY POLYMER

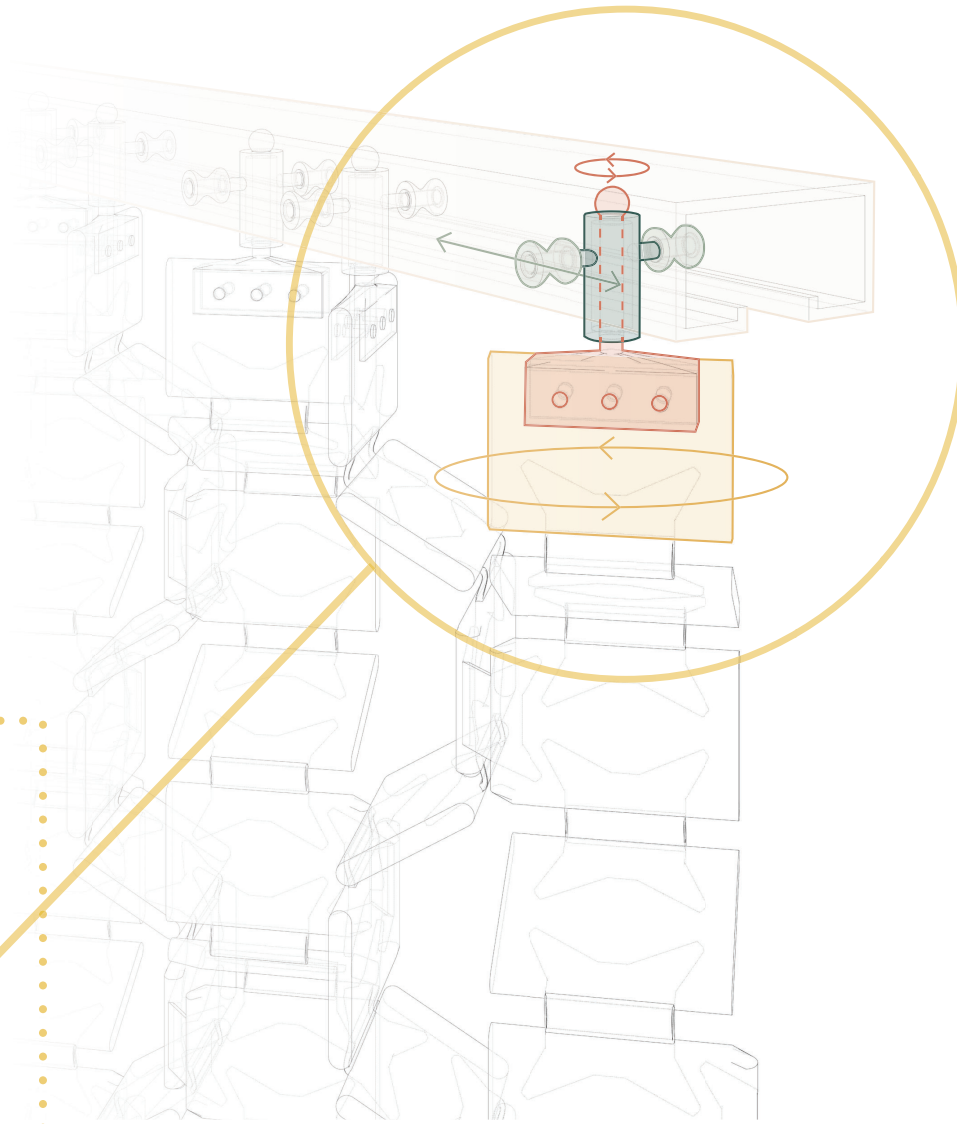
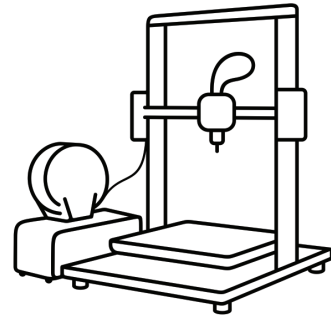
This SMP is activated by temperature and is acting like a hinge between the various tiles. It is 2-way in that when the temperature returns to normal, the shade will return to the open position.



HOW IS IT MADE?

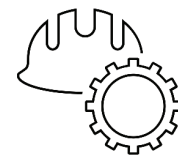
Since algae-based bioplastic and SMPs are 3D printable, the Kiri Shade is printed in place with a dual-nozzle printer. Therefore, several portions of the system can be printed at a single time, and then connected on site.

This makes the manufacturing process faster, and lessens the amount of individual moving parts.



HOW IS IT INSTALLED?

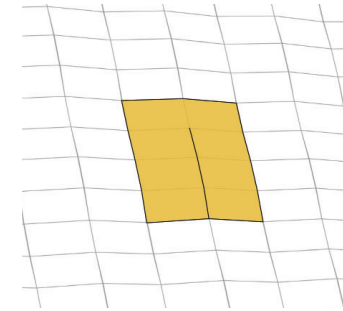
The Kiri Shade consists of a rail system that is installed into the ceiling of either a new or existing building. On the rail, there is a system of pins (red) and rollers (light green). As the hinges rotate the tiles into the "closed" position (see photo on left), the pins connected to the top tiles (yellow) will be pushed slightly apart in sets of two's. The shaft (dark green) and rollers allow for this rotation along a single axis.



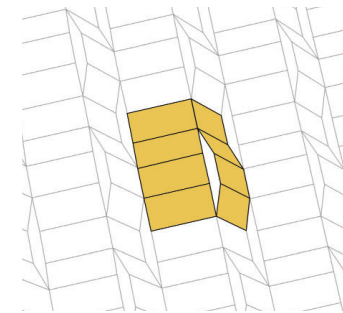
These small mechanical systems don't move far, but they give the shade the freedom to adjust accordingly on its own.

HOW DOES IT DEPLOY AND COLLAPSE?

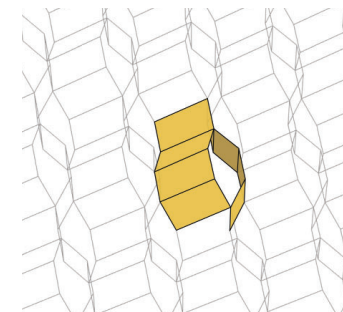
The Kiri Shade is based off of the traditional Japanese Kirigami Honeycomb Pattern. It is similar to Origami, except it introduces cutting along with the classic valley-ridge folding.



A single "cell" is comprised of 8 panels - all connected along the top and bottom seams, with one connected on the side.



The top and bottom seams fold every other panel, creating a corrugated texture.



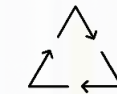
Then the side seams begin to fold every other, also causing a corrugated texture perpendicular to the first texture, which then forces the cell to open.

BUT, WHY?

The Kiri Shade is a sustainable approach to shading systems. On average, the US produces **25 BILLION POUNDS** of textile waste per year, and of that, **85% goes to our landfills.**



Algae-based bioplastic is incredibly durable and biodegradable. Depending on the local climate, it can **biodegrade in just 2 months during the summer, and 4 months in the winter.**



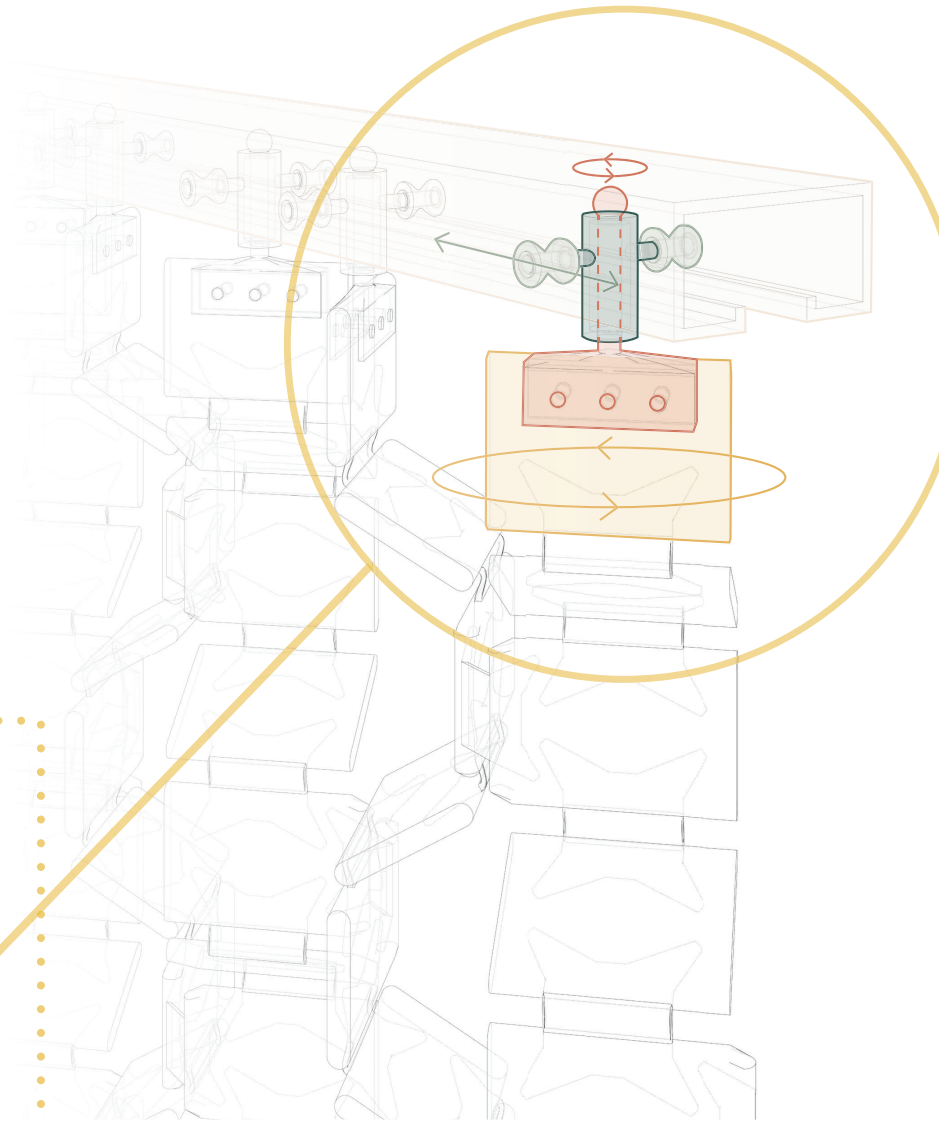
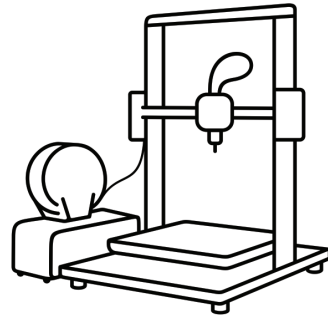
Also, the heat-activated system reduces heat gain from large glazed areas in the summer, but allows for it as needed in the winter. Leading to **healthier, more comfortable** spaces, and happier space occupiers.



HOW IS IT MADE?

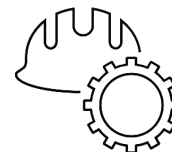
Since algae-based bioplastic and SMPs are 3D printable, the Kiri Shade is printed in place with a dual-nozzle printer. Therefore, several portions of the system can be printed at a single time, and then connected on site.

This makes the manufacturing process faster, and lessens the amount of individual moving parts.



HOW IS IT INSTALLED?

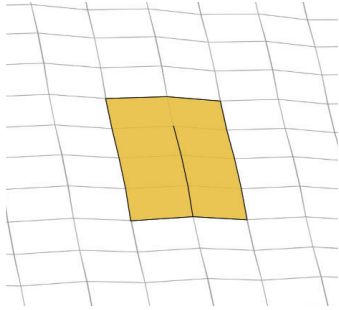
The Kiri Shade consists of a rail system that is installed into the ceiling of either a new or existing building. On the rail, there is a system of pins (red) and rollers (light green). As the hinges rotate the tiles into the “closed” position (see photo on left), the pins connected to the top tiles (yellow) will be pushed slightly apart in sets of two’s. The shaft (dark green) and rollers allow for this rotation along a single axis.



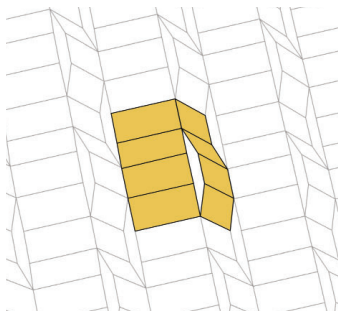
These small mechanical systems don’t move far, but they give the shade the freedom to adjust accordingly on its own.

HOW DOES IT DEPLOY AND COLLAPSE?

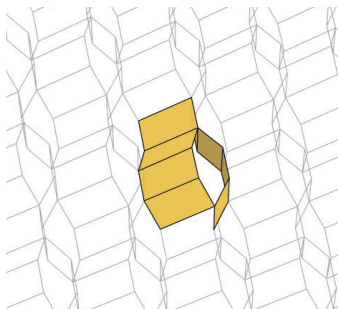
The Kiri Shade is based off of the traditional Japanese Kirigami Honeycomb Pattern. It is similar to Origami, except it introduces cutting along with the classic valley-ridge folding.



A single "cell" is comprised of 8 panels - all connected along the top and bottom seams, with one connected on the side.



The top and bottom seams fold every other panel, creating a corrugated texture.



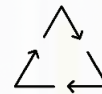
Then the side seams begin to fold every other, also causing a corrugated texture perpendicular to the first texture, which then forces the cell to open.

BUT, WHY?

The Kiri Shade is a sustainable approach to shading systems. On average, the US produces **25 BILLION POUNDS** of textile waste per year, and of that, **85% goes to our landfills.**



Algae-based bioplastic is incredibly durable and biodegradable. Depending on the local climate, it can **biodegrade in just 2 months during the summer, and 4 months in the winter.**



Also, the heat-activated system reduces heat gain from large glazed areas in the summer, but allows for it as needed in the winter. Leading to **healthier, more comfortable** spaces, and happier space occupiers.

