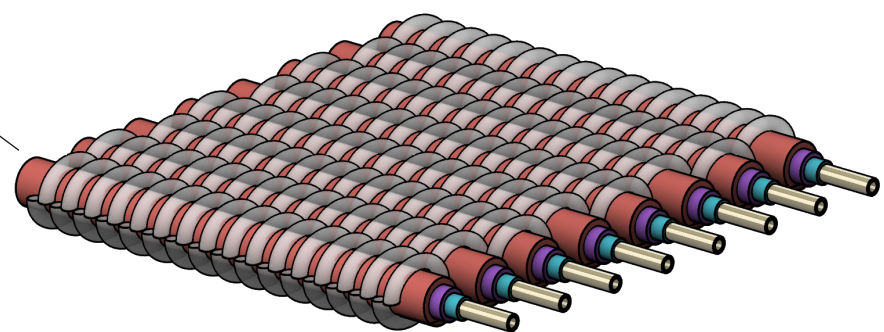
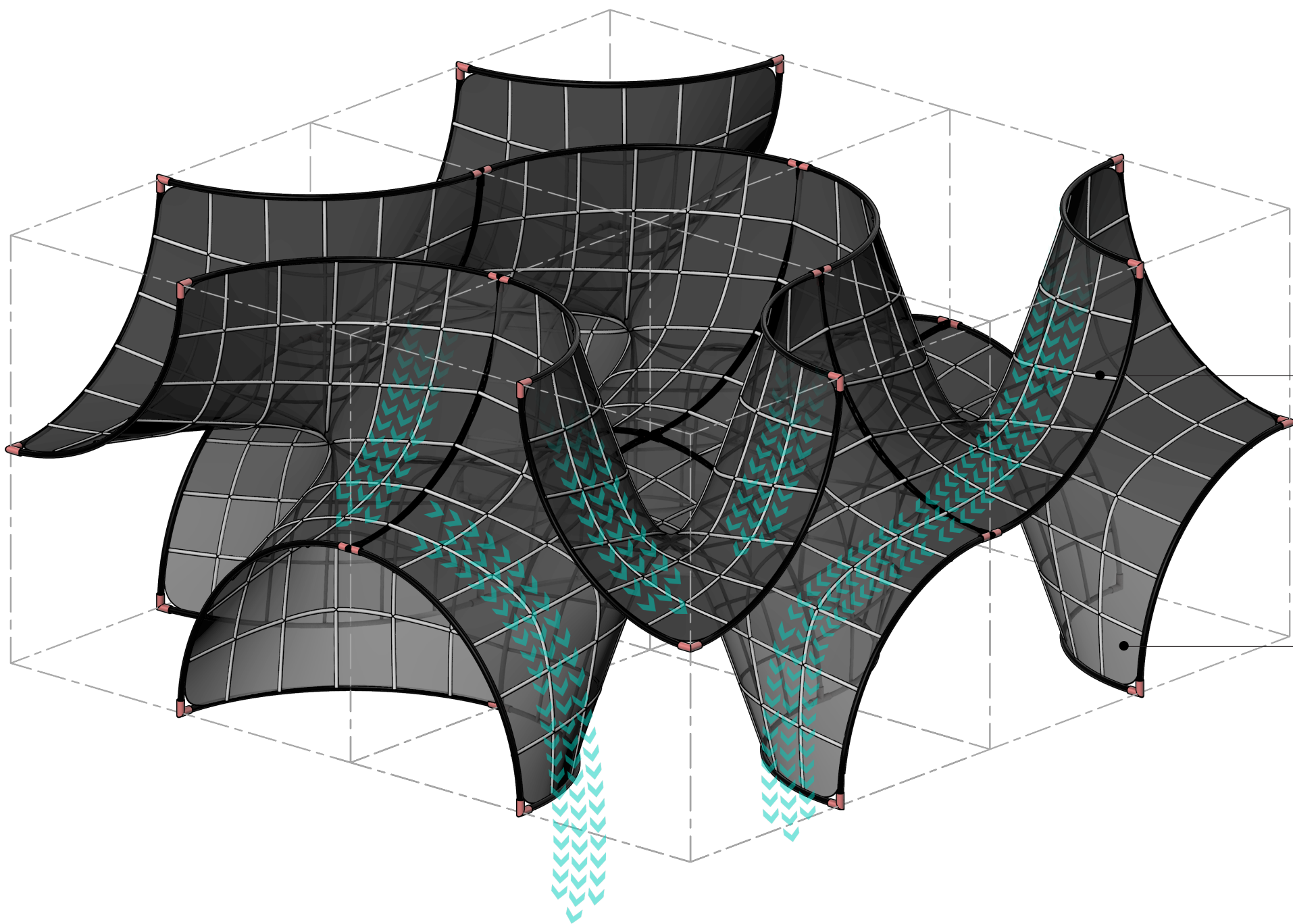


Solar cell textile

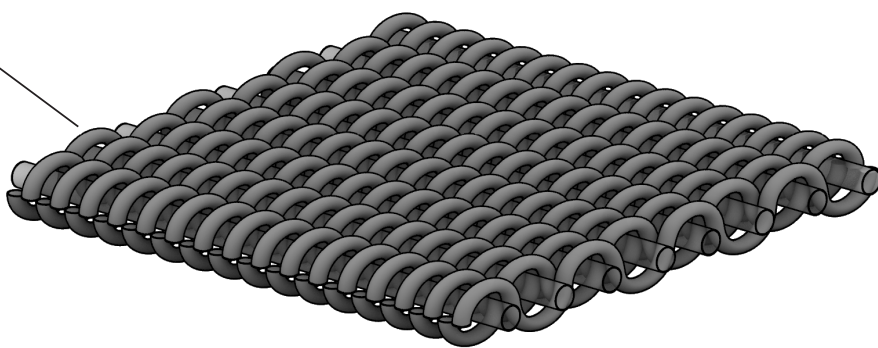
The solar energy will be captured using a novel and sustainable energy solution in the form of a photovoltaic fabric that can deliver a reliable amount of energy that will be stored in batteries situated in the interior of the structure and serve as charging stations for devices ranging from mobile phones to electrical scooters.

The solar fabric was woven using the electronic yarns created by embedding miniature sized crystalline silicon solar cells connected with fine cooper wires within the fibers of a textile yarn. This method of integrating solar energy harvesting capability within the core of the textile fabric allows it to retain the flexibility and the three-dimensional deformability that will seamlessly integrate on to the structure without interrupting the visual design language.

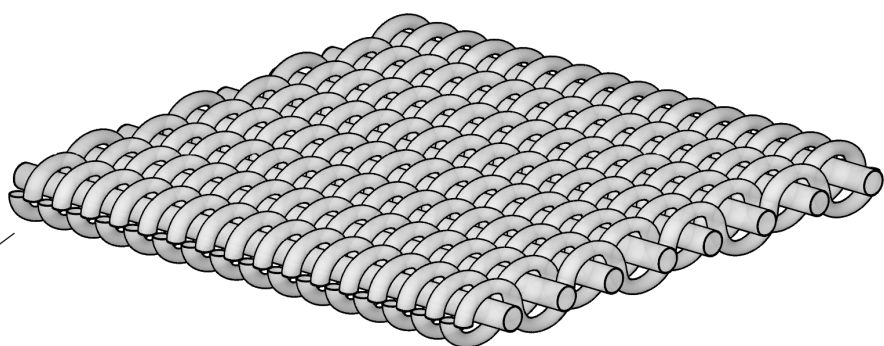
The solar analysis of our structure revealed that the surfaces that receive the most constant radiation throughout the day are the outer corners. There, the values are ranging from 500 kWh/m2 to 1000 kWh/m2 depending on the inclination of the fabric so it will be the optimal space for capitalizing on the solar exposure implementing a solar cell embedded yarn fabric. Such implementation will offer an annual yield of 18.28 MWh.



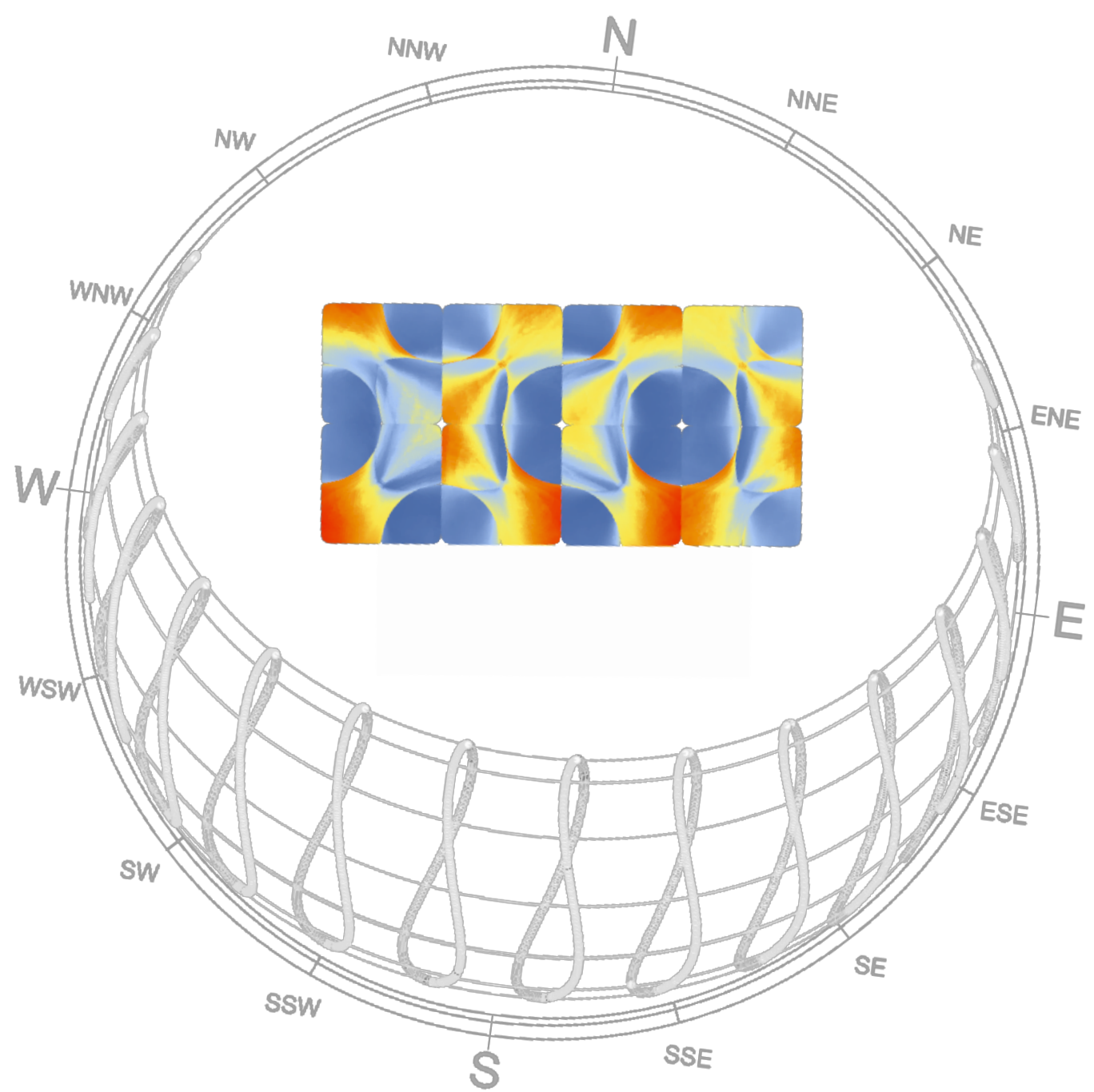
Solar cell embedded yarn fabric



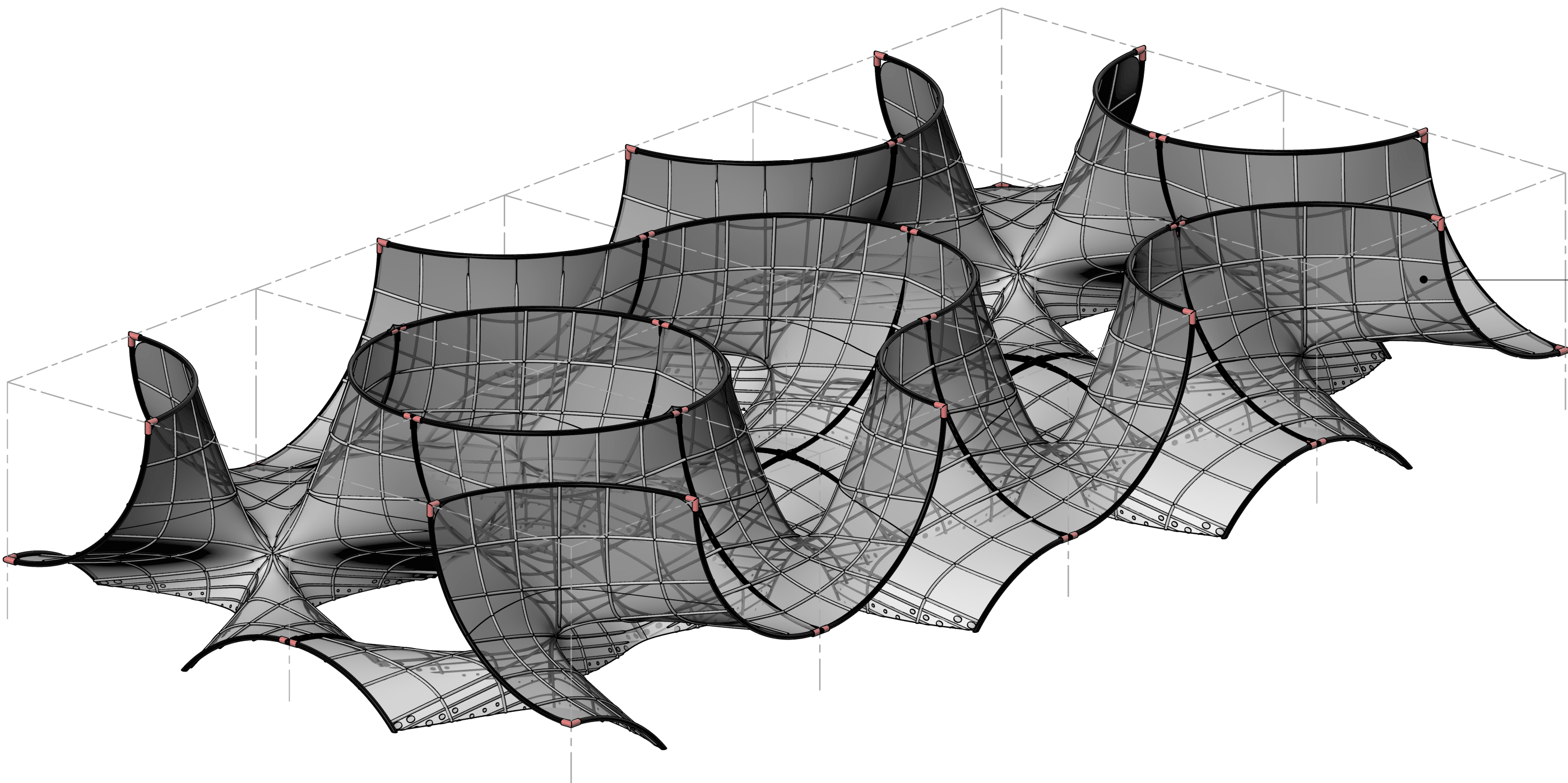
Blackened polyester yarn



Polyester yarn

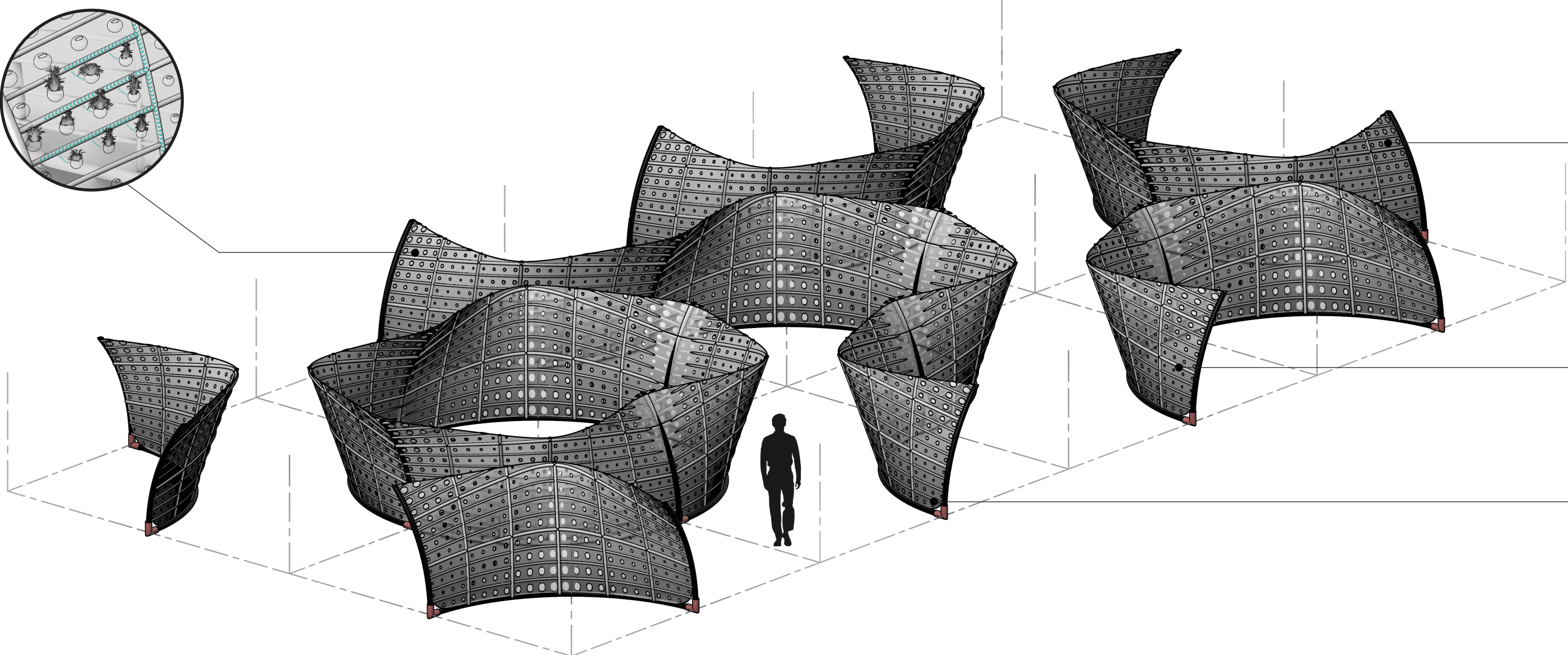


Solar radiation analysis



Vertical Farming

The selected crops are a combination of water purifying and fruit producing plants that are typically found in the area of Baden-Württemberg. The plants are placed in accordance with their function, water needs and growth style in order to increase their efficiency (herbs that filter the water are placed on top of the structure followed by the fruit and vegetable crops on the way down).



	USE	SUN	WATER	GROWTH STYLE
Sphagnum Moss	<ul style="list-style-type: none">- reduces Ph of water- inhibits biofilm- removes ions like dissolved metals from water	Partial	High	On coils
Spotted Liverwort	<ul style="list-style-type: none">- filters heavy metals- attracts pollinators bees, butterflies and birds	Partial Shade	Medium	On coils
Grapes	<ul style="list-style-type: none">- grows big leaves that create a shady nook- clusters of grapes will be easily accessible	Ful	Medium	On coils
Strawberries	<ul style="list-style-type: none">-capable of producing a significant amount of fruits in a relatively small space	Full Partial	Medium	On coils
Blackberries	<ul style="list-style-type: none">-reduces ground temperatures-increases water for other plants-captures nutrients from decaying leaf litter	Shade	Medium	On coils
Spinach	<ul style="list-style-type: none">-easy to grow-very beneficial for human consumption	Partial	Medium	Gound level

	USE	SUN	WATER	GROWTH STYLE
Warer Mint	<ul style="list-style-type: none">- filters bacteria like E.coli and Salmonella	Full Partial	High	In Vessel
Redcurrant	<ul style="list-style-type: none">-good vitamin source well suited for human consumption	Shade	Low	In Vessel
Green Beans	<ul style="list-style-type: none">-will boost the soil nitrogen levels	Full	Low	On coils
Cherry Tomatoes	<ul style="list-style-type: none">-rich in lycopene, great at fighting free radicals that cause disease	Full	High	On coils
Squash	<ul style="list-style-type: none">-deters weeds-helps retain soil moisture lev-els	Full	Medium	Gound level