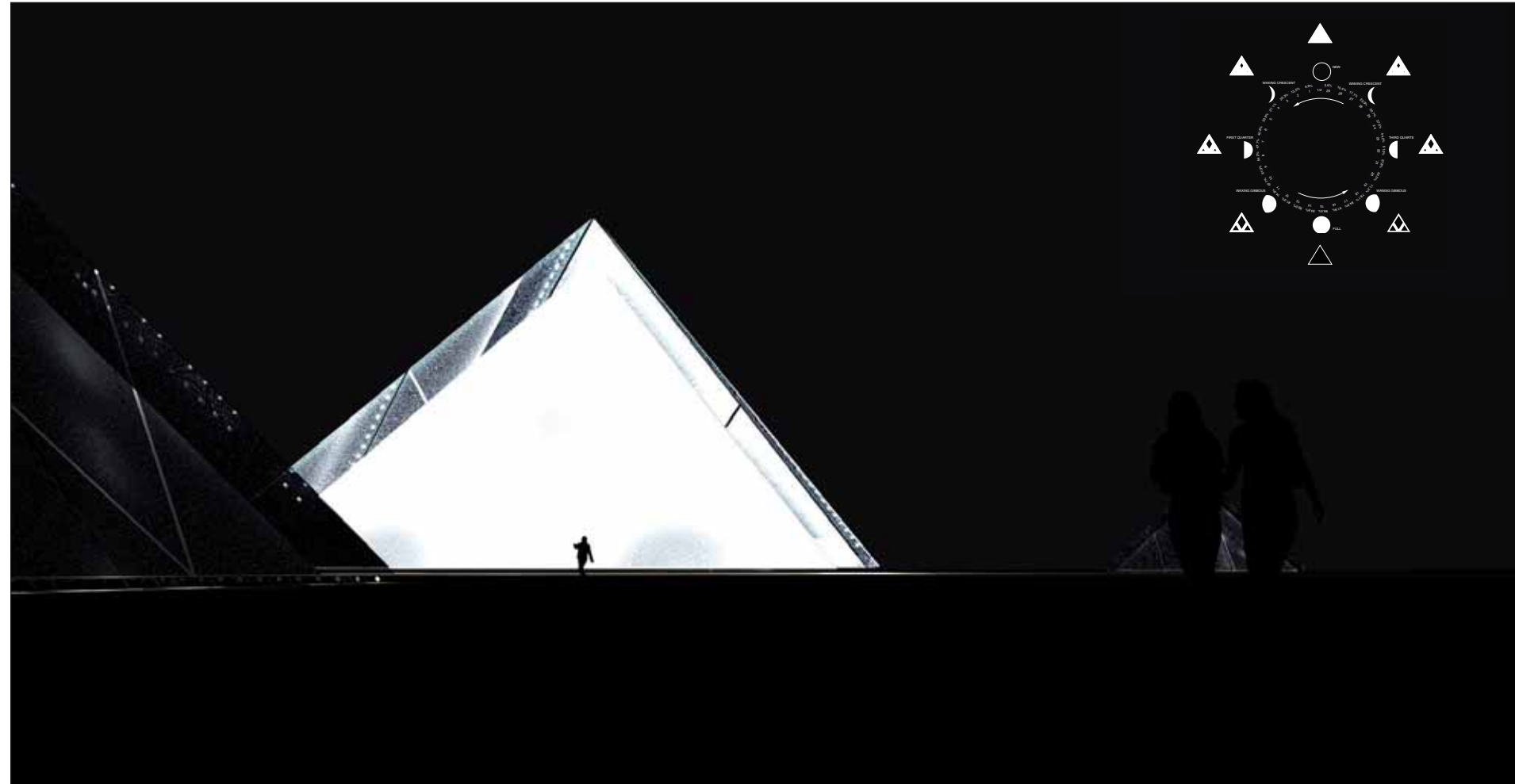


# LUNAR CUBIT



Lunar Cubit represents nine pyramids made of solar panels that collect energy during the day and illuminate at night inversely proportional to the lunar cycle.

New Moon  Fully Illuminated

Full Moon  Totally Dark

With no moving parts, no exposed wires or hazardous elements this work invites personal interaction and meditation.

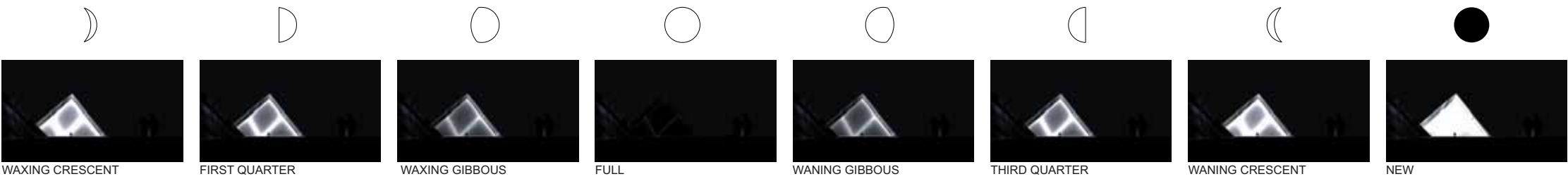
Viewers are free to get as close as they like, even touch the pyramids and experience energy from the sun being transformed into electricity.

Linked to the site is a data monitoring system accessible anywhere in the world, providing real time data showing how much energy the pyramids are producing. Visitors can use their smart phone or view the data at a kiosk display located on site.

Visible from the sky, travelers flying into Abu Dhabi international airport will be welcomed with pyramids of light and easy access from the airport road will attract visitors, wanting to get a closer look at what they could see from the sky.

Hilal is an Arabic term, meaning crescent moon, first developed in pre-Islamic Arabia. The very slight crescent moon that is first visible after a new moon. Muslims look for the hilal when determining the beginning and end of Islamic months. The need to determine the precise appearance of the hilal was one of the inducements for Muslim scholars to study astronomy.

LOOKING EAST TOWARD CENTER PYRAMID ON THE NIGHT OF A NEW MOON



WAXING CRESCENT

FIRST QUARTER

WAXING GIBBOUS

FULL

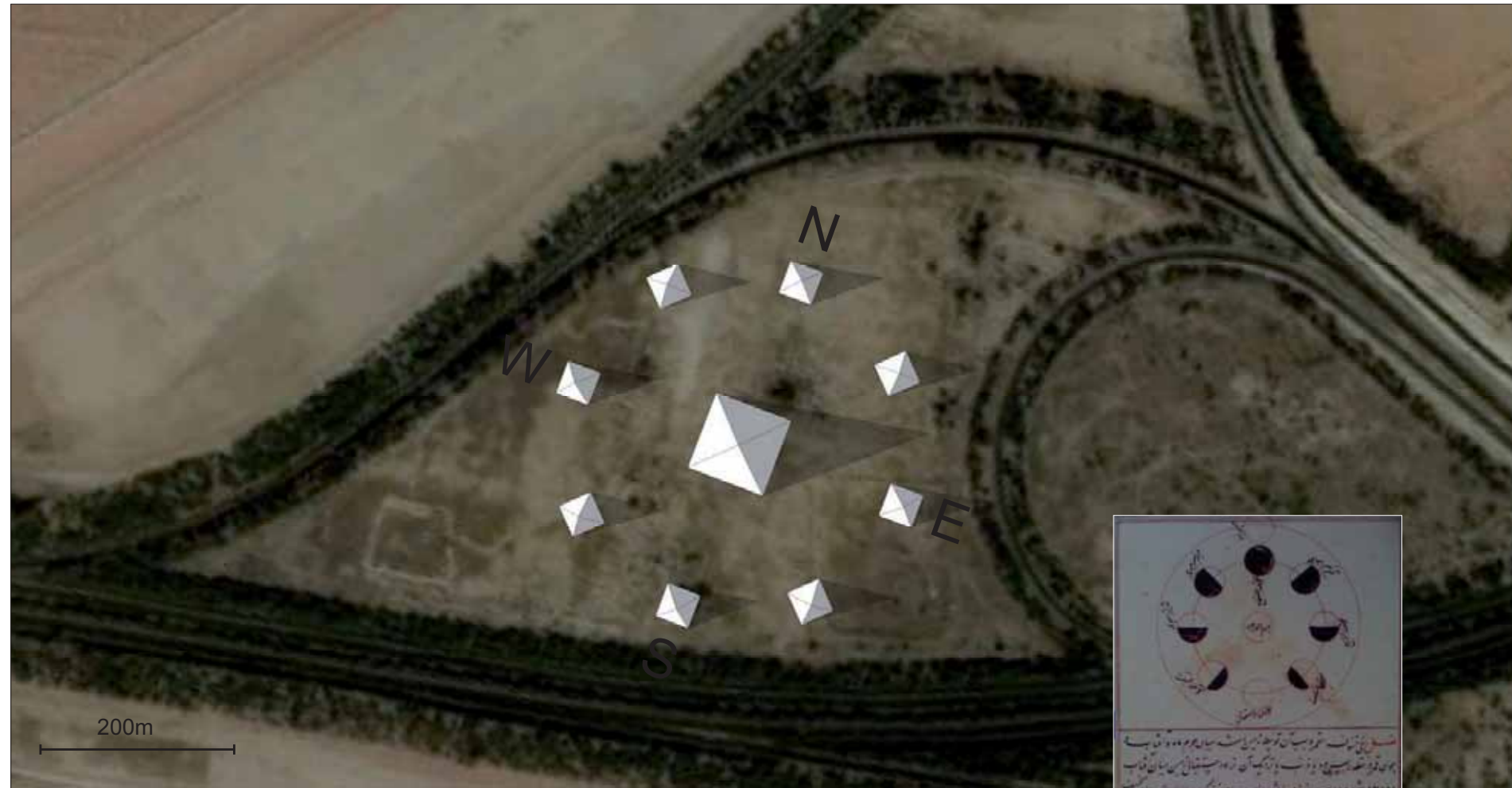
WANING GIBBOUS

THIRD QUARTER

WANING CRESCENT

NEW

# LUNAR CUBIT



Designed with proportions matching the Great Pyramid at Giza and scaled using Royal Cubits, the earliest attested standard of measure; eight pyramids each 42 Royal Cubits high (~22meters) form a ring around a central pyramid 96 Royal Cubits high (~50 meters). Each of the eight smaller pyramids represents one of the eight lunar phases. Starting at North and rotating counter clockwise, following the orbit of the moon, they are; New, Waxing Crescent, First Quarter, Waxing Gibbous, Full, Waning Gibbous, Third Quarter, Waning Crescent.

Each night the central pyramid will always illuminate inversely to the lunar cycle. Pyramids forming the ring also illuminate inversely but are lit only when their corresponding moon phase is active, orbiting around the central pyramid like the moon orbits around earth.

A cubit is the first recorded unit of length and was one of many different standards of measurement used through history. It was originally based on measuring by comparing to one's forearm length. Cubits were employed through Antiquity, the Middle-Ages up to the Early Modern Times, especially for measuring cords and textiles, but also for timbers, stone and volumes of grain.

The Egyptian hieroglyph for the unit shows the symbol of a forearm, but it was rather longer than any actual forearms. The Egyptian cubit was not subdivided into centimeters or inches, but into palms and digits. The Egyptian cubit was subdivided into 7 'palms' of 4 'digits', making 28 parts in all, and was between 52.3 and 52.4cm in length.



16TH CENTURY PERSIAN MANUSCRIPT „WONDERS OF CREATION“ AL QUAZWINI

The Islamic calendar or Muslim calendar or Hijri calendar is a lunar calendar consisting of 12 lunar months in a year of 354 or 355 days. It is used to date events in many Muslim countries (concurrently with the Gregorian calendar), and used by Muslims everywhere to determine the proper day on which to celebrate Islamic holy days and festivals. The first year was the year during which the emigration of the Islamic prophet Muhammad from Mecca to Medina, known as the Hijra, occurred. Each numbered year is designated either H for Hijra or AH for the Latin anno Hegirae (in the year of the Hijra).[1] A limited number of years before Hijra (BH) are used to date events related to Islam, such as the birth of Muhammad in 53 BH.[2] The current Islamic year is 1431 AH, from approximately 18 December 2009 (evening) to 6 December 2010 (evening).

**NIGHT**



ILLUMINATES WITH LOW ENERGY LED LIGHTING

**DAY**



TRANSFORMING SUNLIGHT INTO ELECTRICITY

RATED CAPACITY 1.74 MW  
LUNAR CUBIT WILL  
GENERATE ENOUGH  
ELECTRICITY TO POWER  
250 HOMES

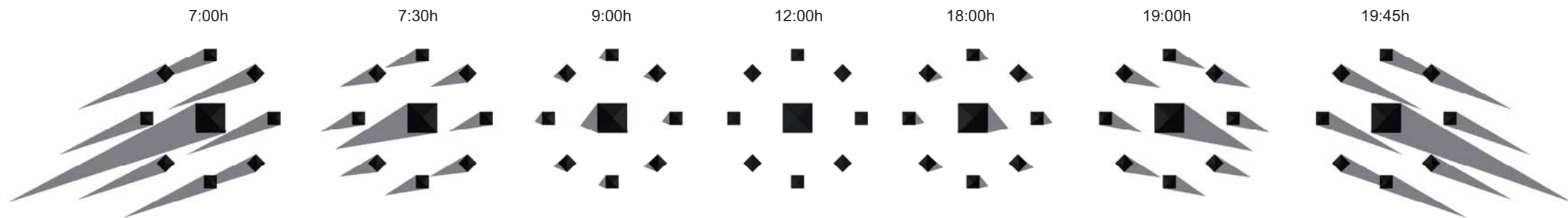
# LUNAR CUBIT



Made from Amorphous Silicon solar panels, this work is tailored to withstand the high temperatures of Abu Dhabi, with an operating range upto 85°C (185°F) Amorphous Silicon is also ideal for low light situations such as the north side of the pyramids.  
Each outer pyramid has a DC rating of 131kw, totaling 1048kw for all eight. The center pyramid has a DC rating of 691kw. All nine have a combined DC rating of 1739kw - enough energy to power 250 homes for an entire year.  
Expected output values were calculated using NREL TMY3 data and even though orientation for all the solar panels is not true south, the total loss in expected output is less than 25% from ideal.

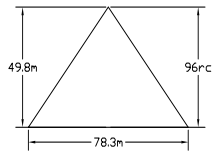
Site three is located about 100km north of the Tropic of Cancer. The Tropic of Cancer is the circle of latitude on the earth that marks the apparent position of the sun at the time of the northern solstice. Also referred to as the Northern tropic, it is one of the two tropics (with the Tropic of Capricorn) that represent the extremes of the sun's path across the sky with the change of the seasons.  
Because of the tilt of the earth's axis of rotation relative to the plane of its orbit around the sun, the sun is directly overhead on the Tropic of Cancer at the June solstice. It is the northernmost latitude at which the sun reaches 90 degrees above the horizon at its zenith, with the Northern Hemisphere tilted toward the sun to its maximum extent.  
The tropics are two of the five major degree measures or major circles of latitude that mark maps of the Earth, besides the Arctic and Antarctic Circles and the Equator.

## SHADE STUDY - SUMMER SOLSTICE JUNE 21, 2010

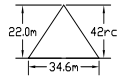


# LUNAR CUBIT

## PYRAMIDS



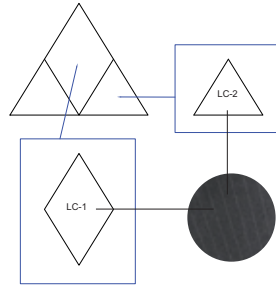
RATED POWER  
691 KW DC  
SURFACE AREA  
10 000m<sup>2</sup>



RATED POWER  
131 KW DC  
SURFACE AREA  
1894m<sup>2</sup>

Built on a concrete foundation with a steel support structure that carries an extruded aluminum facade, engineered by Schüco, a world leader in building integrated photovoltaics (BIPV)

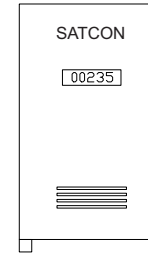
## SOLAR PANELS



AMORPHOUS SILICON (a-Si) THIN FILM  
HIGH PERFORMANCE LOW LIGHT  
THERMAL OPERATING RANGE - 40°C TO 85°C  
25 YEAR POWER OUTPUT WARRANTY

Custom SUNTECH Thin Film solar panels, LC-1 and LC-2 create a beautiful seamless facade while providing 1.74MW of rated power. For this application Amorphous Silicon modules will outperform crystalline modules and unlike many other thin films, are 100% safe for the environ-

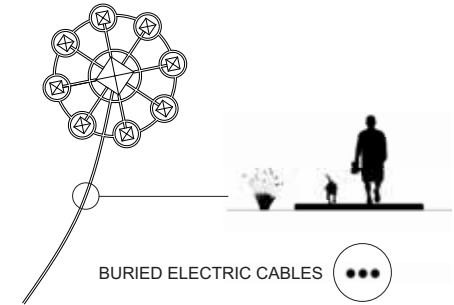
## INVERTER



POWERGATE® PLUS 500KW  
96.52% EFFICIENCY  
SATCON SOLSTICE FOR MAXIMUM ENERGY HARVEST  
THERMAL OPERATING RANGE - 40°C TO 85°C  
5 YEAR WARRANTY

SatCon is an industry leader offering the highest quality product to convert DC energy to AC. Four PowerGate®Plus 500kw inverters will be co-located inside the central pyramid where AC power is stepped up to transmission voltage for Utility Grid interconnection.

## ENVIRONMENTAL IMPACT



BURIED ELECTRIC CABLES

Disruption to local ecosystems will be minimized by building pedestrian paths with natural stone over land disturbed during initial construction. Accessibility and power transmission linked together reducing the footprint impacted by Lunar Cubit.

## DATA MONITORING



Locus Energy will provide a state of the art data monitoring system providing real time revenue grade data accessible anywhere in the world. This interactive feature expands Lunar Cubit beyond its geographic boundaries, inviting national and international participation.

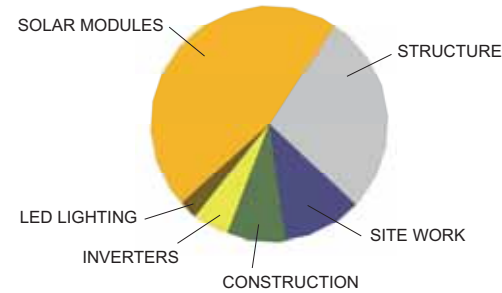
## MATERIAL



ALUMINUM EXTRUSION  
ANNEALED GLASS  
AMORPHOUS SILICON  
STEEL  
CONCRETE  
NATURAL STONE

Constructed with safe, reliable, non-toxic materials that perform well over long periods of time; creates no run-off, no emissions nor any other by-product beyond renewable energy. No moving parts to break or be serviced.

## EMBODIED ENERGY



Using frameless thin film solar panels the estimated time to recover their embodied energy is less than two years. Total embodied energy for Lunar Cubit will be recovered in under five years.

## LIFE CYCLE ANALYSIS



Decommissioning of Amorphous Silicon solar panels after their 25 year warranty is safe and simple. Using non-soldered junctions, they are 100% clean fill, safe as a pile of sand. Inverters at end of life will be recycled.