

A photograph of a modern wooden house with a large array of solar panels installed on its roof. The house is situated on a lush green hillside, surrounded by dense trees and flowering bushes. In the background, another building is visible on a higher slope. The overall scene conveys a sense of sustainable living in a natural environment.

**GEMINI next Generation AG (Inc.)**

**Off-Grid — Local-Grid — On-Grid,  
always the same,  
always the best.**



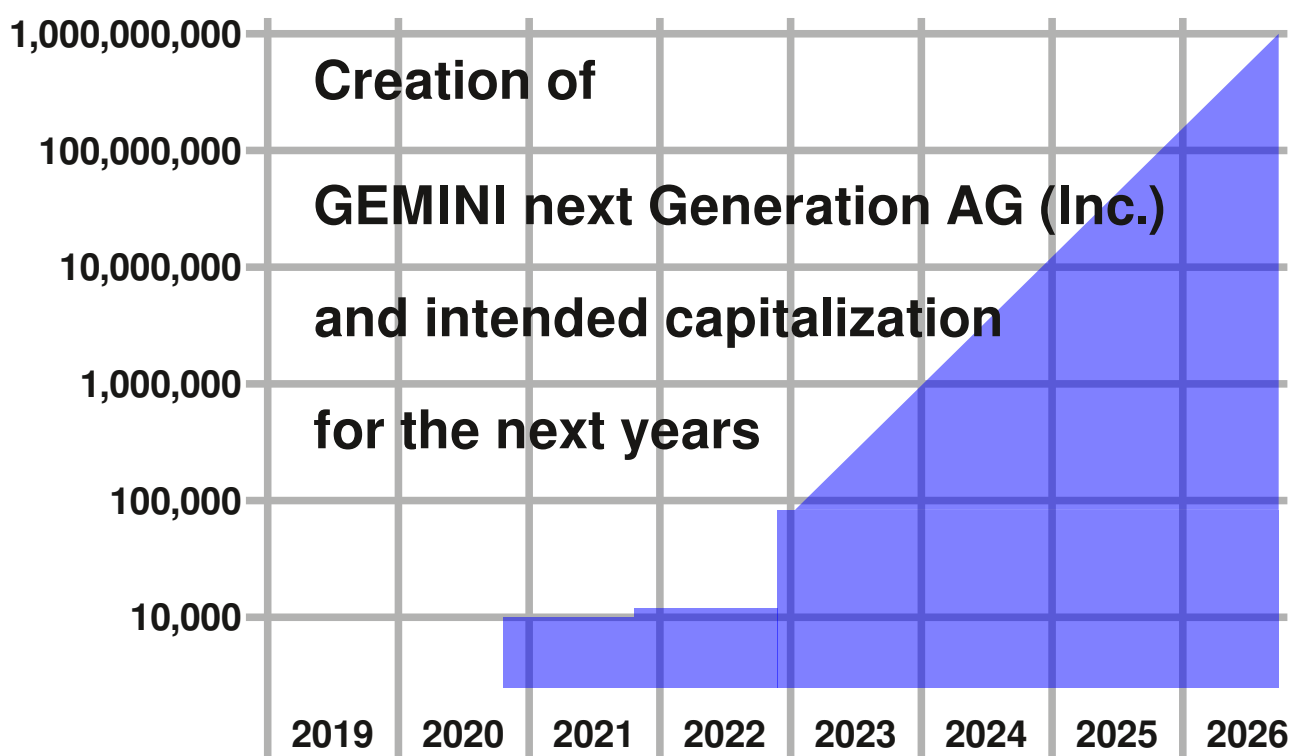
# Houses have to be developed to be useful

The car was not fully developed into something useful in 1900. It was in 1900 only a new toy for rich people. Only now, with new cheap electric cars and cheap renewable energy, it becomes something really useful for all.

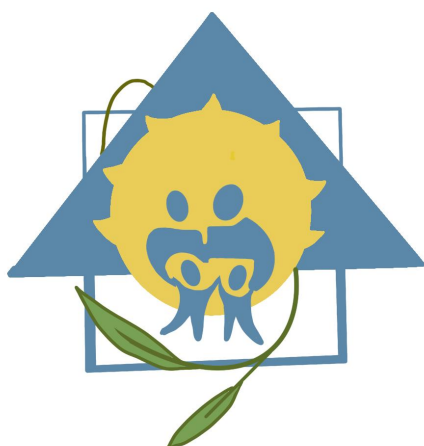
The house has not yet been ready developed into something useful for 8 billion people. It is only a emergency solution that consumes a lot of energy and contributes a lot to climate change.

We will change this! We just created GEMINI next Generation AG (Inc.) in November 2022. We will build our first production hall in the new industrial park Unken September 2023. We will show our first 5 example houses September 2024 in Unken (Austria, Salzburg).

We plan worldwide for many production halls and a production capacity of 6,000 houses per year in 2027.



## Establish worldwide a new building standard



Who would have thought in 2003, that the new registration of ICE cars will be abolished 2025 in Norway and 2035 in the EU? 2003 was the year, Tesla Inc. was created.

We define the new building standard, CPSH — Climate Protection Superiority House.

The replication factor is the central measurement of this standard: how many houses of the same type could be produced with the excess electricity of one house in 30 years?

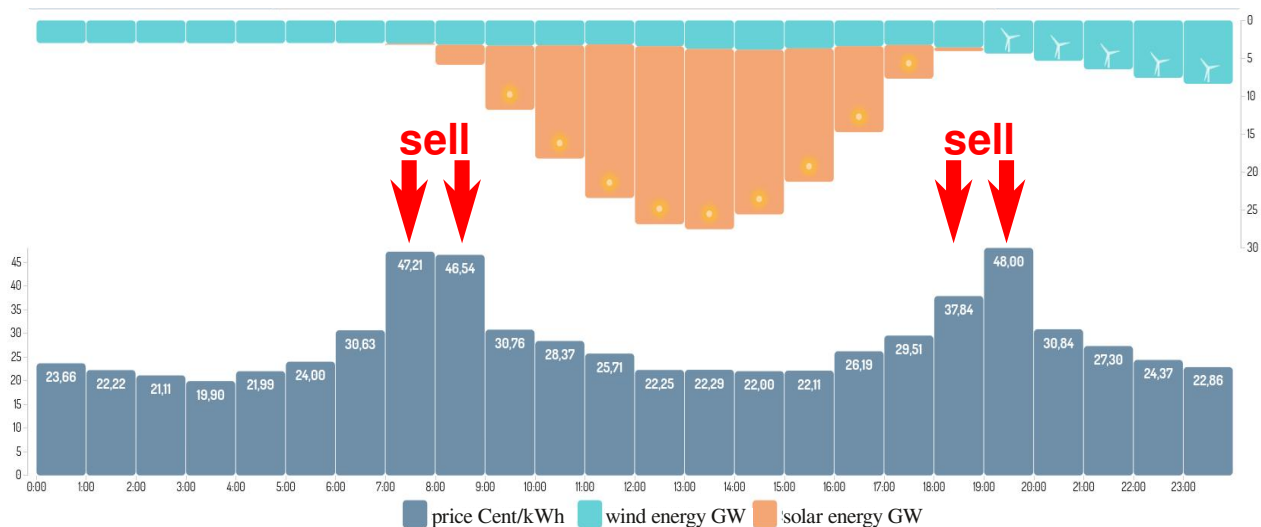
This building standard is far beyond the imagination of today's architects and builders.

# Grid connection is only to sell electricity

It has been this way for thousands of years: some farmers sell their harvest immediately, when everyone else is also selling, and get a poor price. Some can store their crop and sell it at a much better price.

This story repeats itself when selling electricity. Depending on the size and additional photovoltaic areas, a GEMINI next generation house is equipped with 100 to 200 kWh of batteries.

This is beneficial to the community because it avoids, for example, the use of inefficient peaker power plants in the evening, when the sunlight decreases and at the same time the demand for electricity increases.



Hourly prices on the German day-ahead spot market in October 12th 2022

## Local grid even for energy intensive industry

You think off-grid means only light in the night? Maybe a refrigerator? We think different! Some houses somewhere in nowhere power a fast charging station for cars, some more houses power a fast charging station even for a Tesla Semi.

Electric tractors for agriculture. But electricity supply from the sun and electricity demand from the charging stations can fluctuate. These fluctuations can be much larger than can be compensated for with 3 kWh of batteries per kW of photovoltaics. The solution for settlements: a large-scale consumer such as power to methanol, power to ammonia or power to fertilizer.

Every few weeks a Tesla Semi with a tanker trailer comes, charges and collects produced methanol or ammonia, is the new off-grid vision for settlements of a hundred houses or more.

Workers housing estate providing electricity for an energy intensive factory. Or just CO<sub>2</sub> DAC – Direct Air Capture, then split the CO<sub>2</sub> into carbon and oxygen. We need to think far bigger, that is why our mission statement is:

**Planet renovation back to 350 ppm CO<sub>2</sub>,  
we contribute house by house**

# Side effect: the perfect off-grid house

With off-grid houses far from the equator, the problem is always: how to store enough energy in the summer to get through the winter. The GEMINI next generation house is designed to sell as much electricity as possible and to have as little self-consumption as possible for heating, cooling and hot water.

Therefore, storing energy in the summer for the winter is unnecessary, because even in a very cloudy week in December, the electricity yield is sufficient.

This eliminates the need for complex, very expensive seasonal storage.

Development costs have to be distributed to the number of products. Off-grid houses are mostly single designed products without any intention for mass production.

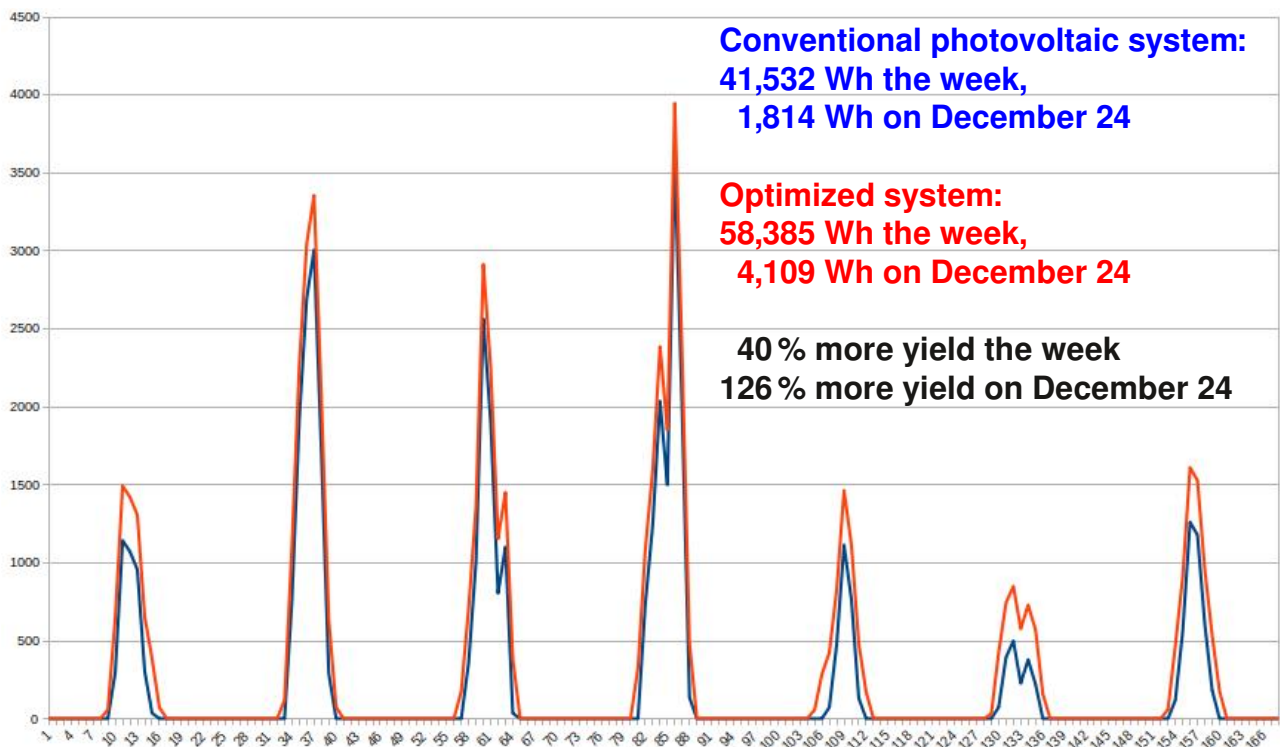
So this side effect makes an incredible cheap off-grid house possible, because we intend to beat on-grid houses not only in comfort and useful features but also at the price.

## Electricity production starts at 1.3 W/m<sup>2</sup> light

We will develop a method for higher yield at extreme low light. Over all the year, this brings only 3 % more yield, but the improvement can be dramatic in winter.

We searched in the weather data from Berlin (52.5° N) for the most dense cloudy week and found this week from December 19th 2017 to December 25th 2017.

We simulated the GEMINI next Generation house 70 m<sup>2</sup> with a carport for 2 cars. This makes 43 kW photovoltaic.



The highly optimized system for room heating and hot water would even have left about 10 kWh for charging the electric car in this darkest week detectable in the weather data.





## Simply more photovoltaic

Certainly carport or garage with photovoltaic. But maybe a covered sitting area in the garden? Or a garden fence made of bifacial photovoltaics?

How should new photovoltaic surfaces be integrated into the system? As simple as possible, of course, which is why we are developing our own inverter in cooperation with an established manufacturer. This will be a single-phase water-cooled 5 kW inverter, which can be arbitrarily assigned to one of the 3 three-phase phases. The allocation is done dynamically via the on-board computer.

Also several batteries can be installed. Which battery is charged or discharged by which inverter is also decided by the on-board computer.

Already in the 70 m<sup>2</sup> version there will be space for up to 12 of these 5 kW inverters. 6 of them are for the house roof, 2 more for garage or carport for 2 cars. 4 more can be mounted for additional photovoltaic systems.

To be compatible with the low light system, 720 cells are assigned to each inverter. This can be 10 modules with 72 cells or 12 modules with 60 cells.

## Synergy saves costs, material and space

A photovoltaic system needs a foundation, a house also needs a foundation. A house needs a roof, photovoltaic is the cheapest roof. Humans feel most comfortable at certain temperatures. Batteries also have an ideal temperature for least degradation and longest life.

Fortunately, the ideal temperatures for humans and batteries are very similar. Power electronics for inverters last longest at low temperatures. So what could be more logical than not also using the elaborate cooling and heating system of the house for water-cooled inverters?

With electrolytic capacitors, the service life doubles for every 10° less operating temperature. We collect all the scientific studies on this subject in order to offer the most reliable, long-lasting product possible.

But the most important thing is the saving of space: housing, solar power plant, storage power plant and infrastructure for electric mobility, all in one to save space.



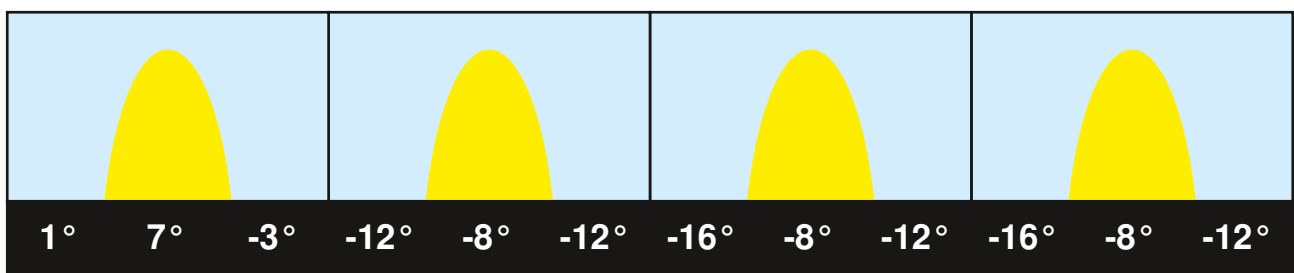
# 100 % renewable energy is only a stage goal

A long-term existing civilization needs a more and more perfect recycling. The first big recycling task will be to recycle CO<sub>2</sub> into carbon and oxygen until 350 ppm is reached again. The effort for this is many times greater than for 100% renewable energy.

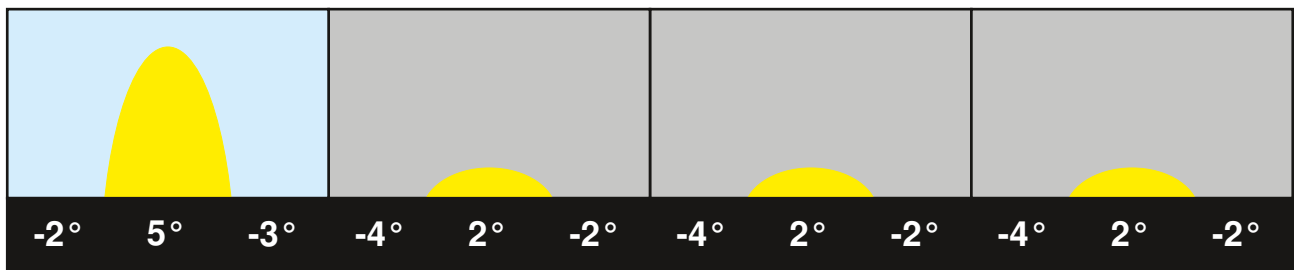
Housing is a basic need of every human being. We link this basic need with the greatest possible contribution to become independent of fossil energy and to make a planet renovation, CO<sub>2</sub> back to 350 ppm, possible.

## Heat and cold - generating and storing

Does it really make sense to run an air source heat pump 6:00 in the morning at -16°? Wouldn't it be wiser to build up heat reserves before the cold snap? In 40 m<sup>3</sup> of water, 46 kWh of heat can be stored per degree of temperature difference.



*The on-board computer evaluates the weather forecast and decides to stock up on heat.*



*The on-board computer wants less power consumption during very cloudy days and therefore creates a heat reserve beforehand.*

In hot countries, this is the opposite: produce and store cold at the coolest hours of the day.

The house will also have connections for external needs for heat or cold: Swimming pool, floor heating for snow-free walkways and driveway, garage and greenhouses. Does an electric car require less electricity if it is parked in a garage heated to 12° in winter?

With our highly optimized heating system, the answer will be yes.

Jordan is a very dry country. A glass house for growing fruits and vegetables with Vertical Gardening Aeroponic systems. Water from gray water recycling. Heat and moisture recovery from exhaust air. During the night the storage is cooled down by 5° Celsius, 230 kWh of cold to keep the greenhouse at 25° Celsius the next day.

How much fruit and vegetables is the annual harvest? We hope to explore the answers to this in the coming years.





## We do everything electric

Everything electric, everything possible with B+E driving license. B+E means in the EU a passenger car with maximum 3.5 t gross vehicle weight pulls a trailer with maximum 3.5 t gross vehicle weight.

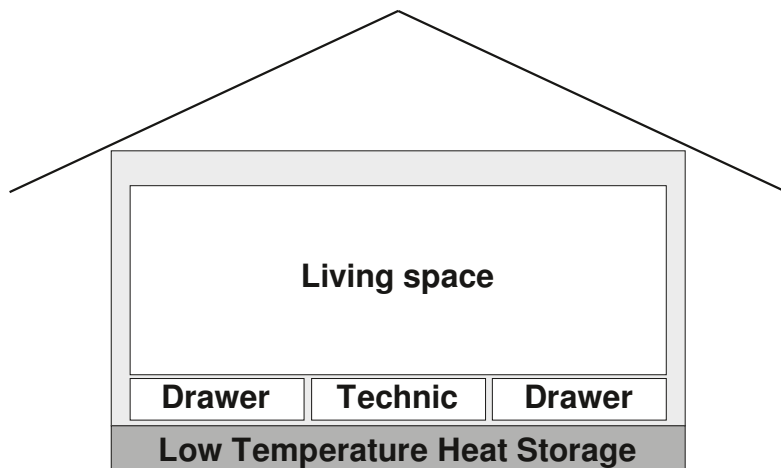
For the 70 m<sup>2</sup> variant 9 trips are necessary. Bring electric excavator to the building ground, it does all the digging work and then screws the foundation screws into the ground.

Then follow 6 trips with one house segment each. Another 2 trips for photovoltaic and carport. A 10th trip might be required for a garage.

The 100 m<sup>2</sup> variant consists of three additional segments and therefore requires 3 more trips.

If the building site is inaccessible even for an off-road car, a helicopter needs 2,700 kg lifting capacity for all required transports.

## We shrunk the cellar

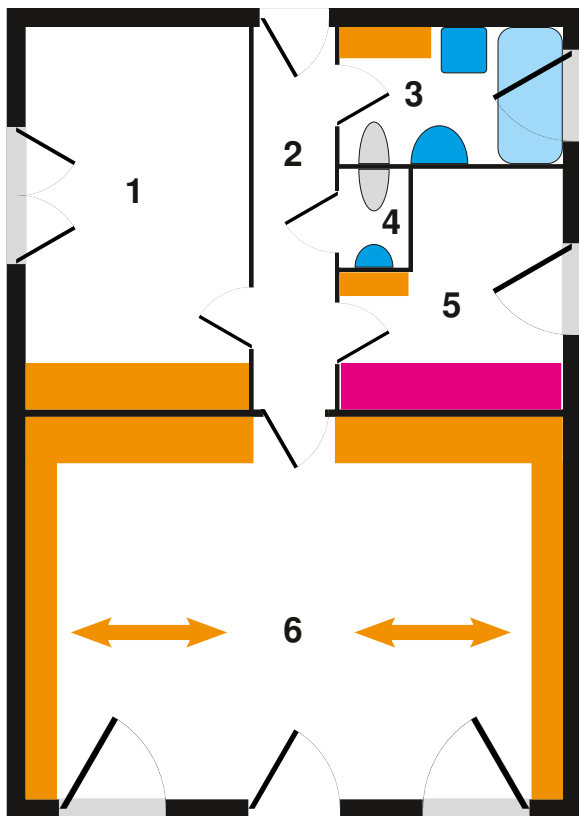


Cellars are very expensive, unheated cellars have too high humidity for storage.

We have shrunk the cellar to 58 cm in height: 24 drawers accessible from the outside. All within the thermal envelope of the house. About 750 l volume per drawer. Extremely large space and the best climate for everything you want to store.

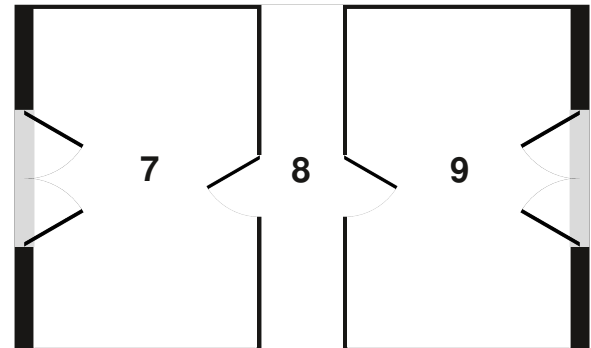
In the middle segments of the house is the technology.





The standard version is 10.7 m long, 7.59 m wide and has 70 m<sup>2</sup> of living space.

The house is composed of 6 segments, each 5.35 m long and 2.53 m wide.



Between the front 3 segments and the rear 3 segments can be extended with 3 more 4.58 m long segments by 30 m<sup>3</sup> of living space.

**1:100**

Room	Width	Length	m <sup>2</sup>
1 Bedroom	2.940	5.045	14.83
2 Corridor	1.060	5.045	5.35
3 Bathroom	2.940	1.800	5.29
4 WC	0.900	1.295	1.17
5 Kitchen	1.965	1.370	
	2.940	1.800	7.98
6 Living room	7.090	5.045	35.77
7 Room	2.940	4.469	13.14
8 Corridor	1.060	4.580	4.85
9 Room	2.940	4.469	13.14

The living room can be divided into 2 or 3 smaller rooms via sliding wall/furniture elements.

The smaller rooms that can be separated from the living room can be used as a children's room, office or guest room.

Thus, the living value is significantly higher than in conventionally rigidly divided 70 m<sup>2</sup>.

## GEMINI next Generation AG

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