

# ON THE GRID

- An Electrical Substation and Selfie Factory

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*This project investigates an electrical substation  
which uses the natural resource of narcissism and self-exposure  
to promote sustainable energy*

## INTRODUCTION

The world has to go green, we have no choice. And from this, many architectural opportunities are arising. One such opportunity is the Empire Wind project - a large offshore wind farm outside of New York. The wind farm and its substation will provide green electricity to over a million New York City homes. In those homes, without a doubt, people are using their electrically charged gadgets to access social media apps like Instagram.

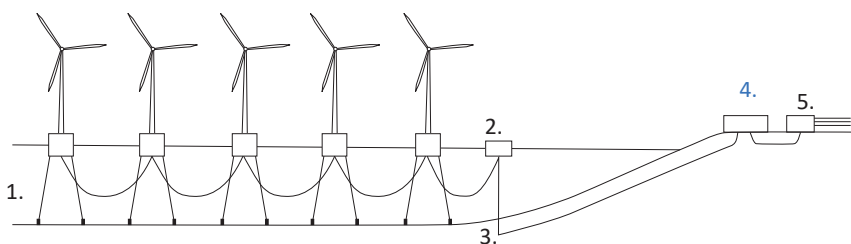
The world of social media is now rendering itself in the physical world. Spaces and constructions are now intentionally designed to be “Instagramable”, which seems to have a magnetic effect on people. From this phenomena, the Selfie Factories were born.

## THE EMPIRE WIND PROJECT

The Norwegian company Equinor is developing its offshore wind farm 30 km south of Long Island. The wind farm will cover an area of 80 000 acres and can produce 2000 megawatts of electricity. This diploma project suggests a design for the onshore substation (point 4. in the diagram below) linked to the wind farm. From the lease area, an underground cable will transport electricity to the project site in Sunset Park, Brooklyn.

An electrical substation changes the voltage of the electricity before it is sent out to consumers via the electrical grid. At the substation, the electricity goes through several steps before it is consumer-ready.

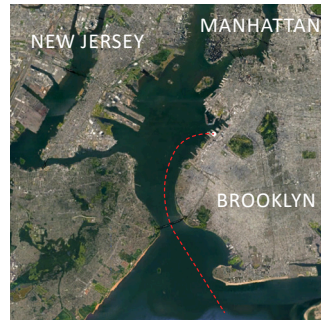
## OFFSHORE WIND FARMS; HOW IT WORKS:



1. Windmills linked together in a chain
2. Connection to offshore substation
3. Underground cable
4. Onshore substation
5. Underground cable connected to a generation station which sends electricity out to the consumers



*The Empire Wind Project lease area*



*An underground cable transports electricity to land...*



*...and into the onshore substation*



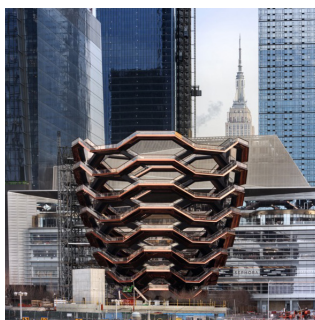
*..before it is sent to Gowanus Power Station and out to the consumers*

## **SOCIAL MEDIA AS A PLATFORM FOR EXPOSURE**

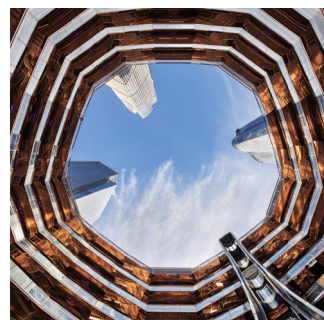
The social media platform Instagram has 1 billion monthly active users and is the fourth most popular social network in the world after Facebook, YouTube and Facebook messenger. The term “instagrammable” has occurred in our language the recent years and describes something worth sharing on the platform. A google search on “Instagrammable places in New York” gives you almost 700 000 results with suggestions for where to go and what to photograph.

In the world of Instagram, photography has become a way of showing cultural, social and creative capital by its users. By posting a photo on Instagram you tell the world “I was here, the trip was made, the fun was had”. And for companies, the platform has become an undeniable source in branding. Instagrammability is used as a way of attracting the masses. Now also urban developers use photogenicity as a tool to attract people - as done in The Vessel in Hudson Yards, Manhattan. By signing a form before you enter the pine cone-shaped, stair-structure, you allow Hudson Yards the right to use the photos and selfies you take while visiting. By hashtags and geotags, employees at Hudson Yards can find your photos and reshare them on Hudson Yard’s social channels for marketing.

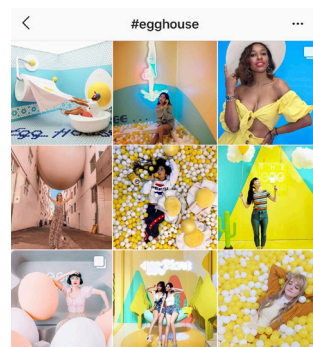
The most distilled examples of designing spaces purely for Instagram are the Selfie Factories (also known as selfie museums or Instagram playgrounds). In these places the visitors move through a sequence of spaces, often following a narrative, with several “tempting” backdrops and scenes to photograph.



*The Vessel*



*View towards the sky in The Vessel*



*A Selfie Factory; The Egg House*



*A Selfie Factory; Museum of Ice-cream*

## PROJECT DESCRIPTION

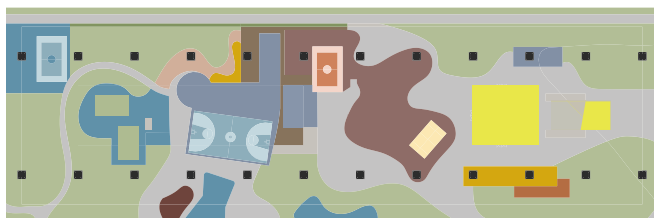
The project consist of three different layers: the urban, the substation and the selfie factory.

### THE URBAN LEVEL

The site is in Sunset Park, an area which is undergoing a fast process of gentrification. The structure places itself in the already existing city grid of New York.



### GROUND LEVEL: ENERGY CITY FLOOR

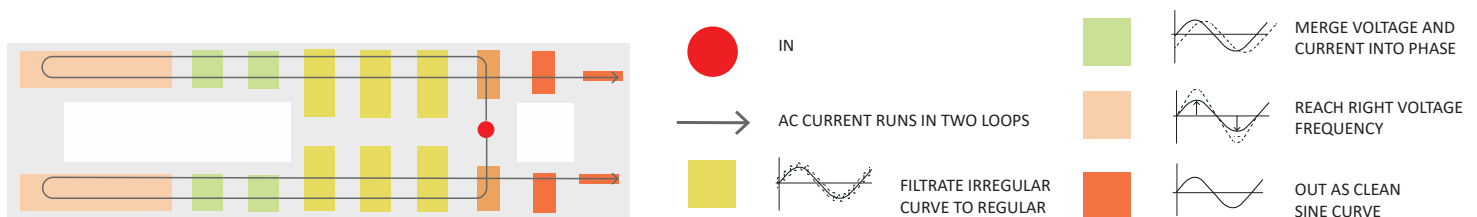


The ground level of the site is an activity city floor, with areas for sports and play.

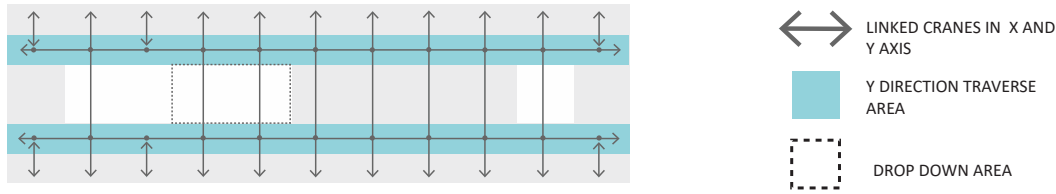
### THE SUBSTATION

The electricity comes into the substation via two 230 kV cables. It is an alternating current, graphically represented by a sine wave, and moves through the equipment in loops. The substation layout consists of two mirrored lines of high voltage equipment. Both lines can run at the same time, or one can be kept in spare in case maintenance is needed on any of the machines. Through the machines in the substation, the electricity is “washed” and “cleaned” to become a perfect sine wave, ready for the consumers.

### SUBSTATION FLOOR LEVEL: ELECTRICITY FLOW



## SUBSTATION FLOOR LEVEL: CRANES



As the machinery has to be able to be transported out of the substation in the rare event of maintenance being needed, an overhead industrial crane system is incorporated. It runs both in x and y-axis, and can transport the equipment and lower it down in the drop down area, where a truck will be waiting.

## SUBSTATION FLOOR LEVEL: EMPLOYEE FLOW



Employees enter either through the main staircase or by elevators in either side of the structure. Equipment free employee movement zones run by the long walls. There are no special considerations needed for employees concerning radiation or noise at the substation.

## THE SELFIE FACTORY

Both electricity and people enter the building at the same place, and both are funneled into their own systems. Visitors walk on a journey similar to the electricity's journey. People move along a steel path, with views and shape by what machine/situation it is passing. Visitors are separated from the machines for safety by a steel mesh.

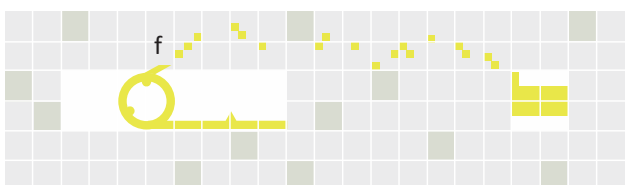
## SELFIE PATH: VISITORS FLOW



- a. #monumentalstair
- b. #stepandrepeat
- c. #irregularity #regularity
- d. #alignment
- e. #frequency
- f. #distribution #onthegrid

*See PDF with illustrations for views from the selfie path.*

## ROOF LEVEL: GRID GARDEN



As you step off the ramp on the rooftop, your view is towards Brooklyn - where the electricity has reached its consumers.