

SPONSORS  
**MOR**







# MOR TEAM

## Board of recommendation

**Ir. K. (Kasper) Jensen**  
**Drs. M. (Meindert) Smallenbroek**  
**Ir. J (Jos) van Dalen Kwartiermaker**  
**Drs M.J.M. (Maxime) Verhagen**  
**Drs. T. (Titia) Siertsema**  
**Drs. A. (Annemarie) van Doorn**  
**Prof. dr. ir. Tim van der Hagen**

Founder 3XN architects and GXN innovations, Visiting professor TU Delft  
 Directeur Energie & Omgaving bij Ministerie EZK  
 Programma aardgasvrije wijken bij Ministerie BZK  
 Voorzitter Bouwend Nederland  
 Voorzitter Nederlandse Vereniging Toeleverende Bouwmaterialenindustrie  
 Directeur Dutch Green Building Council  
 Rector Magnificus/ Voorzitter College van Bestuur TU Delft

# INTRODUCTION

With a vision to address the sustainable needs of the future, the MOR team representing the Delft Technical University in the Solar Decathlon Europe 2019, proudly brings to you its second project sponsor release. Bringing concrete solutions for the societal and environmental challenges brought by the necessary transition towards sustainable energy, the Modular Office Renovation (MOR) team will showcase its ideas for a net-positive renovation in Szentendre, Hungary in July 2019.

The Delft University of Technology is the largest and oldest Dutch public technical university, located in Delft, the Netherlands, providing technical education for the last 175 years. Known for its high quality of education and research, the university was ranked 3rd for the Architecture and the Built Environment subject and 4th for Civil Engineering subject in 2018<sup>1</sup>. TU Delft being an internationally oriented university is reflected well in the MOR team, since its members are originated from more than 15 different countries. Across the campus, a large pool of talents contributes to the conception and implementation of technological solutions for actual environmental and social challenges, from the local to the global level. The university includes the faculties

of Aerospace Engineering, Applied Sciences, Architecture and the Built Environment, Civil Engineering and Geosciences, Electrical Engineering, Mathematics and Computer Science, Industrial Design Engineering, Mechanical, Maritime and Materials engineering, as well as Technology, Policy and Management, most of which will contribute to this project.

The TU Delft is an open academic community which, through its students, scientific personnel and graduates, is represented throughout the academic world and is rooted in its own regional and national, social and economic environment. Currently, there is an abundance of research and development at TU Delft dealing with power generation, storage and novel solar technology. This body of work includes: the Nuon solar powered car project, the Solar boat project, development of cheap thin-film silicon solar cells with high efficiency, and other solar energy systems such as electricity generating windows. In collaboration with our partners, the MOR team has an important position in that technological ecosystem, linking these unique solutions together in a working net-positive housing unit.

Footnote 1 : According to the QS World Universities ranking 2018.

Ing. Peter de Jong  
Main faculty advisor

Prof. Dr. Ir. Andy van den Dobbelsteen  
Main faculty advisor

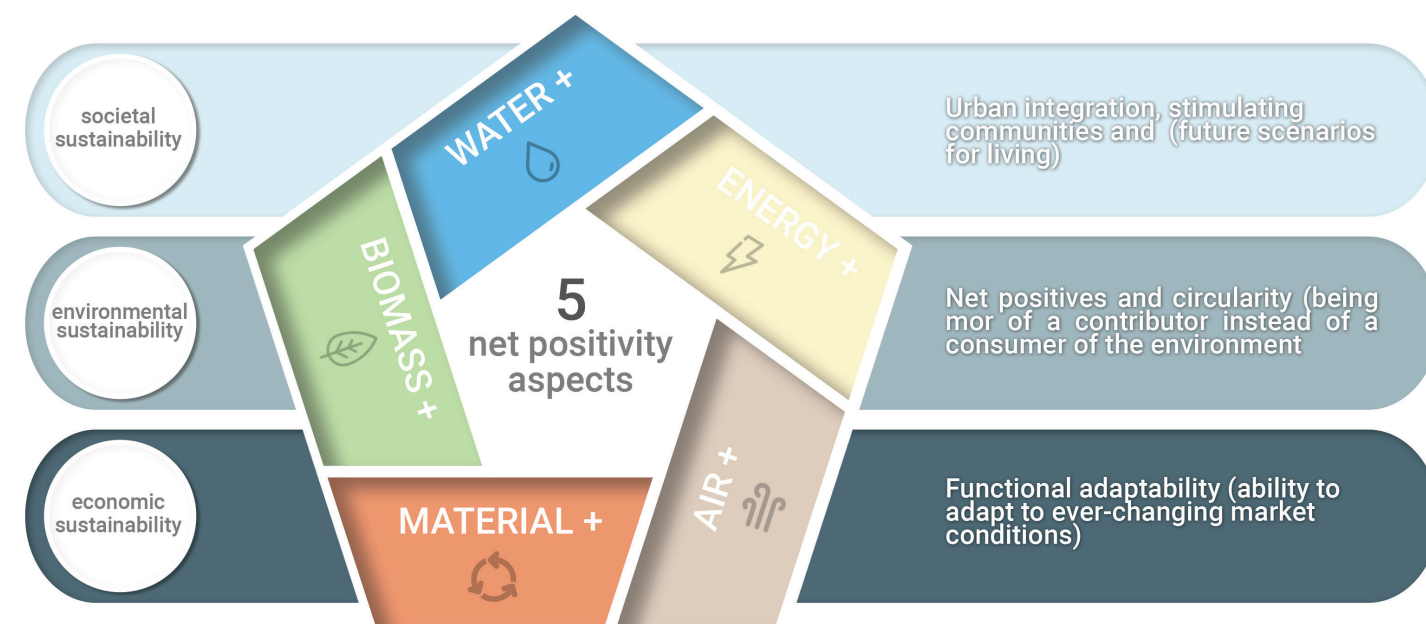
Francesco Longo  
Student team leader

“ THERE IS A GREAT NEED FOR THE INTRODUCTION OF NEW VALUES IN OUR SOCIETY, WHERE BIGGER IS NOT NECESSARILY BETTER, WHERE SLOWER CAN BE FASTER AND WHERE LESS CAN BE MORE ”

## VISION

Buildings are huge consumers of resources. But we think this should be different. In order for future generations to flourish, we envision a future proof built environment that gives back to its surroundings more than it takes away from it. Moving away from being a consumer towards being a contributor.

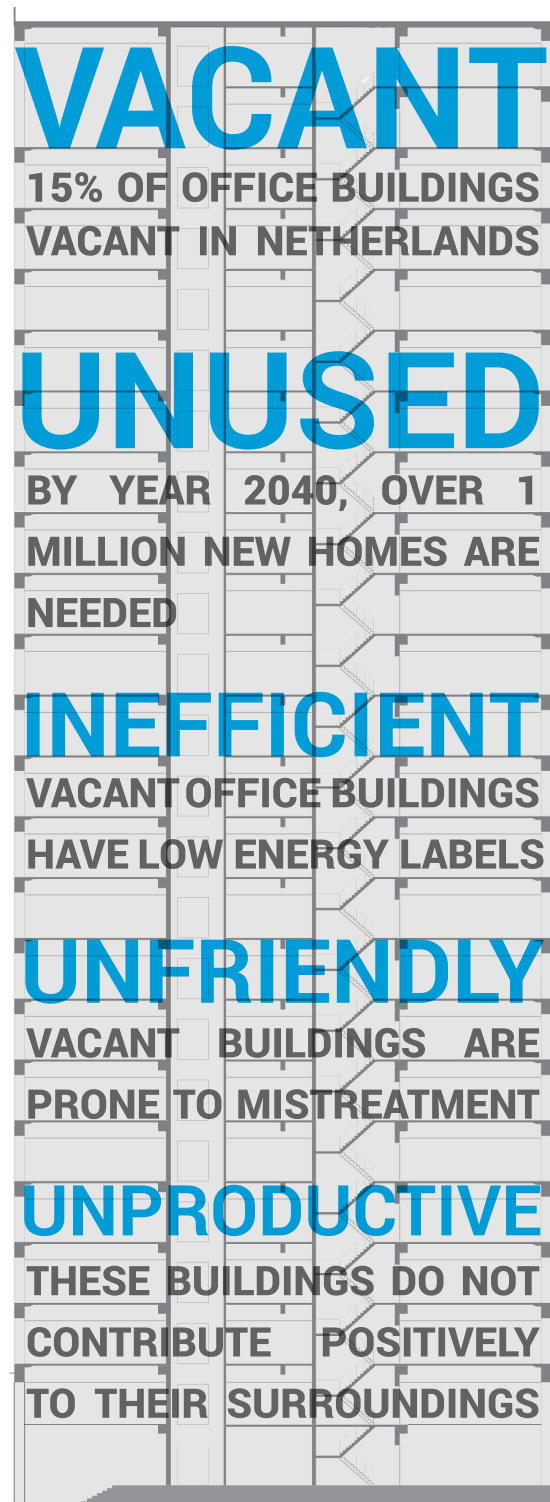
## CONCEPT



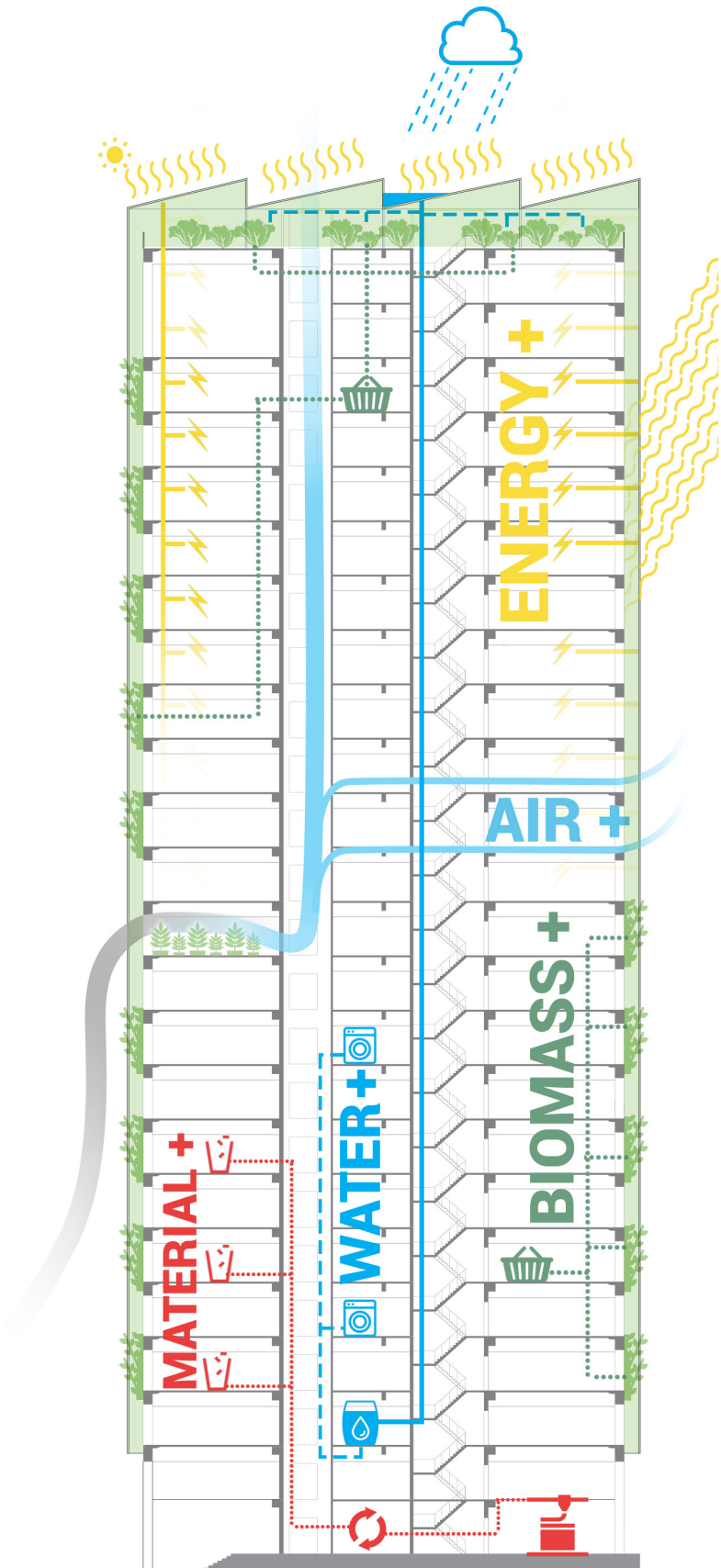
Thats why we propose the concept of net-positivity. With the use of smart technology and a combination of circular concepts such as a power-generating facade, materials reuse, grey water recycling, urban farming and passive ventilation we are aiming to achieve a positive impact towards the surrounding area.



In the Netherlands all office buildings with an energy label lower than C have to be closed by law before 2023. Almost half of all the current offices have label C or lower. This means there is a huge challenge in the built environment coming up!



With our net-positive design, we create a future proof building that will exceed any legislation heading towards 2050: a circular society where we envision buildings to be the producers of our resources.



# MODULAR DESIGN

# ADAPTABLE DESIGN

## STRATEGIES

To make our design future proof, we propose a modular and adaptable design approach that allows the building to change its functionality over time (circular design).

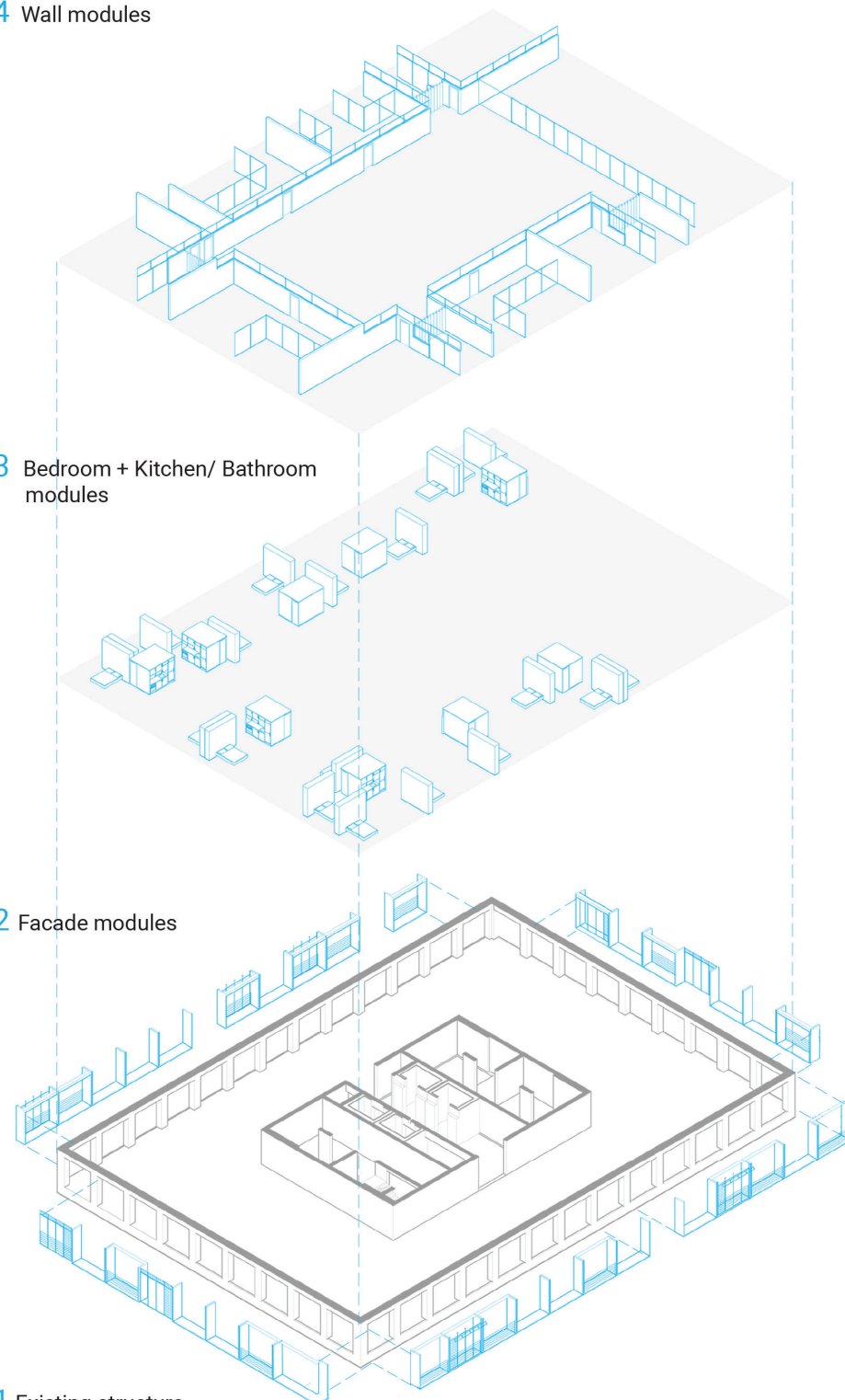
1. Develop an adaptable solution for the renovation of energy inefficient office buildings into net-positive and multifunctional buildings.
2. Make the solution modular and integrate digital technology so as to achieve the goals for the circular economy and cost-effectiveness.
3. Raise awareness of the professionals, general public and inspire the public authorities about the necessity for energy renovation, specifically of inefficient building stock with an effective working prototype.
4. Provide affordable accommodation and workspaces for starters, who are in need of housing in proximity of their workspaces in large cities.
5. Stimulate sustainable urban densification by renovation into mixed-use space.
6. Achieve net-positivity in dense urban environments with the smart combination of circular concepts such as power-generating facade, materials reuse, grey water recycling urban farming and passive ventilation.

4 Wall modules

3 Bedroom + Kitchen/ Bathroom modules

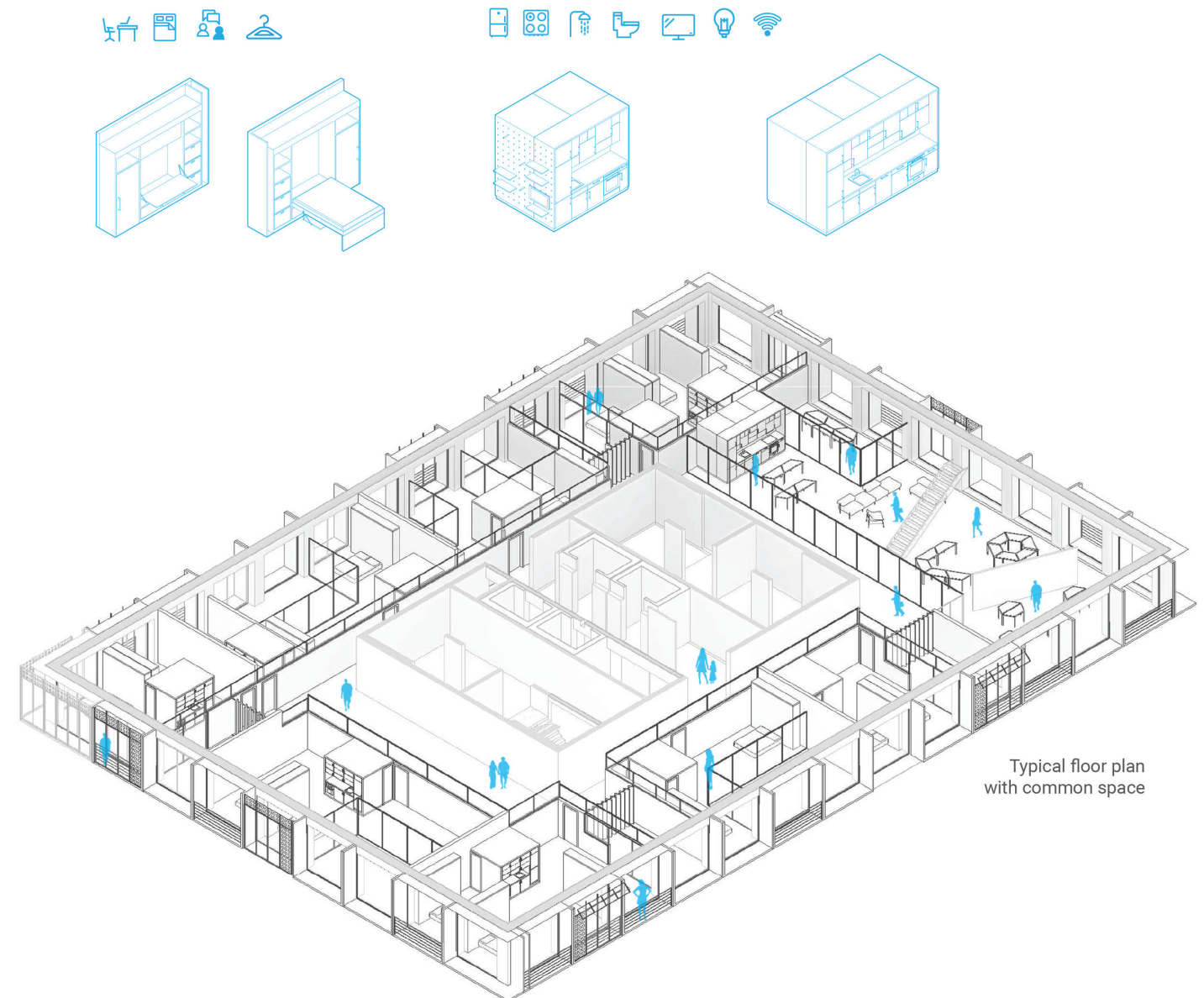
2 Facade modules

1 Existing structure

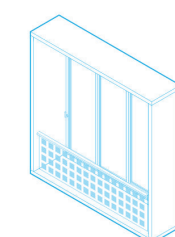


Bedroom/ Workstation module

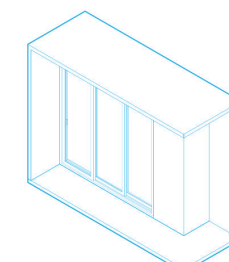
Kitchen/ Bathroom module



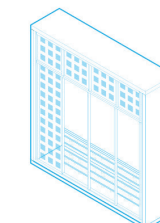
Facade modules



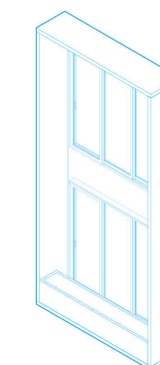
Common area module



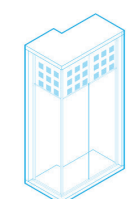
Corner module 1



Bedroom module



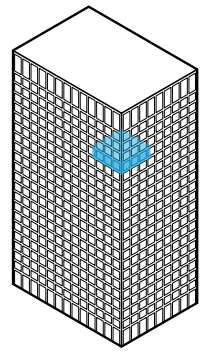
Green space module



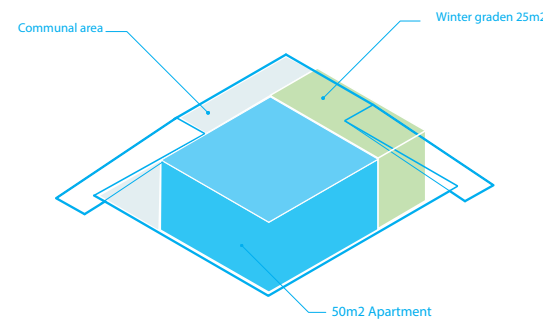
Corner module 2



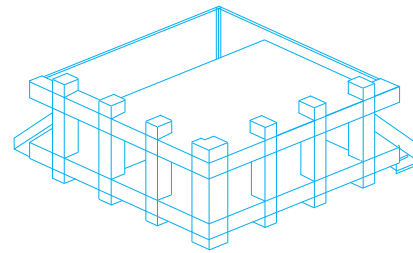
# PROTOTYPE



Indicative location of the competition dwelling on the tower



Competition dwelling function programme



Competition dwelling structure

To propose a design which could be easily replicated on existing office buildings, we identified a typology that is common among the building stock from the 70s all over the world. Three high rise buildings with 22 levels located in Rotterdam serve as a case study to address the complexities of the net positive renovation. These living systems will be integrated together, creating cohesive living and working environments forming a multifunctional building.

To start off, our team analyzed the performance of the existing vacant office building. The proposal will then reduce its energy, water, ventilation, biomass and materials demand to a minimum. What remains will be supplied by passive measures; only where such measures do not suffice, active systems will be used. In the meanwhile we generate electricity, clean the water and air and recycle biomass and materials to make the structure net positive. By such, MOR will not be

less bad, but good for the people and the environment.

A working prototype will be created from the south-west facade in order to replicate the typical structural typology. All the design strategies will be implemented on the prototype from which practical research results can be concluded for the renovation of inefficient office buildings.



# EXPOSURE

SOLAR DECATHLON EUROPE 2019 IN SZENTENDRE, HUNGARY

design phase

building @TGV 01-05-2019

SDE competition 07-07-2019

post competition 01-10-2019



Originally launched by the U.S. Department of Energy in 2002, the Solar Decathlon is a international competition for universities with the goal to design and build the most recourse efficient solar powered house. The 2018 Solar Decathlon Europe (SDE) will be held in Szentendre, Hungary.

300K VISITORS at the previous SDE in Versailles 2014

>300 PUBLICATIONS of the previous TU Delft team Prêt-à-Loger.

ON THE SOLAR DECATHLON WEBSITE  
3.2M page views, 550K visitors  
15.5K Facebook fans, 13K twitter

THE GREEN VILLAGE IN DELFT, THE NETHERLANDS

design phase

building @TGV 01-05-2019

SDE competition 07-07-2019

post competition 01-10-2019



TGV located in Delft facilitates a platform for entrepreneurs free from building regulations to test and demonstrate technical innovations in an environment that functions as a testbed for the cities of the future.

A location where test persons will live and work and deliver data from the perspective of the users.

Possibility to conduct research after the competition focussed on the prototype connected to its surrounding.

Crossection off knowledge institute like the TU Delft, tech start-ups from YES Delft, corporate companies and public organisations.



# SPONSORSHIP LEVELS

As the project touches on varied fields of expertise from design to construction and transport to Hungary and back. Here are some key areas we would need to gather support for:

- Support for construction
- Products and materials
- Land for the prototype at TGV
- Transportation of the prototype to Hungary and back
- Travel sponsorship of team members
- Events, promotion, appeal and publication

Full acces to all research results including market analysis, performance test and simulation results, construction and design drawings

Possibility to organise 3 company events in the prototype after the competition

Primary exposure on the construction site, sponsor board in the prototype and on the back of the MOR T-shirts (100%)

Exposure on the back of the MOR T-shirts (50%)

Possibility to organise 2 company events in the prototype after the competition

Prominent exposure on the construction site and sponsor board in the prototype (75%)

Possibility to organise 1 company event in the prototype after the competition

Exposure on the construction site and sponsor board in the prototype (50%)

Low Exposure on the construction site and sponsor board in the prototype (25%)

Listing on partnerships page on team website

Invitation to all MOR events

Presented on all MOR social media platforms

Sustainable leader 60K +	Innovators 30K +	Team members 15K +	Promotor 5K +	Supportor 1K +

## CONTACT



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