

### **The relationship between research and design**

In this project the research defines the architectural design. Energy transition, circular economy and the socio-economic issues are the three most relevant topics of this time.

Researching the specific situation and ambitions for those topics regarding Rotterdam, Bospolder - Tussendijken appeared as one of the most important locations of the city.

My fascination for Phase Change Materials enabled a solution to bringing the energy transition ambitions of the municipality and the socio-economic problems of BoTu in contact with each other. A low-tech and circularly gained passive cooling element allows the people to sustain their homes, make a living and educate themselves socially and skillfully.

Inevitably, the research conducted contains two topics: the Material Research (PCM module) and the Social Resilience Research. The design is based upon a similar division between the technical component and the social intervention. Both topics focus on different scales: the technical aspects on the scale of a small module sized around 1 meter, whereas the social research does so on the scale of the neighbourhood or building block. Where topics and scales meet is the architectural expression of the research based design.

### **The relationship between the graduation studio and the subject chosen by the student within this framework**

The Veldacademie studio has a great contribution to the city since they combine the social problems with spatial interventions. The subject I had in mind initially, was somewhat different than expected by the studio. I had not defined a clear topic when I enrolled for this specific studio, although my fascination for sustainability, PCM and smart materials was strong.

Unawarely of how the Veldacademie precisely was set up, I was certain that my identification with Rotterdam would be able to match my fascination within their field of research. After all, the Veldacademie allows students to fill in their own project and process. Luckily, I could combine mine with the socio-economic research I conducted in Bospolder - Tussendijken. Along the way my research question got shape combining both topics: PCM and socio-economic problems. The outcome is a rather relevant topic in the new industrial revolution defined by the energy transition.

### **The relationship between the methodical line of approach of the graduation lab and the method chosen by the student in this framework**

The Veldacademie has specific methods to conduct research on the scale of the neighbourhood. Using tools as (mental) mapping, observations and interviews, the common desk researches are finally validated by the main character of the project. Although this approach does not go without hesitation since some people are not welcoming visitors that much, I learned a lot from this way of working. It emphasises on the social value of space and spatial interventions. It contributed to some idea I had in mind due to my (limited) professional experience: in urban development the social value should be equal to the monetary profit.

In my framework I oppose this social research with the technical research. The technical validation of the PCM product allows for potential success of the social research due to a

feasible outcome. Thereby they seem to support each other. In the design phase, the social aspects have been left a little more to the essence, whereas the architectural expression of the overall research has resulted in a technical and broadly defined architectural design.

### **The relationship between the project and the wider social context**

As previously stated, the PCM factory as a social architectural intervention that re-links two neighbourhoods has a lot of relevance at this specific time. It combines the energy transition ambitions and the socio-economic problems by the use of a circularly won PCM module of frying oil and Mg<sup>2+</sup> that passively cools renovated houses. During this process the people gain skills, social contact and education. The emancipatory element is thus leading and most durable product when this projects is in realisation.

The government describes the three main topics as most important struggles of our time, but lacks concrete examples and ideas that combine these. In essence my vision is applicable in many variations, whereby different products could be made than PCM modules, by the dwellers themselves. That is exactly why it is suitable for other locations around the world. The physical appearance of my architectural outcome therefor is the consequence of portraying my overall vision to this specific site.

Looking back, the actual size of the project does not quite seem to represent the low-tech and DIY makability of the project at first. Some elements are to large to be initiated by bottom-up initiatives it seems. However, the architectural expression, the urban structure and the future flexibility that it allows does emphasise the importance of this future proof project. To capture slightly more specific and with elegance the bottom-up approach, next time the scenario's and developments within the process would need more attention. Whereby the potential growth of such process could indeed lead to this size architecture, but would not be seen as an end product. Writing this down gives me further ideas towards P4 and P5.