4.401/4.464 Environmental Technologies in Buildings – Course Project

Instructor: Christoph Reinhart

Due Date: Presentation on Friday of week 13 (4.401) and week 16 (4.464)

Type: This is a group assignment.

Project Description

As announced in the course syllabus, the final course deliverable is the presentation of an environmental design concept for the 3500m^2 innovation/startup space that you have been working on since assignment 5. The final presentation should last for 12 minutes plus 3 minutes for Q&A and draw from the material that you have generated during previous assignments. You may want to add some additional work to create a coherent project narrative. Below you will find a suggested sample structure for your presentation.

Table 1: Suggested Presentation Format

Content	**# of slides**
Introduce yourselves and your design philosophy. Show one or more precedents. What is your EUI target?	1
Context Discuss your site using Google Maps, a Rhino massing model of surrounding buildings and a shading study. Describe how you intend to work with your local climate. Be specific. If you show any graphs or figures they should directly relate to your site and design.	1-2
Lighting and Daylighting - Walk us through your original three daylit massing models and what solution you ended up choosing. - Present any visual comfort analysis and describe any resulting shading systems, if applicable. - Show your electric lighting solution with an overview plan of all of the luminaires for your project.	 1-2 1-2 1-2

- Show inside and outside perspectives of your final design as well as a sample floor plan. How adaptive is your concept?	1-2
Environmental Concept - Describe your thermal envelope using select sections. - Explain your energy concept. How does the building function? What are the main environmental features such as added insulation, lighting controls, shading, PV and HAVC systems? - Discuss operational energy use versus thermal comfort considerations in your building. Present simulated annual energy use and compare it to your earlier defined target.	 1-2 1-2 1-2
Concluding Thoughts	1-2

Table 2: Items to remember

Figures - All plans and perspectives should have a North arrow. - All figures need correct units and legends (cd/m^2 and lux are not the same; kWh or kWh/m^2; kWh or BTU).
Energy For all energy simulations make sure that you understand whether you are calculating site or source EUI. Explain where your target levels come from.
Glare For DGP simulations make sure that the view position is representative of where people usually are. It can be helpful to show a plan with the view point and direction on it.

Table 3: Evaluation criteria

Presentation
Precedents and context
Daylighting analysis (complete and correct)

Thermal analysis (complete and correct)

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