Vertical farming:

Plan of action

Afbeelding met binnen, vloer

Automatisch gegenereerde beschrijving

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## Versions

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| --- | --- | --- | --- |
| Version | Date | Changes | Author |
| 1.0 | 03-12-2021 | First design | L.Touwslager |
| 1.1 | 10-12-2021 | Added information chapter 1 - 7 | L.Touwslager |
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## 1) Project information

This project is published by the ROC Da Vinci College. With the aim of setting up a project for and by students.

The project arose because the ROC Da Vinci College participates in a European trajectory around Energy transition. Together with 7 other schools, each school independently develops solutions that contribute to the energy transition. At the end of the process, each school delivers 1 or 2 modules. A module contains a complete implementation plan and lesson plans to independently build a product or machine around a theme with students and to apply it in education.

Project date : 26-12-2021 / 18-3-2021

Location : Duurzaamheidsfabriek, Dordrecht, The Netherlands

Supervisors : Michel Pipping, Martin Borsje

Class : LPEMO18K4E1

**Members of this project:**

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## 2) Project assignment

We divided the project into 4 separate assignments to provide our proficiency as to the EsMEI method.

**Assignment 1 Redesigning the vertical farming cabinet**

We make an improved redesign of the vertical farming cabinet. The vertical farming cabinet must:

- Be efficient in use;

- Be able to control the conditions in the cabinet with sensors;

- Be made airtight for building up air pressure;

- Be able to be controlled remotely.

Adjustments that need to be made:

- Redesigning, making and assembling new doors;

- Redesigning and adapting the irrigation system to the plants (nozels);

- Fitting the back wall;

- Moving the water hose to the correct position (right instead of left);

- Designing an electrical diagram for controlling the 4 Control Valves;

- Design and realization of a Database for storing the measured values (air quality/CO2, temperature & humidity);

- Designing and realizing a Mobile App for remote reading of the measured values;

- A camera must be built in per floor to monitor visual growth.

**Assignment 2 Preparation production vertical farming cabinet**

We collect and process production data. We make adjustments to the drawings (package) and organize people and resources so that the vertical farming cabinet can be redesigned and finished.

**Assignment 3 Supervising production and installation of the vertical farming cabinet**

We coordinate the work with our supervisor, project members and other stakeholders.

We supervise the production and installation of the vertical farming cabinet. We carry out quality checks and deliver work.

**Assignment 4 Supervising maintenance work on the vertical farming cabinet**

We supervise the testing of the vertical farming cabinet and we also supervise the execution of maintenance assignments.

We ensure that the right documentation is available for carrying out maintenance on the vertical farming cabinet.

## 3) Objective

**Specific**

The project has to be clearly defined to give all project members, supervisors and stakeholders a clear picture of the project. This means having specific objectives which can’t be perceived in different ways.

**Measurable**

To create a clear overview we divided the project into different segments. Which gives us the possibility to show which segments have been finished and to show those still in progress.

Measurable segments:

- Able to monitor the conditions in the cabinet with CO2, temperature and humidity sensors;

- Control all conditions in the vertical farming cabinet automatically;

- Vertical farming cabinet must be airtight for building up air pressure;

- Camera’s on each layer to monitor plant growth;

- A Database for storing the measured values of (air quality/CO2, temperature & humidity);

- The option to be controlled remotely.

**Acceptable**

The completed plan of action will be proposed to all supervisors on 17-12-2021.

**Realistic**

The project group can’t ensure the finishing of the vertical farming cabinet in the given project time. As discussed in the customer conversation the project might exceed the given time. There is a possibility that more time has to be invested by all project members. In the case of that outcome happening a settlement will have to be made with all supervisors to seek academical rewards for all project members involved.

**Time-bound**

The project is to be done by march 2022 as discussed with all supervisors.

## 4) Schedule

Timespan

We get 56 hours for these 4 sub assignments

- 10.5 hours for the drafting of the PvA

- 15 hours for production preperations

- 25 hours for production and installation

- 5.5 hours for inspection and maintenance

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| Items | Target date |
| Plan of action | 17-12-2021 |
| PoA presentation | 17-12-2021 |
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A specific schedule in Microsoft projects is yet to be made.

## 5) Cost analysis

An budget of €500,- has been given by ROC Da Vinci College. The supervisors have given the option to discuss the increase of the given budget if needed.

## 6) Terms and conditions

Terms and conditions to client

* Client will be kept up to date by the project leader.
* All documentation will be delivered in a organized zip file at the end of the project.

Terms and conditions to project group

* Supervisors will make time to help the group if necessary.
* All needed resources will be made available.
* All needed tools will be made available.
* The possibility to ask help from teachers if necessary.

## 7) Risk analysis

Like every project risks will have to be accounted for to make sure that the project runs smoothly. By doing inventory of all these risks we can make sure that we can take account of these risks during the project. Per risk we will enlighten wat type of effect this risk can bring to the project and how we are planning to deal with those.

**Time**

If time is not taken into account, many things can go wrong in the project. This way it can happen that the vertical farming cabinet and documentation assignments are not delivered or with insufficient quality. This can happen due to miscommunication with the customer or other group members.

To ensure that no time problem occurs, a schedule is made and we as a project group try to stick to this as well as possible. The planning is made in such a way that adjustments can be made before the final deadline is exceeded. This way we can ensure that everything is picked up on time and we meet our deadlines.

**Money**

During the conversations with the customer it has not become clear if we will stay within the prescribed budget of € 500, -. The customer has indicated that there is also more money is needed we can always discuss the budget.

**Quality**

In order for this project to be successful, it is important that the customer receives a product that meets the set quality standards. The project members are currently still students and not graduate professionals, so it can of course happen that something goes wrong with the quality. In this project, this will mainly be reflected in the manufacturing/assembly phase and the documentation phase. To prevent this as much as possible, we will continue to talk to the customer, and regularly ask for feedback on our documentation.

**Scope**

It can happen that by occurring on of these risks that the scope of the project has to be adjusted. This will often be the case of lack of time, money shortage or standing quality standards.