Logbook

This is your logbook. Insert here all relevant information regarding the evolution of your project

Weekly Report

1st Week Report

- Debating about the different projects
- Gathering information about the different projects
- Decided to do the solar refrigerator

2nd Week Report

- Gathering information about the topic
- First meeting
- Changing the topic to Solar Dryer
- Visting the lab where the algae grow
- Collection of information about microalgae, solar power, drying methods,...

3rd Week Report

During this week we managed to:

- take a closer look at the marketing issues
- set up ethical code concerning our teamwork
- discuss chosen options: hydrocyclone and distiller
- focus on distiller as our choice, writing down all possible doubts
- take part in 3rd EPS meeting with supervisors, discuss distiller concerns
- run a test on magnetic properties of algae, which gave negative result
- run a thorough investigation on:
    - controlers mode (liquid level, temprature sensor)
    - solar energy application (to run controlers and fan)
    - material for container (good heat conductivity, non-stick surface for algae)
    - filter for UV radiation
- draw a block diagram of the solar algae dryer
- start work on leaflet

4th Week Report

This week was mainly devoted to creation of material list. We also made several changes to the construction of solar algae dryer. Those changes are:

- new sun shinning control system - blinds controlled by step motor,

- reflectors are to be installed inside the tank, not on it,
- algae reamoval mechanism will be simply a valve and handle required for lifting up the tank,
- there are going to be 3 fans instead of 1,
- new level control system - ultrasound level control system.

We also started to work on detailed scheme of our device.

5th Week Report

Easter Holiday Week

- We got feedback on our material list and we made the changes needed
- Made the sketch of our system
- Made 3-D model of the tank
- Calculated the exact dimensions for ordering the plexi

6th Week Report

- We wrote on Interim Report the whole week
- Made charge test on the algae in INEB lab
- Meeting to prepare presentation
- Uploaded Interim Report and Interim Presentation

7th Week Report

- Prepared and practised for presentation
- Had Interim presentation and got feedback

Meetings

1st Meeting (2013-02-28)

Agenda:

1. Presentation
2. Modus operandi
3. Project proposal
4. Electronic Logbook

Minute:

1. Presentation of the students and supervisors
2. Presentation of the project topics
3. Presentation of the Wiki page and how to use it

4. Presentation of the calander

2nd Meeting (2013-03-07)

Agenda:

1.Environment:

1. What tasks/environment the object must fill/ is going to be used?

2. Dimensioning:

1. Is there a size limit?

3. Budget:

1. Are we able to build a prototype?
2. Are we allowed to buy used materials?

4. Design:

1. Outward appearance
2. More than one possibility (depends on marketing/sales)
3. Special functions

5. Framework:

1. What range should it operat in?

6. Technology

1. Efficiency (vertical vs. horizontal)
2. Portable vs. fixed (combination)
3. Electricity vs. Power autonomy (>24h)

7. Marketing

1. Target marketing
2. Costumer/consumer expectations

8. Free questions

9. Conclusion

Minute:

- Build a solar dryer that takes out the water and leaves the algae (90% algae, 10% water)

- Prototype about 5l, adapt to 40-60l tanks

- Temperature can't be higher than 50° C

- 500€ budget to start with

- built of reused materials, materials from ISEP, then identify what else materials we need → find a shop → ask for offer.

- Design, solar panel, temperature control.

- should operate in -5° - 40° C

- should have a main switch, simple display (temperature)

- considering also others interested in this product, fashionable right now in the bio market.

- Reproducible

3nd Meeting (2013-03-14)

Agenda:

- Comparison of different drying methods
- Distiller (two options)
- Hydrocyclone
- Which Solarpanel
- Renewable parts to hydrocyclone?
- Materials
- Free questions?
- Conclusion

Minute:

- Discussing the approach of the project: top-bottem
- Materials: looking for local suppliers
- Discussing drying methods:
    - Excluding hydrocyclone
    - The best distiller was the one without an extra heater
    - UV-protection
    - The dryer should be automated to its maximum extend
- Agreeing on doing 2 experiments:
    - Are algae magnetic?
    - Can we charge algae and attract them with the opposite charge?

4th Meeting (2013-03-21)

Agenda:

- Tank: size vs. speed

- Present block diagram
- Algae removal
- UV-protection (75% or 98%)
- Level control
- Temperature control
- Micro-control
- Algae and water container, mirror
- Solar panel
- How long should it work a day?

Minute:

- Box world
- Fan: Inside/outside? One fan/two fans? How much power does it need?
- Cover: blinds with a stepper motor instead of a blanket
- Inside walls of the tank should be reflective
- Level sensor: ultrasound
- Algae removal: valve/spring/manual/…

5th Meeting (2013-04-05)

Agenda:

- Prototype assembling
- Pro-forma invoice
- Interim Report (how do we elaborate on report later on?)
- Interim Presentation
- Model presentation (how we exactly imagine the dryer)
- Charging algae test
- How far should go into the algae topic in general?

Minute:

- Supporting structure: available at school if we buy wheels
- Pro-forma invoice: we go to the store and ask the prices, we present the data to Nidia
- Interim report: template available in moodle
- Interim presentation: mostly visual information, 15-20min
- Charging test: mail Cristina to remind her about the charging test
- Algae topic: we have to describe the process and how to temperature, humidity,… affect the process
- Material list: add the 4 wheels with breaks (Rua Almada), they have the 13mm tube at school, buy the micro controller at in motion arduino

6th Meeting (2013-04-11)

Agenda:

- Buying plexiglass
- Interim report feedback
- Technical documentation
- Users manual
- Product assembling instructions?
- Temperature effect on microalgae

Minute:

- Abstract: more assertive, describe more what we want to build
- Objectives: we have to mention: water 10%, how much time it will take, space we can use… → the requirements of the client
- Related projects: not only for algae, just removing water is similar enough
- Units!! K =Kelvin and k =1000
- End state of the art: conclusion “we use a tank of Plexiglas because…” of “this material is better but we had to use something from school”
- Technical documentation: appendix: datasheets we used to make are decisions
- Functions: all the functions, not only the main

7th Meeting (2013-04-18)

Agenda

Interim presentation

Minute

- Presentation
- Evaluation

8th Meeting (2013-04-22)

Agenda:

1. Could you recall the concerns that you think we should include into our report?
2. What about the money? Should we already collect proforma invoices?
3. Do we have to create proper 3D model of the divice?
4. Algae charging solution - application of polymer? Where to look for?
5. Why ultrasound controller is not a good solution?

Minutes:

1. Contact with Cristina in order to proceed with algae attraction system - possibility of applying positively charged metal plate to attract algae
2. Characteristics of sensors and controlers should be checked
3. Electric diagrams/charts should be prepared
4. 3D model should be created
5. Problems with ultrasound sensor should be checked, test ought to be conveyed.
6. Rethink removing algae system.

9th Meeting (2013-05-02)

Agenda:

- Discuss 3D model
- Presentation of drawings
- Charging system - solution
- Feedback from prototype building meeting
- Ultra sound sensor test
- Buying materials
- Stepper motor: bipolar, unipolar, DC?

10th Meeting (2013-05-09)

Agenda:

- Discussing drawings
- Budget
- Purchase

Minutes:

- Arduino: set up
- Discussing budget
- To do: connection motor and blinds (if polymer: Joao Francisco (jfs) F327, if metal: Fernando Ferreira (fjf) F329)
- To do: adding relays to budget

11th Meeting (2013-05-16)

Agenda:

- Charging test - results
- Ultra sound sensor test - results
- Stepmotor - blinds connection

Minutes:

- General remake: update the wiki (not only in word) with our corrections of the intrim report
- What we need: construction for capacitor
- Has the solar panel 20V output?
- Will it work if lower voltage (12V)? But it will just take longer. → TEST
- Maybe higher voltage is better because it will take less time, less time is less energy. Because it is an electrostatic charge
- Not only taking pictures but measure the density → more scientific
- Test different kind of algae with capacitor
- Ultrasound test: problem sensor: 1cm was the lowest measured point. Solution: change software (x.10 / 58 → to mm)
- Work on our group: only 2 people attended this meeting

12th Meeting (2013-05-23)

Agenda:

- Charging test
- Ultra sound sensor test
- Stepmotor - blinds connection
- Place to assemble everything?
- Electrical wires

Minutes:

- Discussing results tests: tests were successful
- Solution steppermotor connection: protect rubber from UV
- If we need tools: let the supervisors know
- To do: Support sensor, Rails blinds, Email Benedita if she can switch her male for female wires

13th Meeting (2013-05-30)

Agenda:

1. Is there any template for User Manual?
2. Arranging meeting for writing the program
3. Plexiglass

Minutes:

- User manual:
    - How to connect and switch on/off
    - How to interface → Functionalities
- Discussing the programming

- Final presentation:
  - Integrate sustainability, ethics and deontology and marketing. Just one slide per subject
  - 15 min (5min for demo)

14th Meeting (2013-06-06)

Agenda:

1. Can we ask for help with connecting all the electrical appliances?
2. Printed report: when do we have to hand it in?

Minute:

- Solution glue: chloroform
- Pushed deadlines: not for us (uploading monday is good too)
- Connection electrical components: if we have a scheme of it they can help us
- Printed report: after last feedback

Activities

Please register here all project activities

Start	End	Task	Description	Who
2013-03-01	2013-03-03	Choose the project topic		Team 1
2013-03-05	2013-03-05	Wrote agenda for the first meeting		Team 1
2013-03-07	2013-03-07	First supervisor meeting	Changed the project to solar dryer	Team 1
2013-03-09	2013-03-09	Gantt chart and task allocation		Sven, Ola
2013-03-11	2013-03-11	Meeting about different drying methods and research,writing week reports		Paul,Sven,Ola,Benedicte
2013-03-12	2013-03-12	Setting up ethical code for teamwork		Team 1
2013-03-13	2013-03-13	Inside team meeting	Discussion over distiller	Paul,Sven,Ola,Benedicte
2013-03-14	2013-03-14	Supervisors meeting		Team 1
2013-03-15	2013-03-15	Laboratory experiment	Checking algae magnetic properties	Paul,Sven,Ola,Benedicte
2013-03-15	2013-03-17	Research	Creating first chapters of state of art	Team 1
2013-03-18	2013-03-18	Meeting	Creating Box World, Material List	Team 1

Start	End	Task	Description	Who
2013-03-19	2013-03-19	Group meeting	Agenda for 4th supervisor meeting, Work division, Discussion over different mechanisms in algae dryer	Team1
2013-03-22	2013-03-22	Group meeting	Finished Material List	Paul,Bartek,Ola,Benedicte
2013-04-03	2013-04-03	Group meeting	Discussed and divided tasks for the next week, wrote Agenda for 5th meeting, finished material list	Paul,Ola,Sven
2013-04-08	2013-04-08	Group meeting	Working on seperate parts of the report, working on presentation for Energy & Sustainablility	Team 1
2013-04-11	2013-04-11	Group meeting	Discussed the work plan for the next week	Team 1
2013-04-12	2013-04-12	Laboratory experiment	Charging test in INEB lab	Team 1
2013-04-12	2013-04-12	Group meeting	Preparing interim presentation	Team 1
2013-04-18	2013-04-18	Presentation	Interim presentation	Team 1
2013-04-19	2013-04-19	Project management	Made sprint for next 14 days	Paul, Sven, Benedicte
2013-04-23	2013-04-23	Meeting	Tasks for next weeks, discussed feedback on interim report	Paul, Sven, Benedicte, Ola
2013-04-24	2013-04-24	Meeting	Tried to meet with João Silva	Ola
2013-04-26	2013-04-26	Meeting	Discussed plexiglas problems with João Silva	Sven, Bartek
2013-04-30	2013-04-30	Meeting	Discussed the to do list and agenda for next meeting	Sven, Ola, Benedicte, Paul
2013-05-02	2013-05-02	Test	Ultra sound sensor test	Sven, Benedicte, Paul
2013-05-03	2013-05-03	Meeting	Discussion with Benedita	Ola, Paul, Benedicte, Sven
2013-05-08	2013-05-08	Test	Algae charging test	Team 1
2013-05-09	2013-05-09	Test	Algae charging & ultra sound sensor	Team 1
2013-05-20	2013-05-20	Test	Algae charging with amended voltage	Benedicte, Paul, Sven
2013-05-21	2013-05-21	Purchase	Purchasing of materials	Benedicte, Paul
2013-05-22	2013-05-22	Test	Ultra sound sensor with amended software	Bartek, Sven
2013-06-03	2013-06-03	Meeting	Meeting with João Francisco concerning assembling of the tank	Ola
2013-06-03	2013-06-03	Meeting	Group meeting, working on the project together	Team 1
2013-06-03	2013-06-03	Assembling	Connecting wheels to the pallet	Bartek, Ola
2013-06-03	2013-06-03	Meeting	Benedita's advice on programming	Bartek, Ola
2013-06-04	2013-06-04	Meeting	Working on the deliverables	Paul, Sven, Benedicte

Start	End	Task	Description	Who
2013-06-05	2013-06-05	Meeting	Assembling the report	Sven, Paul