Flip Report 1

1. Suomalaiset luovat aalloista, newspaper clip

* Päivikki Kause, Suomalaiset luovat aalloista, Helsingin sanomat 21.7.2015, p. A22-A23.
* This newspaper clip tells about Finnish innovation in wave energy. The Finnish company, AW-Energy, has tested its new technique for harvesting marine power in Portugal. The tests have been promising, as AW-Energy has managed to surpass some of its competitors who have run into troubles creating a sustainable solution (using somewhat different methods in harvesting the energy). This type of energy production is still taking its first steps, but might become one of the used methods for sustainable energy industry (approximate usage 10 %).
* The most interesting part about this testing is the durability of these power stations. They still need to do some testing on how the underwater components will manage in stormy weather. In addition it is good to see that Finnish companies are on the top in this technology.

1. Environmental-impact assessment of hydro-power in Egypt

* S.M. Rashad, M.A. Ismail, 2000. Environmental-impact assessment of hydro-power in Egypt. Applied Energy, vol 65, p. 285-302.
* Hydroelectricity plants in the form of dams has been an excellent way to produce energy, as it has low CO2 emissions and can provide high amounts of energy. One of the problems is that the power stations and reservoirs take up huge space and have an extremely high impact on the surrounding environment. Maintenance costs can be high with the plants built a few decades ago. At this moment, most of the areas suitable for this type of hydropower have been harnessed (if we want to preserve the environment without massive, probably unpredictable events), which means that new methods for renewable energy industry need to be found to respond to the growing need of energy.
* It was interesting to see how large the impact of hydropower can be to the surrounding environment. The construction of a dam can create unpredictable effects which means that extensive studies need to be made before implementing the power plant. This article gave a good example about this regarding The Aswan High Dam.

1. Marine power

* Annon. Wikipedia article, available: <https://en.wikipedia.org/wiki/Marine_energy>, 15.1.2018
* Oceans cover the majority of earth. The moving masses of water can create a huge amount of kinetic energy. Harvesting this energy is called marine power. Marine power is renewable and multiple different methods have been created to turn the energy into electricity. It is important to know what methods have been studied and how they work. The main marine energy forms are marine current power, osmotic power, ocean thermal energy, tidal power and wave power.
* It is listed that ocean thermal energy and wave energy have the most potential. OTEC has the ability to produce about 10000 TWh of energy. In comparison, wave energy can reach from 8000 up to 80000 TWh.

1. A review of Ocean thermal energy conversion technique and its Economical consideration

* H.K. Patel, A. Ram, N. Jatav, M. Xaxa. A review of Ocean thermal energy conversion technique and its Economical consideration. International Journal of Research, Vol 2, Issue 05. 5/2015, p. 668-675.
* Ocean thermal energy conversion (OTEC) has the ability to create energy from the temperature difference between the surface and deep regions. It also utilizes the pressure in the deep to generate mechanical work. The warmth vaporizes ammonia liquid, which is used to rotate a turbine, thus generating electricity. Most of marine energy forms use the kinetic energy of oceans, while OTEC depends on thermal activity. This is why it is economical to use in tropical regions of the world. The efficiency of OTEC in energy production is low at the moment due to optimization problems. Creating a functional OTEC generator needs a lot of studies in material selection, to make the plant endure the harsh environment, while staying functional.
* In addition to the energy production aspect, OTEC produces clean water (desalination) and hydrogen. The plant also produces cold seawater that can for example used as cooling water in air conditioning or other needs. It is an interesting fact that this method has other beneficial applications along with energy production.