

Sustainable building at Rocamar

Sustainability research

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Some friends in high school and I were passionate about sustainability and finding some sustainable ways of development in the places we loved. We approached Rocamar hotel to do research for them, and help them achieve the Golden CREST sustainability level. Achieving such a level of sustainability was very important to Rocamar, since it was being built in Cap de Creus national park which is a UNESCO world heritage site. Additionally, since the hotel was built in a remote part of the coast which was land locked with only one road going in and out, transporting fuel in trucks for the hotel would be practically impossible. We needed to find and model sustainable sources of energy for the hotel, which would be very important to power the building. We started by doing research on the laws in that part of Spain, when it came to sustainable energy development. We researched what sort of solar, wind, geothermal and biomass energy would be legally available to be used. We stumbled upon many restrictions such as the Sun tax which actually prevented people from installing solar panels, as well as many architectural laws preventing people from installing solar panels on top of buildings in Cadaques. However, there were some loopholes that we found, since sun tiles weren't considered a solar panel and converted as much solar energy into electricity as a solar panel. So we started making calculations, to try and find out how much energy would be eventually turned to electricity if we used solar tiles, and then if we used modified solar tiles which had beams changing the rotation of the solar tiles as the day went on. We also found other ways of sustainable development, such as sun tunnels, which helped light up the room by using natural light and reduce the need of electrical lights and reduce the power needed by the hotel. We then made models of our findings in Blender, to then be presented to our stakeholders. We prepared a large document of all of our findings written up as well as presented to the mayor of Cadaques, the Cap de Creus officials and the Director of Rocamar the possibilities of development in Cad de Creus with the potential tools to help save endangered species of the UNESCO site.