

Gibrán Vita Garza

Contact: gibranvita@hotmail.com

Personal information:

Gibrán has a background in Chemical Engineering and Biotechnology with a minor in Industrial Economy. Before the M.Sc. in Industrial Ecology, he worked as product manager for new Pharmaceuticals, as a Process Engineer for Heineken Brewery, and implementing Six Sigma/Lean methodologies for the Steel Industry.

He is now part of the start-up cooperative firm “Emulsionen”, based in Sweden (emulsionen.org). There, he works with very diverse engineering projects that range from developing in-house technology to process Waste Water into Energy (biogas) and High Value Products to providing consultancy about Smart Grids, Decentralized Generation and Distributed Energy Resources. Part of the core-values of Emulsionen is to collaborate only with truly sustainable projects but also to be an active part of societal change by engaging volunteer work to grass roots movements and activism. Exercising, cooking and speaking different languages are part of his daily life (goals).

Title of thesis: “Energy Optimization and Design of a Trigeneration System for a Printing Company: Insights towards a Smart Grid in Graz, Austria”

Abstract:

Despite the fact that cogeneration (CHP) and tri-generation (CHCP) are among the most efficient ways to produce electricity and thermal energy, there is still great unexploited potential for these techniques. The framework for implementing cogeneration in industrial facilities has never been more promising: the techniques are developed, they are flexible in their fuel input, they are profitable, and there is a wide range of technologies available on the market. Secondly, cogeneration was set into the context of the European Union energy goals with a focus on Austria, emphasizing the versatility of trigeneration to target multiple societal goals: improved security of supply through distributed generation while increasing energy efficiency. Thus trigeneration is regarded as a key concept for the transformation towards a low-carbon energy system. The external and internal barriers and benefits of trigeneration projects were viewed through a stakeholder’s discussion, followed by innovative business models that can help overcome these challenges and ease the cooperation between energy suppliers and firms. Furthermore, the concept of Smart Grid was introduced with relation to the role that trigeneration plays in promoting a change of paradigm, from an unidirectional consumer economy, to a dynamic “prosumer” economy. Finally, the theoretical research of this project was set into practice through a consultancy project that serves both a printing company and the suppliers of the heat grid in Graz. A full analysis was performed through field studies, measurements, interviews and data compilation in order to design a feasible technical and economical trigeneration system that matches the energy requirements of the printing industry but at the same time provides surplus heat to feed the district heating grid of Graz.