The Sustainable Electric Power Engineer –
Topic #5 – Sustainability and Engineering

As the world is constantly expanding, the need of food, water, goods and services is increasing rapidly. It does not matter if a country is poor or not, all resources that we gather are in some way finite natural resources. Every living being on the planet is dependent on the services that the eco system provides. Nevertheless the ecosystem is more delicate than ever, since a new era has begun, a time where nature itself is dependent on the actions of mankind.

While mankind develops new technology in order to fulfil their needs in larger scales, the habitants of the ecosystems suffers. With faster methods and larger production, humans are fully capable to out harvest species or eliminate whole biospheres. And in many cases of the western world we consume many times over our basic needs.

Since the consumers' needs habits are controlling the production, we all as individuals have a key role when we chose how to live and consume. To be able to change trends in consumption is our power as consumers, and this is vital for the global market and the ecological footprint we make. And it is absolutely crucial that we as individuals, who are not suffering from offended basic needs, take a stand for what we can do in order to improve the sustainability in our lives and society.

As engineers we are system builders and problem solvers. We design and construct the future world everyone will live in. Some of the technology that is built, will exist and operate for a very long time. Such as power systems, transportation system and buildings. Consequently it is of great importance that the planning of these systems has a large consideration of sustainability put into them. Efficiency, materials used and emissions caused by the construction and operation phase has to be taken into account at an early stage of the design. I think that we as engineers have to take stand in when economically beneficial short term solution has to be out concurred by long term solutions. Even though the long term solution may not be as economically efficient as a short term.

For me as an electric power engineer dedicated for electric energy conversion and electro technical design, I have an expectation on myself. This is to always try to find the solution to a technical problem that is beneficial for all the part of the sustainable development definition. Technical solution should always contribute to social, economic and ecological improvement. And it is essential that we all have that in mind when we make decisions.

Electrical machines play a huge role in the energy production and consumption. For example 10% of the total electricity consumed is utilized in electrical machines for pump applications. [1] So as a machine designer, every contribution to increased efficiency is a step in right direction. Materials used in such machine are also of great concern, and it is important for us designers to always think of what impact certain materials can cause on the environment.

Moreover we engineers play a big role in the society when decisions are made. In many occasions engineers and academics are information providers for stakeholders. This makes it vital for the sustainability for such knowledge to be communicated wisely and long term valuable. It is a big deal for the future if one can convince a company or a group of politicians to choose a greener and more

energy efficient solution rather than the cheap and fast solution.

For me, KTH has provided knowledge in sustainable development in many ways. Most evidentially in form of courses, for example ecology, environmental impacts and environmental economics. Moreover KTH has many platforms where knowledge about sustainability can be shared for instance business days and conferences and gust lectures

[1] IEA Report 2009, IEA Statistics, CO2 Emissions from fuel combustion