



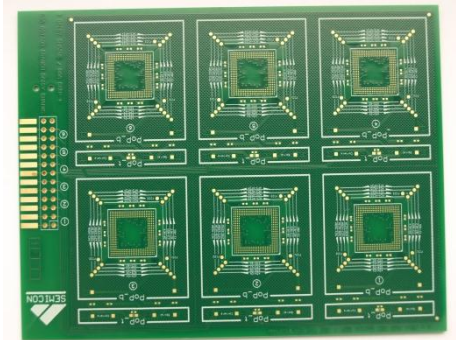
Printed Circuit Board and Electronics Case study



The Semicon Company is an importer and authorized distributor of electronic components, materials and tools for the electronics, measuring apparatus and appliances for measuring. Semicon is also a manufacturer of laser modules, laser line generators and laser measuring devices as well as is a contract assembler of different electronics products. It is a small enterprise operates mainly on the Polish and European market.

Mr Tomasz Krzaczek from Semicon is responsible for development of new products and assembly processes. He had the opportunity to take part in the workshop organized by ITR in Poznan concerning Life Cycle Assessment of products from PCB and Electronics sectors as well as in mentoring concerning “LCA to go” tool. The mentoring processes were via emails and during a site visit in the company at the 12th of March 2014.

During the mentoring, the backgrounds of the LCA to go project were explained as well as practical possibilities of the tool offering by the “LCA to go” project were showed. The tool’s modules for electronics and PCB sectors were tested. During practical tests the basic version of the “LCA to go” tool was used for environmental analyses of the various PCBs variants for PoP technology, which was introduced in the company then.



The example of the PCB utilized in “LCA to go” tool tests.

First of all, the energy consumption was analysing and carbon footprint depending from the type of finish on PCBs and manufacture places. The influence of different transport profiles on carbon footprint was interesting for Semicon because they purchasing PCBs for their products from different countries from Europe and Far East. Some results are presented below.

Based on obtained results Mr Krzaczek said: “The tool is very easy to use and it will help us to estimate the carbon footprint of our products if will be such an enquiry from clients. Over other applications we have to think yet, but we should use the tool for marketing. Also I saw that the transport profile has impact on carbon footprint of products and we have to consider more this issue in future products development”.

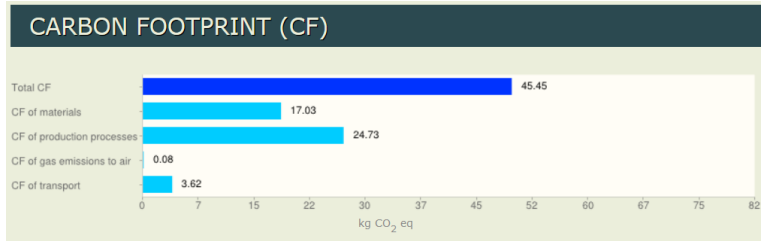
Examples of results from case studies:



Comparison of two PCBs design variants:

Indicator	Units	PoP ENIG - Shenzhen, China	PoP Sn - Eldos, Poland	Result of comparison [%]
Water consumption	m ³	0.4460	0.4293	-3.74 %
Energy consumption E _c (E _c = E _{cm} +E _{cp})	kWh	56.0622	50.9255	-9.16 %
E _{cm} - Energy consumed during materials production for PCB	kWh	22.8598	20.8207	-8.92 %
E _{cp} - Energy consumed during production processes of the PCB	kWh	33.2024	30.1048	-9.33 %
Total sludge and waste emitted	kg	1.0497	0.9765	-6.97 %
Carbon footprint - CF	kg CO ₂ eq	45.4502	34.8706	-23.28 %
CF of materials	kg CO ₂ eq	17.0268	14.1855	-16.69 %
CF of production processes	kg CO ₂ eq	24.7304	20.5110	-17.06 %
CF of GHG emission	kg CO ₂ eq	0.0759	0.0759	0.00 %
CF of transport	kg CO ₂ eq	3.6171	0.0981	-97.29 %

CF of the PCB PoP ENIG manufactured in China:



CF of the PCB PoP Sn manufactured in Poland:

