Abstract

I completed my internship at Souriau enterprise. Souriau is a company which creates interconnects solutions for severe environments. These solutions are used by aerospace, army, industrial equipment and heavy industry. Souriau became a part of Esterline Corporation in 2011.

My internship took place from April 15, 2012 to June 21, 2013. During these three months I worked in a laboratory. Before December 1st, 2012, the laboratory was a part of the research department; now it is a part of Quality department.

The connectors allow an electrical current connection between 2 conductors (cable). The connectors can be likened to an outlet with a male part and a female part, which is also called the receptacle (fixed) and the plug (moving part).
My main task was to check the calibration of the female contact in accordance to the finite element analysis in order to anticipate the next new size of contacts.

Based on the existing, I made an anticipation of design to determine a new pair of contact.
A lip (part of the female contact) can be compared to a beam, by measurements of strength and dimensional measurements related to calculation to check the friction coefficient.
I had 12 batches of 30 test pieces, and had time to test 6 batches. My test results are in accordance with the finite element analysis with some deviations due to the tests setup.

The setup test protocol that I have done can quickly control the friction coefficient of the work piece and the desired batch. These tests also give us a clear status on the main factors which we have to take into account for the new designs, hence its usefulness.
Whatever the tolerances on the test results, this method is a good step to validate a design.
Tolerances are done by:
Calibration
Operator
Differences between 2 samples

I made other tests in order to determine the best cable sizes which are allowed on the current shape requested by the customer and the acceptable heating temperature on the connectors.

I also had to perform tensile measurements to break shielding rings. There is too much scrap in the assembly shop and I have checked the failures mode on two different kinds of shielding ring.

This internship allowed me to discover the working world. During this period, I gained autonomy in using the skills acquired during these two years at the IUT physical measurements of Le Mans.

These ten weeks were a learning experience for me, which confirmed my career choice. The team spirit in the laboratory, the advice of my tutor, and technical tests were motivating factors in the choice of continuing my studies. This was an excellent industrial and business experience, as well as a life experience.