Stimulating creativity & innovation in electrical products designers

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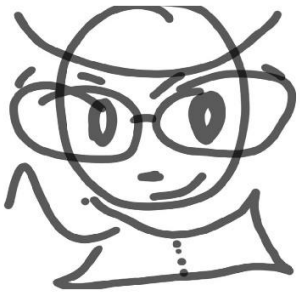

1. A REAL CASE EXAMPLE OF STIMULATING CREATIVITY AND INNOVATIONS THROUGH TRAINING

I am a Brazilian electrical engineer, 68 years old. I witnessed – in deep - the process of transforming the Brazilian 70's small electric power industry to a considerable one in the 2010's [Ref. 1 to 4]. In 1977 I graduated as an electrical engineer and went to work at CEPEL / ELETROBRAS, the main electrical energy research center in South America. The center was created to promote R&D activities in electrical systems and equipment and included large testing labs. The country objective was to accelerate the formation of knowledge and infrastructure for the growth of the Brazilian electrical industry. At that time the main G&T power utilities were created or improved.

The more important investment was in the training of high-qualified technical personnel, and this was also done in the power utilities of the Eletrobras system. A good part of the professionals who later became the main researchers, engineers and managers were trained in important similar institutions like IREQ (Canada), CESI (Italy), KEMA (Holland). I was among them. The manufacturers in the electric industry saw good examples and also invested a lot in training their teams and in developing and testing very competent products. The electrical industry has established itself.

At those times, the Brazilian electric sector had a very high-level long-term planning conducted by Eletrobras. Unlike today, what was planned was implemented. The harmful political influences that came after dismantled much of the efforts made at that time. In addition to investments in research centers, the strategy included strengthening the technical standardization systems (ABNT / COBEI) and Certification (INMETRO). The electric sector had a centralized model. The excellent results which came along the decades are easily verified in the sector's quality indexes [Ref.2].

In my first steps in the research center, even before being trained in centers abroad, several visiting top experts from abroad were brought to Brazil to apply systematic training to the team. I participated in these trainings and still keep those books. Although my experience as a young engineer was small and my understanding of the English language was very different from today's, I learned a lot in these trainings. The biggest lesson was to understand the importance of strategic training. Just before leaving the center in 1998, I managed the preparation of a big training program for the company.

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2. WHY DO CREATIVITY AND IDEAS COME EASIER TO TRAINED PEOPLE?

Designers, R&D people, and technical people in general feel motivated to improve and create ideas and innovations when they see that the training strategies are taken seriously by the company. I have witnessed for decades, applying trainings all over the World, that the results obtained by companies that train their teams are much greater than those that do not. Frequently these last ones are still thinking that if they train their employees, they will go to another company to get a higher salary. This is a gross management error made by managers that possibly were not trained in the past. I am no longer surprised when I see the same company ask me to do a design review 3 times when they would spend less than half if they carried out the training I apply, to teach them to do the calculations by themselves.

In many countries, education and training are the main barriers to higher flights. In the case-example of Brazil this is the reason why some Asiatic countries, who in the 70s were even less (knowledge) advanced than us, are today in a much more comfortable position and surpassed us. In Brazil it is visible that the political classes have no desire to let the country reach a better level of knowledge and education.

Another example I see in Brazil is that many companies, for example manufacturers of panels and busways, do not venture into the much bigger export market, believe me, because of problems with understanding other languages or because they do not have the vision to improve their technical teams.

3. THE WEB IS A RICH SOURCE OF KNOWLEDGE FOR WHOM KNOW THE FUNDAMENTALS OF WHAT THEY ARE LOOKING FOR.

I learned this from experience. I was trained in the past to solve complex problems and do R&D developments. When I need to look for specific information on development work, for example on patents, I search the Web. When developing new ideas, it is not enough to enter the browser and type the easy search words. There will come so much useless stuff that you will not find what you're looking for among them.

Maybe you will even find some paid technical article that possibly will not buy it, not knowing if there's what you need in there. You can be sure that such information is freely available somewhere on the Web if you know how to put the right keywords – not obvious ones – in your search. So even for you to do a search you need to have some training.

4. AN EXAMPLE OF TRAINING FOR DESIGNERS OF ELECTRIC POWER PRODUCTS

After spending a lifetime doing tests, managing, and designing testing labs and equipment like panels, busbars and fuses I learned what is useful knowledge for a designer of electrical products. The training that I have been improving and applying over the past 20 years encompasses the essence of what is necessary to be a successful designer. It is the training I wish I had taken earlier in my engineering career.

It contains no excessive information and includes all the main points a designer should know about temperature rise, internal arcs, short-circuit forces, dielectrics, equipment specification and testing. If you need to understand what this fundamental knowledge is, read the text of Ref. [4].

If you want to understand the results that can be achieved with training, take a look at my resume thinking that these achievements started with serious training, as I describe in this article. Good luck and success to you, designers.

CV of the author https://www.cognitor.com.br/Curriculum.html

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