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NAME OF THE PHD THESIS IN MECHANICAL ENGINEERING (N.S. CYCLE IX (2007-2010)):

**"DEVELOPMENT OF A METHODOLOGY FOR ANALYSIS AND IMPROVEMENT OF
QUALITY IN DESIGN"**

DR. ING. RENZO CAU

Abstract

Consistent with content related to the life cycle of a product, the most common definitions of quality reference both to the characteristics of the latter both to the human and industrial activities developed to produce it and use it.

Who designs, besides, can make more or less difficult the life of those who must then make or use the product depending on the choices.

The question that arises is "how do you take into account in the design phase all requirements related to the product life cycle?"

An answer to this question is the methodology of "design-oriented" (Design for ...) developed in recent decades.

These methods include design rules that are nothing more than the requirements of the customer-production, customer-technical assistance, supply from the customer and the customer-end user. Of particular interest are the applications and methods developed to improve quality in the design. This applies, in particular:

- Quality Function Deployment (Q.F.D.)
- Taguchi Methods (Robust Design)
- Design Of Experiment (D.O.E.)
- Failures Mode and Effect Analysis (F.M.E.A.)

The highest product quality is determined in the first two phases of its life cycle, when the characteristics are identified.

In the remaining steps all efforts can be directed solely at maintaining the level of intrinsic quality, not to improve it.

Theoretically, the product should pass from one stage to the next one without returning to previous stages. In fact, at each stage resulting change requests, since the product does not quite fit the needs of the function that takes charge (internal customer). This usually happens because during its design sufficient account of these needs was not taken.

In other words, the designer usually does not take into account the needs of internal and external customers. To these are added those problems related to the cost of modifications and to the project at various stages of product life cycle.

Ultimately, once formed the working group on cross-functional business, operating according to the rules described in this work, the next step is beginning, of course, to develop the new project according to previously

established rules and patterns. Just by virtue of the studied and developed in the present work, we were able to detect even a methodology as generic as possible to run with fewer errors and, above all with the least number of attempts, no groping, a rapid application of the tools available to the designer at various stages of design, through the application of the above mentioned instruments, which form the new methodology to improve the quality in design phase, named TQP (Total Quality Project)..

The methodology proposed by the TQP (Total Quality Project) has helped to identify with precision the different types of intervention as a tool to act and at what specific stage of the process. The application of the proposed methodology give numerous advantages that have emerged. Not a few have been difficulties in implementation, but the benefits achieved through an integrated approach to the type TQP under the supervision of the QFD tool is far superior to the sacrifices faced.