

Concurrent Engineering – A Case Study involving University and Industry

Elsa Henriques¹, Paulo Peças¹, Arlindo Silva², Inês Ribeiro¹

¹ *Instituto Superior Técnico, IDMEC, Av. Rovisco Pais, 1049-001 Lisbon, Portugal
[elsa.h, ppeças, ines.ribeiro]@ist.utl.pt*

² *Instituto Superior Técnico, ICEMS, Av. Rovisco Pais, 1049-001 Lisbon, Portugal
arlindo.silva@ist.utl.pt*

Abstract

Time to market, competition and manufacturing costs are only some of the reasons why concurrent engineering is an increasingly used methodology for product development. The present paper deals with a case study of university-industry cooperation to develop an improved part for an automotive application, with three main concerns: economic, performance and environmental. Four universities gathered to attack this problem with an automotive company, joined by a technology research center. The very short time span of the project called for the application of concurrent engineering project planning and execution. The brainstorming that ensued resulted in, among other significant outcomes, a new methodology for materials selection. Also, the application of concurrent engineering methods to university-industry collaboration was very successful, regardless of the usual different timings of industry and university.

Keywords

Product development, concurrent engineering, materials selection, manufacturing cost

1 Introduction

Nowadays, any innovation process and particularly product development is a concurrent effort involving engineers, business planners, marketing staff and environmental professionals functioning as integrated teams [Cooper, 2001]. Leading firms are introducing new products with high-perceived quality, forcing other companies to respond accordingly in order to maintain their competitiveness. This dynamic flow of new products is achieved by adopting new product development methods [Rouibah, Caskey, 2003]. Emerging in this context, Concurrent Engineering (CE) is a process in which a number of specialists from different areas work interactively to meet pre-determined targets [Hilmes, Schatz, 2004]. CE philosophy has been discussed since the beginning of the twentieth century, but only in the past decades it has become the main approach in product development, due to the fast development of science and technology and to the increasing multidisciplinary and interdisciplinary nature of current engineering problems [Jian, Oriet, 2005]. Within a product development context the main purposes for CE principles are the creation of products with shortened development process, lower costs and higher quality [Xu, Li, Li, Tang, 2004]. Many studies have been developed in this area; some are focused on information exchange between expertise areas [Yassine, Sreenivas, Zhu, 2006; Wognum, Bondarouk, 2003; Farinha, Gonçalves, Garção, 2003], some explore leadership and team management strategies [Lin, Chai, Wong, Brombacher, 2007; Stach, Pfennig, 2004] and others focus on applications and case studies involving concurrent engineering applied to product development [McBeth, Tennant, Neailey, 2005; Loh, 2005; Xiuchun, Ning, 2005]. Nevertheless, and whatever their approach is, all of them agree that the basic principles of CE rely on concurrent work-flow, cross-functional work teams and early involvement of constituencies, whose competences will be required or will be disturbed at some point along the product development process.

Concurrent Engineering Case Studies

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