"A study of Effective Manufacturing Activities" based on a Number of Redesigned Contradiction Matrices"

Manabu Sawaguchi[a] ,Yuji Mihara[b] , Heikan Izumi[c]

[a]WASEDA University, Creative Engineering Department, Japan
[b]Creative Technology Institute, ,Japan
[c]IZUMI Products Corporation, Engineering Department, Japan

Abstract

Although supplying "High-Value-Added Products (HVAP)" to the market continuously is one of the manufacturers' missions, in order to realize this mission both the enhancement of core technologies and the effective utilization of MOT (Management of Technology)-based management techniques are essential pre-conditions. After administering a questionnaire, I gave a presentation on the "10 biggest hits in recent years in Japan" at ETRIA2010. We found that innovative products have provided customers with "Latent Required Functionality (LRF)" hitherto unenvisioned: and that some of these products even solve " Technical Contradictions (TC)" that might crop up in the near future. This shows clearly that Functional Analysis based on VE and TRIZ methodologies are becoming highly effective and valued MOT techniques. However, TRIZ is still underutilized in Japan because of its complexity as compared with other techniques like QC, VE, and so on. Under the circumstances, and with an eye to the Contradiction Matrix (CM) developed by Altshuller in the TRIZ field, we have tried to redesign our original CM (1971 Version) to better suit Japanese companies (in particular, manufacturers who excel at "Product Development Activities (PDA)" utilizing a middle-up approach; but even Kaizen Activities based on the bottom-up approach which counts on strong project team spirit). Specifically, after thorough analysis of the CM, we organized a "new CM, including two contradiction tables for PDA" and a "new CM for Kaizen Activities" focusing on "Cost Reduction Activities (CRA)". In this paper, I will propose a "Flow-Chart" for selecting appropriate CM, and several "Work Sheets" used to facilitate both PDA and Kaizen Activities based on New CM not only for experienced TRIZ practitioners but also for TRIZ beginners. My discussion will also consider the results of the other research we are doing.

Keywords: Technical Contradiction, Product Development Activities, Cost Reduction Activities, New Contradiction Matrices