

## **Analysis of a metal matrix composites automotive component**

### **ABSTRACT**

This study presents an implementation of concurrent engineering (CE) and an analytical network process to form a new rating method as part of the manufacturing process and material analysis in the product development environment. The proposed procedure is referred to as a concurrent network (CN). It is planned for CN to carry out simultaneous analysis of all aspects of product elements by using CE strategy. Furthermore, CN enables interdependence and interrelationship analysis between product elements by implementing ANP. In this study, CN is utilized for the manufacturing process and material analysis of a metal matrix composites (MMCs) automotive component which is the brake disc. The results show that by using CN, all the product parameters can be analyzed comprehensively and the importance weights of the product parameters with regard to the MMCs brake disc performance are obtained. It is concluded that in the manufacturing process cluster the primary process parameter has the highest score, while in the material cluster the ranking is dominated by mechanical properties. This means that these sub-conceptual parameters are the most important ones to consider in order to achieve the required performance of the product.