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# Advanced concept in analysing tool performance in parts production processes

**Amirat Abdelaziz**
Badji Mokhtar University of Annaba, Algeria

Despite the efforts that are continuously spent in developing high technology to make the production engineering process accurate, reliable, efficient and competitive, there is stil a great deal with lifetime of the tools involved as they are always subjected to progressive damage because of plastic deformation, wear and cracking. Unpredictable failure of tools has great effect on the production and non-maintenace costs. The present work introduces an advanced concept in analyzing tool performance in parts production processes. The concept is based on an engineering model developed by coupling the process behavior model and a corresponding damage model. The analyses uses reliability approach that permits to determine a reliability index expressed in terms of number of parts produce with the same tool regarding the required quality and safety. The higher the number of parts the better the performance of the tool. So the concept will be developed and applied to two case studies: forging die and cutting tool. In both cases the performance index is expressed as the number of produced parts before changing tools because respectively of fatigue damage and wear. A particular attention is given to the uncertainties associated to the variables involved in the mechanichal engineering models in order to analyse their sensitivity.

## Biography

Amirat Abdelaziz has completed his Bachelor's in Engineering in Production Engineering; MSc Research and PhD in Mechanics of Materials. He is a Professor since 2009 in Badji Mokhtar Annaba University and has been leading a research team in new materials and composite in the mechanics of material and plant maintenance laboratory and then recently a new team in internal logistics in production workshops, in the laboratory of advanced technology in production engineering. He has been President of the national committee of the professional branch of mechanical and steel industry, within the ministry of vocational training of Algeria for 4 years. He is a member of MasTech Tempus Project and he has published papers in reputed journals and attended international conferences.

abdelaziz.amirat@univ-annaba.dz
amirat_abd@yahoo.fr

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