

INDUSTRIAL DESIGN WITHOUT ENGINEERING DESIGN: “CHEAP, PLASTIC AND BROKEN!”

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During the past fifty years there have been enormous advances in the development and engineering application of polymeric materials that we commonly know as “plastics”. Most consumer products now involve the use of plastics in some form or another with adequate, if not excellent, performance in service. However there are also many products where the inappropriate use of polymers results in early failure, leading to intense consumer frustration and costly replacements. Investigation of such failures in consumer products reveals that in most cases the problem lies not in the actual material itself but in a complete lack of basic mechanical engineering design.

In this presentation a variety of simple failures in the plastic components of well-respected consumer products will be used to illustrate common defects in the design of mechanical elements such as shafts, bearings, screws and springs. The emphasis is not on the theory, but on the need to combine industrial design with the application of mechanical engineering design principles to avoid products ending up labelled as “cheap, plastic and broken.”

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