

**A REVERSE ENGINEERING AND REDESIGN METHODOLOGY  
FOR PRODUCT EVOLUTION**

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New products drive business. To remain competitive, industry is continually searching for new methods to evolve their products. To address this need, we introduce a new reverse engineering and redesign methodology. Motivation is provided by the S-curve product improvement history. We start by formulating the customer needs, followed by reverse engineering, creating a functional model through teardowns. The functional model leads to specifications that match the customer needs. Depending upon required redesign scope, new features are possibly conceived, or not. Next models of the specifications are developed and optimized. The new product form is then built and further optimized using designed experiments. An electric wok redesign provides an illustration. The methodology has had a positive impact in results and systematic approach, both on design education and application.