DFSS (Design for Six Sigma) is a well-known six sigma approach, which is widely used for design of new products and services. Every industry has its own DFSS approach with (may be unique to the product or process application) steps defined in order to develop a product or service. In this paper, a unique DFSS procedure is described for the development of repair processes that can be applied to the service operated power generation gas turbine parts.

During service operation, gas turbine parts experience various types of damages which can be broadly categorized into two; continuous operation (or base load) and cyclic damages. The impact of these damages can result into cracks or loss of material (in extreme cases complete failure of the part). The repair limits are one of most challenging factors to decide during the repair. Because any excessive repair performed on the parts can trigger immediate or accelerated failures of the parts, which may costs significant amount of financial loss to the power plant owners and gas turbine manufacturers.

In this paper, a unique DFSS process called “IPDI” (identify, prioritize, design, implement) for power generation gas turbine repair products is presented. Such type of unique repair product DFSS approach has many benefits which primarily include no requirement of validation phase (repaired parts can be directly used), shorter repair development cycles from identification to implementation, increase in the repair warranty benefits, reduction in premature failure (early life) of the repair parts, less impact on gas turbine performance and efficiency and, part life extension and most importantly increased end customer satisfaction.