

## REMANUFACTURING PROCESS AND ITS CHALLENGES

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### ABSTRACT

In the recent years, remanufacture of used-products is becoming an important production activity amongst many companies. This is primarily motivated by the strict environmental regulations, increasing customers' awareness of green environment and economical benefits. Remanufacturing is an industrial process that involves four key processes, namely inspection/grading, disassembly, component reprocessing and reassembly/testing. It is established that the presence and interactions of several unique characteristics within the remanufacturing systems implicates subsequent key processes. These unique characteristics would become challenges to production planning and control activity in any remanufacturing systems. Consequently, it is very imperative that these characteristics are properly taken into account in any production planning and control activity.

**Keywords:** used-products, remanufacturing, unique characteristics

### INTRODUCTION

Recently, the remanufacture of used-products (remanufacturing) has become an important part of normal production activity in many companies (Guide Jr et al., 1999; Guide Jr, 2000; Aras et al., 2004; Ferrer and Swaminathan, 2006; Schulz and Ferrtti, 2011). This trend has been motivated by three emerging factors; strict environmental regulations (Directive 2000/53/EC; Directive 2002/96/EC; Japanese Home Appliance Law 2001), increasing customers' awareness of green environment (Gungor and Gupta, 1999; Ferrer and Whybark, 2000; McGovern and Gupta, 2004; Georgiadis and Besiou, 2010) and economical benefits (Rogers and Tibben-Lembke, 1998; Dowlatshahi, 2000; Giuntini and Gaudette, 2003; Maslennikova and Foley 2000). The automotive sector, particularly has a strong history of remanufacturing (Seitz 2007), where numerous auto parts have been remanufactured and resold as spare parts (Steinhilpher 1998). Pioneering companies like Fuji Xerox Australia (Fuji Xerox Australia 2007a), Xerox Europe and Kodak (Guide Jr et al., 2003a) have also expanded their core business operations to include remanufacturing. In addition, remanufacturing is gaining scientific significance in industries that include flat screen monitors (Franke et. al., 2006), single use-devices for hospitals, such as wheelchairs and hearing aids (Srivastava, 2004; Rudi et al., 2000), cellular phones (Guide Jr et al., 2003b) and truck tyres (Lebreton and Tuma 2006).