

再制造加工技术的研究进展*

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摘要 再制造加工技术是再制造产品生产中的核心步骤,对于保证再制造产品质量、降低生产成本具有重要意义。本文综述再制造加工技术的发展与应用现状,根据零件的损伤形式将再制造加工技术分为面向表面失效的再制造加工技术和面向结构损伤的再制造加工技术。分类列举多种典型的再制造加工技术,介绍各自的加工原理,并对其在再制造加工零部件中的应用进行举例和评述。最后,总结再制造加工技术目前存在的问题,并对未来再制造加工技术的发展趋势进行展望。

关键词 再制造加工技术;磁粒研磨;激光熔覆;热喷涂;冷喷涂

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Research progress of remanufacturing technology

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Abstract Remanufacturing technology is the core step in the production of remanufactured products. It is of great significance to ensure the quality of remanufactured products and reduce production costs. In this paper, the development and application status of remanufacturing technology are summarized. According to the damage forms of parts, remanufacturing technology is divided into surface failure oriented remanufacturing technology and structural damage oriented remanufacturing technology. A variety of typical remanufacturing technologies are classified and listed. Their processing principles are introduced, and the application in remanufacturing parts is illustrated and reviewed. Finally, the existing problems of remanufacturing technology are summarized, and the development trend of remanufacturing technology in the future is prospected.

Key words remanufacturing technology; magnetic abrasive finishing; laser cladding; thermal spraying; cold spraying

21世纪以来,能源和资源紧缺、环境污染等问题日渐严重,对国内制造业尤其是机械加工制造行业提出了更加严格的要求。制造业作为实体支柱产业的同时,也是各行业中主要的资源消耗者和环境污染源,其每年产生的环境污染物约占总环境污染物总量的70%。为了提高资源利用率、降低环境污染,再制造加

工技术应运而生^[1]。

再制造是将已到达服役年限而无法继续使用的设备及其零部件等进行拆解清洗后,再使用一定的修复方法将其修复,最后组装成再制造新产品的过程。经再制造后获得的产品一般要达到甚至超过新品的使用标准,而其生产成本却仅仅只有新品的一半左右^[2]。

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