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GB/T 44025-2024

Remanufacturing - Technical specification for plasma spraying

再制造 等离子喷涂技术规范

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document was proposed and coordinated by the National Green Manufacturing Technology Standardization Technical Committee (SAC/TC337): This document was drafted by: Hebei Jingjinji Remanufacturing Industry Technology Research Co:, Ltd:, Beijing Mechanical and Electrical Research Institute Co:, Ltd:, Taier (Anhui) Industrial Technology Service Co:, Ltd:, Chinese People's Liberation Army Armored Forces Academy, China Machinery Productivity Promotion Center Co:, Ltd:, Yanshan University, Luoyang Mingtian Remanufacturing Technology Co:, Ltd:, Foshan University of Science and Technology, Xi'an Shaangu Power Co:, Ltd:, Chongqing Sitaiyi Lian Technology Co:, Ltd:, Hebei University of Science and Technology, Hefei University of Technology, Hunan Dijing Environmental Protection New Materials Co:, Ltd:, Shaanxi Tianyuan Intelligent Recycling Manufacturing Co:, Ltd:, Shenzhen Lingtuo Industrial Co:, Ltd:, China Railway Engineering Equipment Group (Tianjin) Co:, Ltd:, Hebei Ruizhao Laser Remanufacturing Technology Co:, Ltd:, Jinan University, Industrial Analysis and Testing Center of Guangdong Academy of Sciences, Sun Yat-sen University, Guangdong University of Technology, CRRC Industrial Research Institute Institute Co:, Ltd:, Beijing Shenjian Aerospace Technology Co:, Ltd:, Zhongzai Technology (Foshan) Co:, Ltd:, Hejian Ruichuang Testing Technology Co:, Ltd:, Beijing Ruiman Technology Co:, Ltd:, Hebei Changli Auto Parts Co:, Ltd:, Shandong Zhongke Machinery Remanufacturing Co:, Ltd:, Fengqingyang (Suzhou) RING TECHNOLOGY LIMITED: The main drafters of this document are: Zhang Wei, Zhang Yun, Dong Zhenqi, Wang Haidou, Liu Ming, Sun Tingting, Wang Dianlong, Zhou Xinyuan, Zhang Tingyang, Yu Helong, Guo Wenyong, Shi Peijing, Li Chao, Liang Zhimin, Wang Haijun, Wei Min, Zhang Zhijian, Liu Hongwei, Li Kai, Li Shenshen, Huang Qi, Zheng Handong, Ouyang Haibo, Ren Jingyu, Han Hongsheng, Wang Qiwei, Shi Changliang, Shu Fengyuan, Wang

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With the improvement of the reliability of industrial plasma spraying equipment, the maturity of production technology and the advancement of plasma spraying technology, the use of plasma Spraying technology has been widely used to remanufacture damaged key and important parts in the vehicle, energy, mining, metallurgy, machinery and other industries: And achieved significant economic and social benefits: This document is formulated to standardize the process flow of remanufacturing plasma spraying technology and promote the orderly development of the industry: Remanufacturing plasma spraying technical specifications

1 Scope

GB/T 44025-2024 covers plasma spraying used in remanufacturing - restoring worn parts to serviceable condition rather than scrapping them. It is the most attractive route economically, because the part being saved is typically a shaft, a hydraulic component or a housing whose original manufacture cost far more than the coating, and the most demanding technically, because the substrate is not new material of known history. It has been in service, it may be fatigued, its surface carries contamination worked into it over years, and the geometry has already departed from drawing. Spraying onto that without controlling the preparation gives a coating that bonds well in places and delaminates in service, which on a rotating or pressure-bearing component is worse than not repairing it. This document specifies the general requirements, technical requirements, quality control and inspection for remanufacturing parts by plasma spraying. Under ICS 25.220 and CCS J04, it is written for remanufacturing workshops, for the fleet and plant operators who send parts for repair, and for the inspection bodies certifying a remanufactured component for return to service.

This document specifies the general requirements, technical requirements, quality control and inspection for the remanufacturing of parts using plasma spraying technology: This document is applicable to remanufacturing research, design, production and processing, engineering application, green manufacturing evaluation and related Related services and management, and other related work such as new product manufacturing and production for reference:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This

document:

GB/T 5616 Nondestructive Testing Application Guidelines

GB/T 8642 Determination of tensile bond strength of thermal spraying

GB/T 9790 Vickers and Knoop microhardness test for metallic materials, metals and other inorganic coatings

GB/T 11375 Safety of thermal spraying of metals and other inorganic coatings

GB/T 12444 Wear test methods for metallic materials - Test ring-block sliding wear test

GB/T 18719 Thermal spraying terminology and classification

GB/T 19291 Corrosion of metals and alloys General principles for corrosion testing

GB/T 19352:2-2003 Thermal spraying Quality requirements for thermal sprayed structures Part 2: Overall quality requirements

GB/T 19823-2020 Application steps of thermal spray coatings for thermal spray engineering parts

GB/T 28618 General technical requirements for remanufacturing of mechanical products

GB/T 28619 Remanufacturing terminology

GB/T 34631 Guidelines for the assessment of the remaining life of remanufactured mechanical parts

GB/T 37421 Thermal spraying Characterization and testing of thermal spray coatings

3 Terms and definitions

The terms and definitions defined in GB/T 18719 and GB/T 28619 and the following apply to this document: 3:

1 Atmospheric plasma spraying plasmasprayinginair The arc formed between the electrode (cathode) and the nozzle (anode) is used to partially or completely ionize the plasma-forming gas to produce plasma: The gas heat expands and ejects a high-speed plasma jet from the nozzle: The plasma jet heats the spray material to a plastic or molten state and then sprays it The method of forming a coating by spraying onto the pre-treated substrate surface: See Figure 1:

Note 1: Atmospheric plasma spraying is referred to as plasma spraying:

Note 2: The powder delivery gas delivers the powder into the plasma jet from inside the nozzle (internal powder delivery) or outside (external powder delivery):

Note 3: Commonly used plasma gases include argon, hydrogen, helium, nitrogen or their mixtures: [Source: GB/T 18719-2002, 4:3:6:1, modified]