

Development of the Brake Disk for High Speed Vehicle Applied Powder Built up Welding

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Improvement of the braking force that will contribute to the further safe operation of high speed vehicle is an important research issue in all the countries in the world. Reduction of the brake distance is an effective safety measure particularly in Japan where the earthquake often occurs. However, improvement of the braking force will usually put higher heat load on the brake disk in case of the emergency braking, causing various problems such as damages of disk surfaces. In order to mitigate the thermal effects of disk material, we studied several methods and developed a method to form built up welding layer on the disk surface using the plasma transferred arc welding (PTA). In this paper, we report the summary of the evaluation of performance of this method applied to brake disk on dynamo test bench up to 400km/h. It was proven that the improved brake disk ensured the target brake distance, and the built up layer and the base material of the brake disk after the test bench maintained a state in which a crack hardly occurs.