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General Color Rendering Index of Wall-stabilized Arc of Water-cooled Vortex Type TAKAYA NAKAMURA, KENTARO YANAGI, SHINJI YAMAMOTO, TORU IWAO, Tokyo City University Graduate School of Engineering, Electrical and Electronic Engineering — The arc lighting to obtain the environment to evacuate, save the life, keep the safety and be comfortable are focus on. The lack of radiation intensity and color rendering is problem because of inappropriate energy balance. Some researchers have researched the high-intensity discharge (HID) lamp which is one of the arc lamp with metal vapor, and the line spectrum emitted from the metal vapor is used for improvement of color rendering spectrum. The broad spectrum emitted from continuous spectrum is needed for improvement of color rendering spectrum. It is necessary to perform the calculation using the wall-stabilized arc to equalize the contribution to the temperature distribution which the convection gives it to bell-shaped form in the gas flow-stabilized arc for the axial distance. This research elucidates the development of the argon wall-stabilized arc in order to control the spectrum for improvement of color rendering spectrum with controlling the current and radius. The color rendering is measured by the general color rendering index. As a result, the general color rendering index increases with increasing the current and radius of the wall-stabilized arc in the case of simulation. However, it doesn't change so much in the case of experiment. Therefore, the radius, i.e. the arc temperature distribution, is more important factor.

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