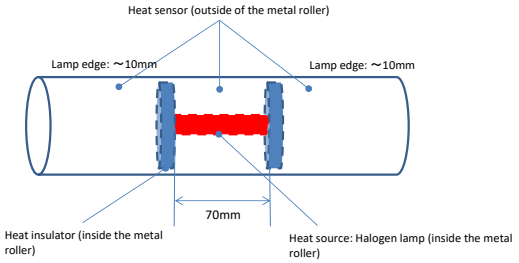
Metal roller heat transfer comparison - lengthwise direction

1. Measuring method



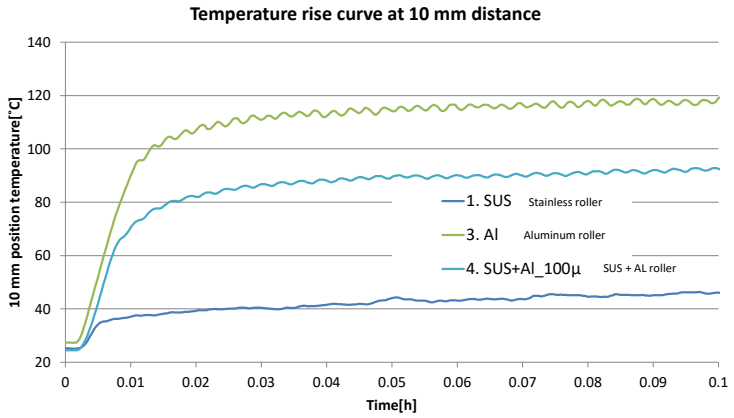
・Install heat source inside the metal roller (halogen lamp)
・Install heat sensor in the middle of the outside surface of the metal roller, and outside the insulators (10mm from the edge of the heat source)
・While maintaining the outside temperature of the roller at 180℃ with the temperature sensor located in the middle of the outside surface of the roller, measure the outside temperature of the roller with the temperature sensor located on the outside of the insulators, to compare the rate of heat transfer in lengthwise direction.

2. Measurement results

Purpose: measuring the temperature change from a spot that is 10mm away from the heat source of the metal roller, and comparing with rollers made with different materials

Test samples: "Stainless roller", "Stainless + AL roller", "Aluminum roller"
All test samples are coated with fluororesin on the outside, and Okitsumo coating on the inside.

Stainless roller	: SUS 304, outer diameter φ 30 mm, SUS plate thickness 200 μm
Stainless + aluminum roller	: SUS + AL, OD φ30 mm, SUS plate thickness 200 μm + AL plate thickness 100 μm
Aluminum roller	: A 5052, outer diameter φ 30 mm, AL plate thickness 500 μm



Among the three samples, aluminum roller heated up the quickest, and showed the best results in terms of transferring heat in lengthwise direction.
Meanwhile, stainless roller heated up the slowest, and was slow in transferring heat in lengthwise direction.
Compared to these, the double-layered roller (stainless layer + aluminum layer), owing to its aluminum layer (t 100μm),
heated up and trasnferred heat in lengthwise direction much quicker compared to the stainless roller.