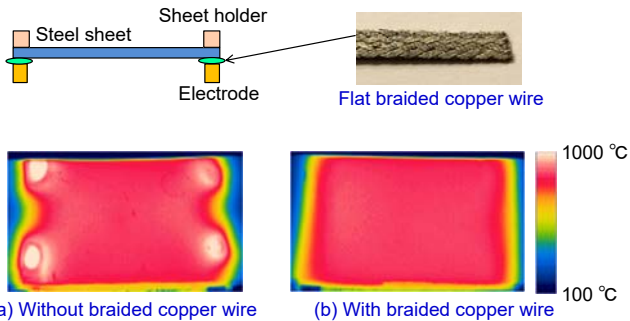
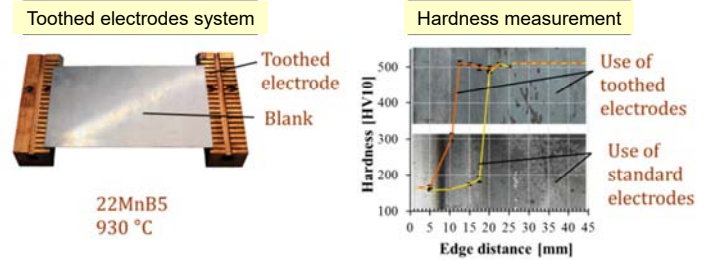


Improvement of fitting of electrode with flat braided copper wire



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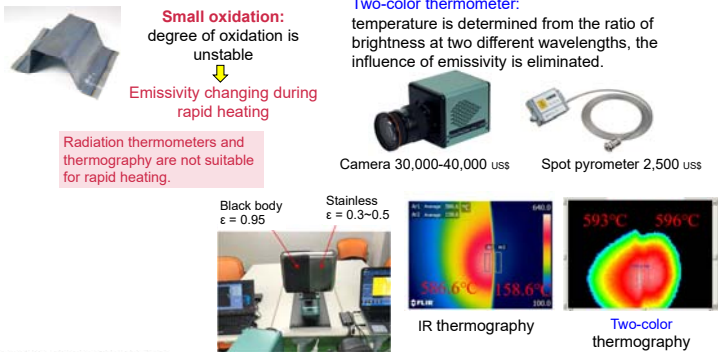
Reduction of non-heated edge with toothed electrodes



- Width of Non heated edge is reduced, and hardened area is increased.
- Material yield will be increased.

B.A. Behrens et al., Patent application, PCT/EP2015/053382.

Temperature measurement in rapid resistance heating with
Two-color thermometer (Ratio thermometer, Multi - wavelength thermometer)



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Conclusion

- High productivity with small in-progress product
 - ▢ Less material waste in case of trouble
 - Flexible control of production line
 - ▢ Suitable for medium volume production
 - Combination with forming tool such as hot blanking, trimming and punching
 - ▢ Hot stamping can be applied to small parts
 - ▢ Limited production of hot stamping in the cold stamping line
 - Limitation of blank shape is partially resolved
 - Tube material is suitable for resistance heating due to uniform heating and coating
- Non-heated edge is unavoidable
- ▢ Material yield becomes small
- Al-Si coating is not available
- ▢ Removing of thin oxide layer is required

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