

increase with clamping force although it is noted that excessive clamping force may generate high friction and suppress the relative motion of the surfaces, resulting in reduced weld strength [8]. Al-Al welds appear to be slightly

stronger than Cu-Cu welds created under identical process parameters, regardless of sample thickness. Scattering of weld strength across the five tests tends to become proportionally smaller as clamping force is increased.

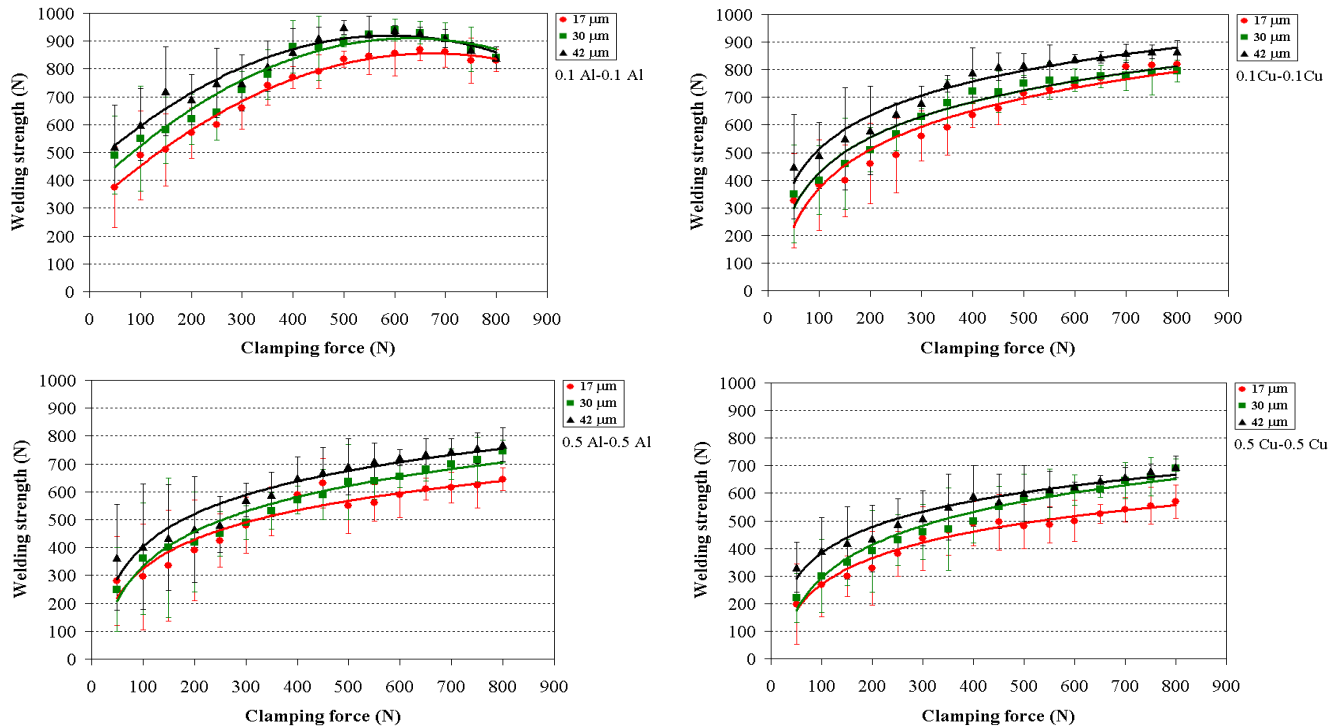


Fig. 4 Variation of weldability strength vs. clamping force for joining similar materials

4. Conclusions

Design and fabrication of a lateral-drive ultrasonic spot welding system has been carried out to investigate the welding of thin metal strips. It has been observed that vibration amplitude, clamping force and, in some circumstances, material arrangement order, have a significant effect on weld strength. Al-Al welds are stronger than Cu-Cu welds and weld strength in both cases tends to increase with clamping force within the range of forces examined. In general, there is a decrease in weld strength when clamping forces above approximately 500 N are applied, which directly influenced on the weldability of joining metlas.

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