

Hard-to-Sinter materials in Easy-to-Sinter waveforms

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Commonly the majority of SPS sintering studies, in research, development and production, are performed with the ON/OFF pulses. After the introduction of SPS some 30-40 years ago, much attention was focussed on finding an optimal ratio between ON and OFF times. During later years this has not been so much researched, instead people tend to stay with an almost “fixed” ratio, like 12/2 or 40/10. Not much optimisation is to be expected by varying the ratio. Even though ON/OFF is the absolutely most common wave current form, some very few studies use constant DC or AC.

During recent times we have been exploring a new wave-form which can be called Full wave. The findings in general can be summarized in the following sentences:

The sintering process starts at lower temperatures, consumes less energy and reaches often higher densities. There are differences between types of materials –metals/ceramics/hard-to-Sinter materials, which we try to systematize. There are also indications that reactions between different powder components proceed with different reaction rates under different wave forms.

The possibility to combine this effect with an advanced de-gassing process which cleans up the powder by removing moisture and impurities under heating at low pressure before sintering commences adds further advantages to be explored.

Professional Status of the Speaker

Senior Scientist

Interest in submitting a paper in a special issue of

Journal of the European Ceramic Society (Elsevier)

Invitation letter for visa

No

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