

Inductive heating potential for energy efficient composites processing

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EPSRC Centre for Doctoral Training in Composites Science, Engineering and Manufacturing



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Energy efficient processing

Energy losses

from source to

component

Autoclave + Oven Component Tooling + **Hot Press** consumables Component **Induction Heating** Air Conduction + Convection **Tooling** Component Heating element Heating element **Induction Coil Electrical Source**



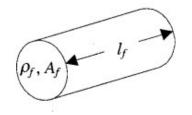




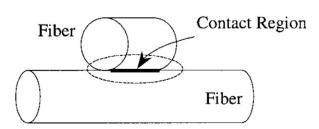
Induction heating

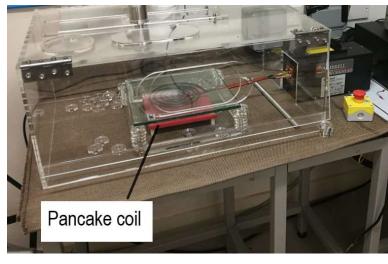
[1]

Joule Heating

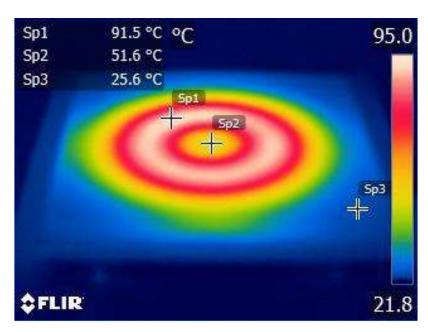


Contact resistance









QI Carbon fibre laminate heated for 18 seconds at 150 Amps and 3kW. 24C to 100C



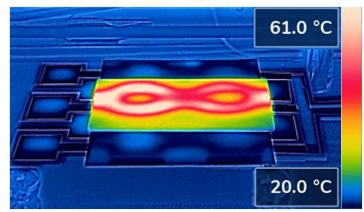
[1] S. Yarlagadda, H. J. Kim, J. W. Gillespie, N. B. Shevchenko, and B. K. Fink, "A study on the induction heating of conductive fiber reinforced composites," J. Compos Mater., Article vol. 36, no. 4, pp. 401-421, 2002

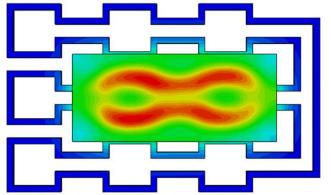


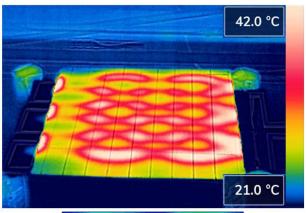


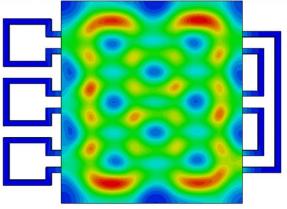


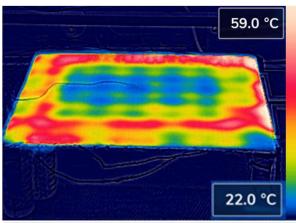
Finite element model

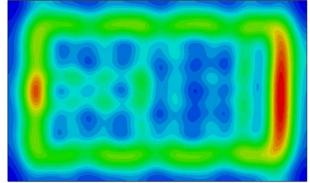






















Thank you for listening, any questions?

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