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Numerical model of acoustic wave generated by free-burning AC arc

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Free-burning AC arc is wildly used in arc welding, arc oven and occurs in the arcing fault of the power system. The acoustic wave will be generated in the process of AC arc burning in the air due to the periodic injection and release of the electric energy. This phenomenon is used in monitoring the quality of arc welding and pressure wave protection of substation. In this article, we made a simulation of free-burning AC arc and calculate the acoustic sound pressure generated by the arc. Then we compare the characteristics of the arc acoustic wave generated by the AC arc to the DC biased AC arc. The relationship between acoustic wave and parameters of the arc such as current amplitude and frequency is also discussed.

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