Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

A "resonance" method to decrease the electrode erosion in magnetically rotated arcs VALERIAN NEMCHINSKY, None — In many industrial application of high-current arcs with tubular or ring electrodes, the arc electrode attachments are forced to rotate in order to reduce the electrode erosion. A method aimed to further reduce electrode is suggested. This goal is achieved by forcing the attachment to drift in the axial direction. The axial arc motion results from the Lorentz force experienced by the radial arc under influence of an azimuthal magnetic field. This magnetic field could be created by a cable located outside the electrode. It is shown that if the current in the outside cable oscillates with a frequency close to the frequency of the arc rotation, it leads to a continuous arc axial drift. The effect has a resonance character: even a low AC current in the cable causes the arc drift. As a result of the combination of the fast arc rotation with a relatively slow axial drift (reversed from time to time), the arc attachment moves within a band of a controllable width. The spread of the electrode heat load over a wider electrode area reduces the electrode erosion. Sources of the azimuthal magnetic field other than a cable are suggested.

Valerian Nemchinsky
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Date submitted: 12 Jun 2018 Electronic form version 1.4