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Experiments on efficiency of electrolysis using pulsating direct current (using rectifiers)

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ABSTRACT

Electrolysis finds numerous industrial applications like synthesis, electroplating, electro refining. For all these purposes direct current source (generally a battery) capable of supplying 5-6A is used. Since the quantity of metal deposited is dependent on charge, so high current is preferred. But such high currents can also be obtained from a transformer and rectifier arrangement. The only difference is that a battery gives only D.C whereas a transformer gives pulsating D.C. The alternating components hinder the reaction and gives undesired products (even if filter is used). Battery on the other hand becomes expensive. For e.g. brine on electrolysis using battery gives pale blue $\text{Cu}(\text{OH})_2$ (if copper wires are used as electrodes). But if the same is carried out by a transformer with rating 12V-3A using a half wave rectifier (using a single IN4007 diode) yellow colored insoluble particles are formed (which was not our destination at all). Use of a proper capacitor makes no significant improvement. In this paper the characteristics of electrolysis using different types of rectifiers at different voltages and currents have been outlined.

Keywords: Efficiency of electrolysis, Pulsating direct current.
