

Wheel Surfer: A Device to Recharge Batteries from Mechanical Motion

(Technical Report)

That Tube Sound: Users of Vacuum Tube Guitar Amplifiers in the Digital Age

(STS Research Paper)

An Undergraduate Thesis Portfolio
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by

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Preface

In the technical project a generator was designed to mount on a bicycle so that it can power a phone or similar device while the user rides. The research paper is a study of electric guitarists who use vacuum tube amplifiers.

The bicycle-mounted generator project demonstrates a useful product that can be mass manufactured. The product is designed to generate and regulate current to a USB plug, and fit on most bicycles with minimal assembly and setup. The product may be most useful to commuters who bike long distances to work and to outdoors enthusiasts who need to charge their devices away from conventional power sources. Although the project could not be completed due to COVID-19 lockdown, design of a working prototype and further improvements are documented in the report.

Most electric guitarists favor tube amplifiers for their unique sonic traits, and due to a cultural bias that is apparent in a fascination for tube amps. Many musicians associate such amps with values such as authenticity and tradition. These values are evident on internet forums and in new products designed to emulate both the experience playing through a pushed tube amplifier and the consequent sound. Touring guitarists are more likely to use tube amplifiers if adherents of their genre value either authenticity or mild distortion.

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