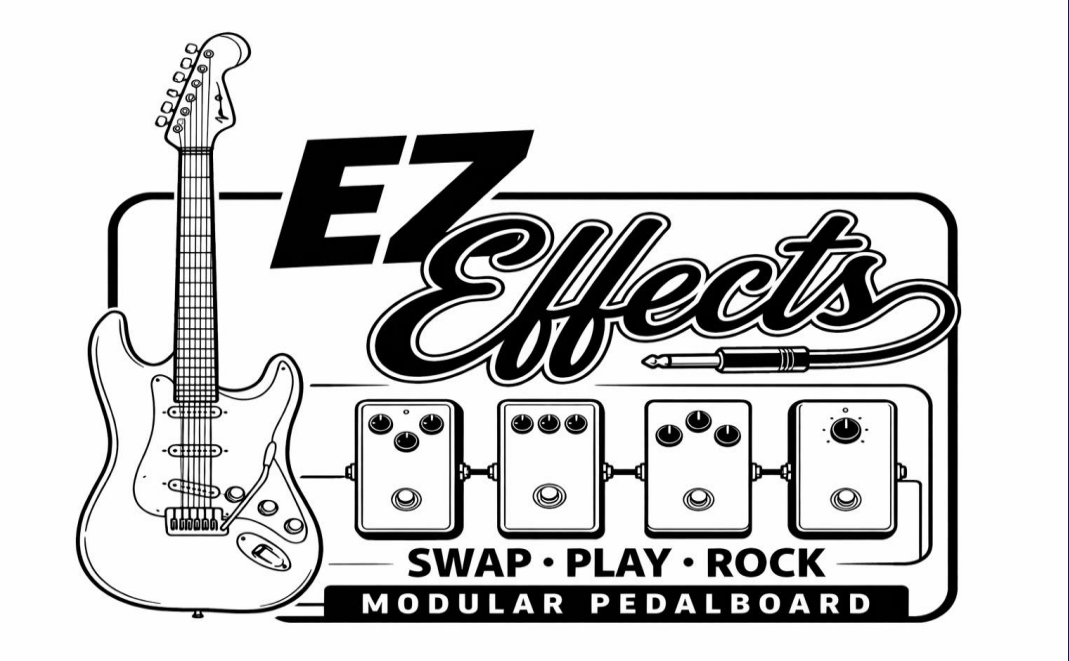




Modular Pedalboard System

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Our Mission

Our goal is to make guitar playing a hobby, not a chore.

Learning to play the instrument is hard enough, players don't need the added stress of:

- Messes of wires
- Learning digital pedalboard software
- Spending exorbitant amounts of money

The Beginner Experience

Analog pedalboards are created by wiring individual effects directly into each other

- Requires knowledge of how chaining effects change sound
- Experimentation becomes costly and time-consuming



Digital solutions exist, but require learning software and can cost \$1000+

Market Comparisons



Dunlop Cry Baby 535Q Multi-Wah Pedal - **\$179.99**



Dunlop FFM1 Silicon Fuzz Face - **\$159.99**



EarthQuaker Devices Blumes Low Signal Shredder Overdrive Pedal - **\$119.00**



EarthQuaker Devices Ghost Echo V3 Reverb Pedal - **\$199.00**

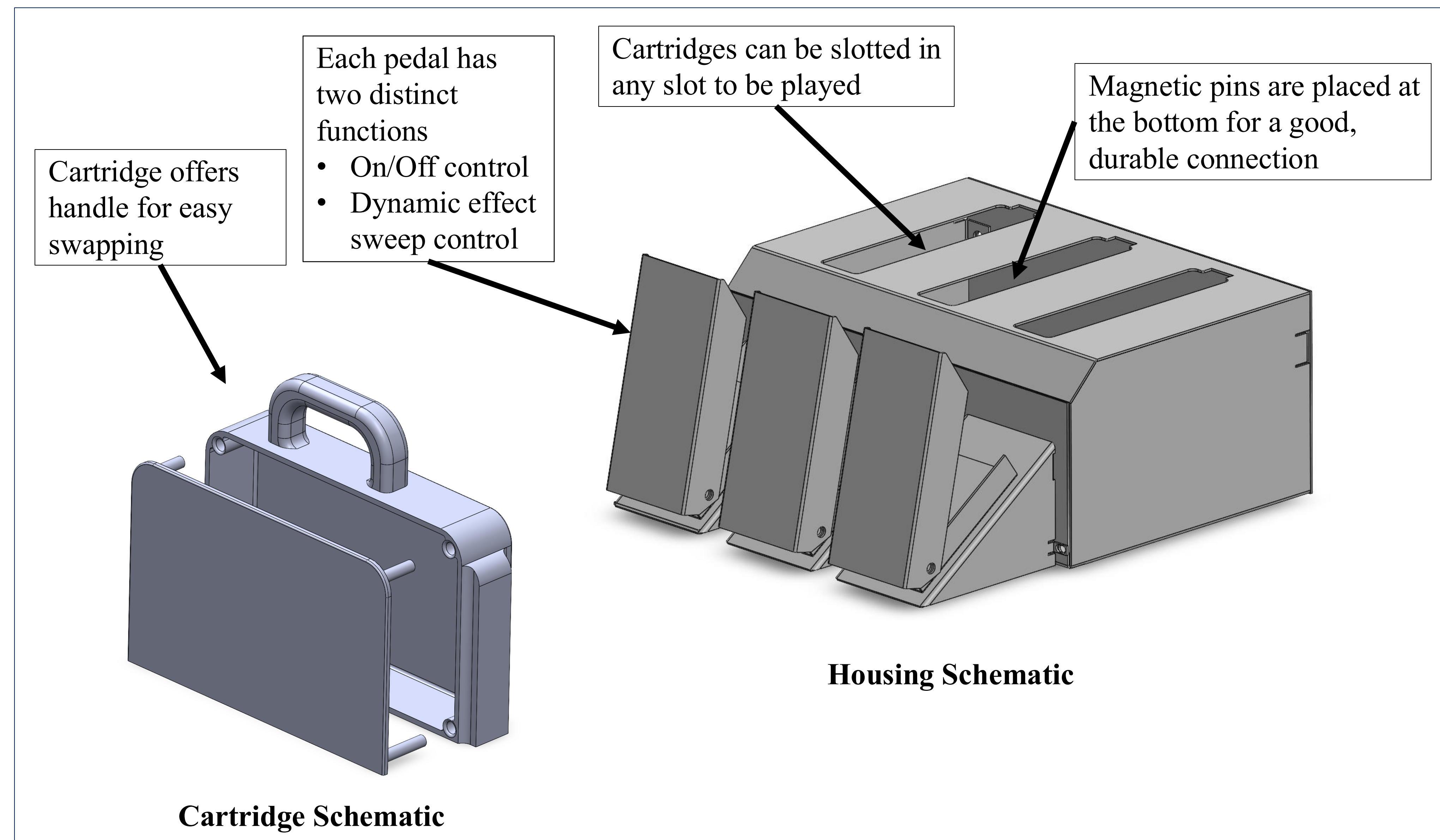
Total \$657.98

Our Cost Analysis

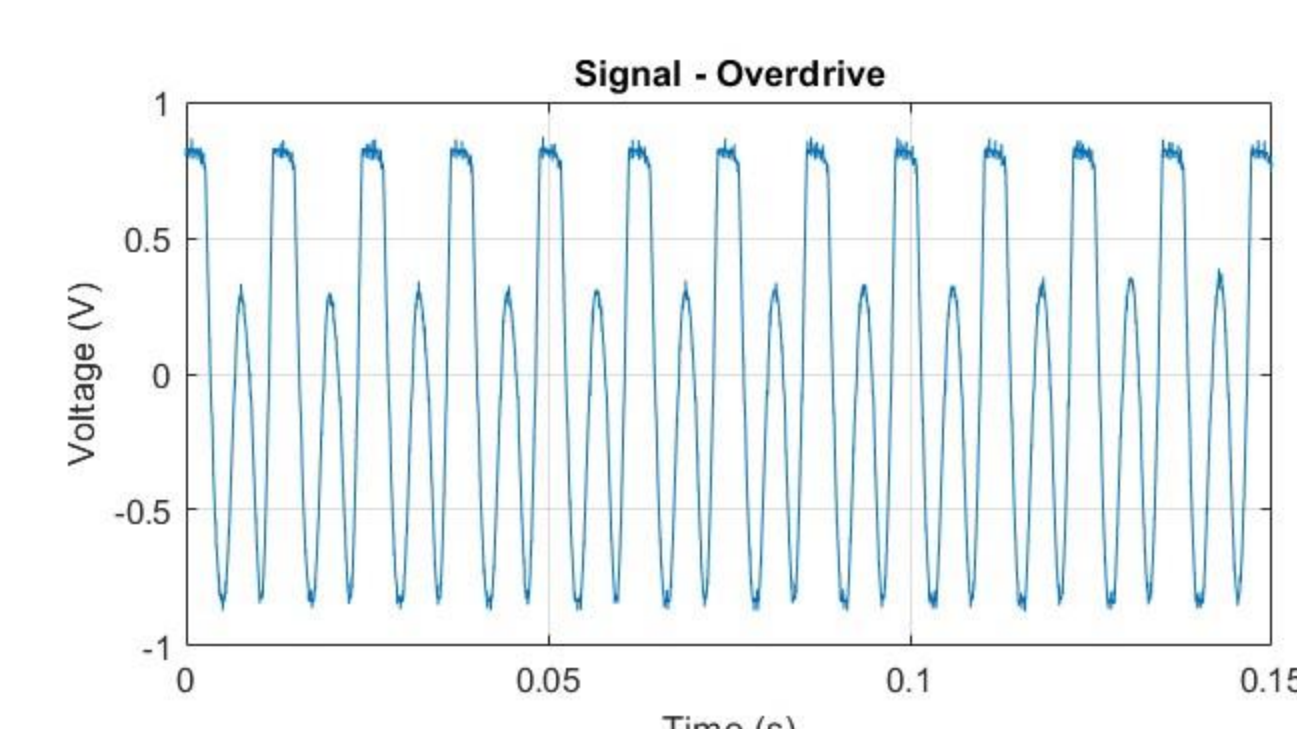
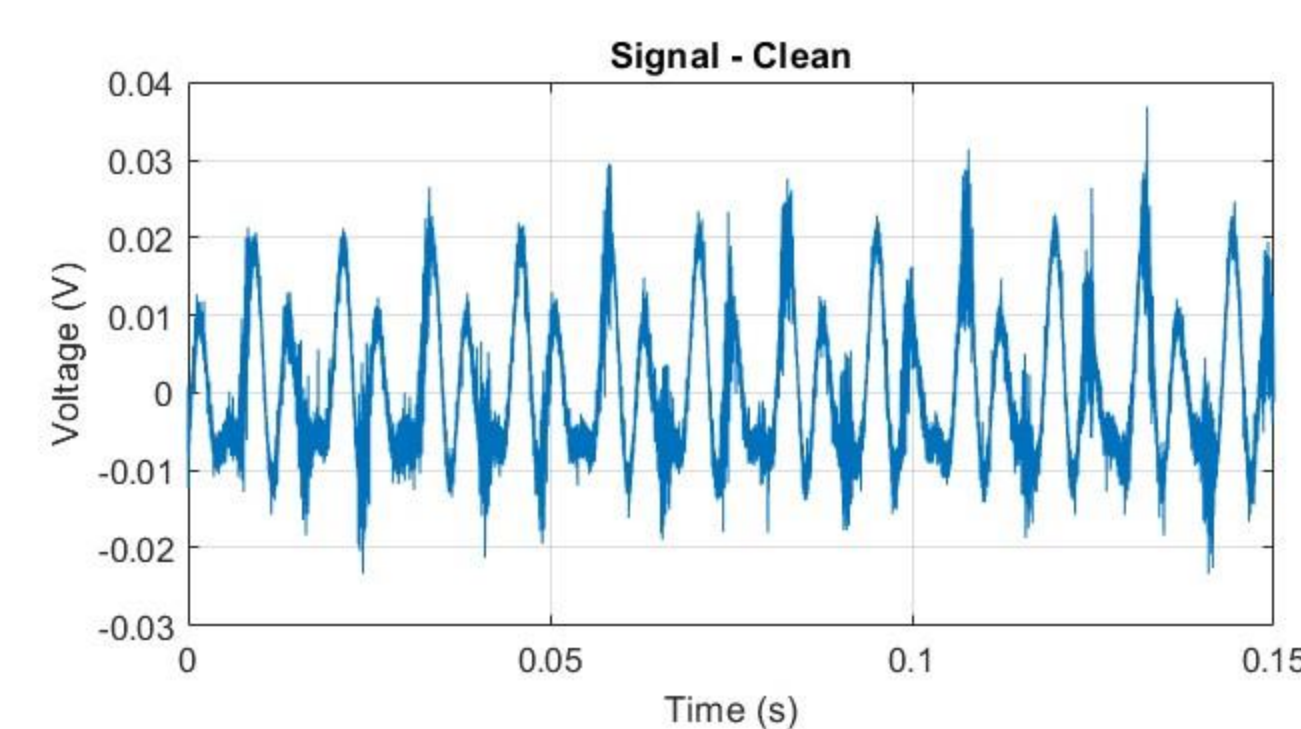
Effects/PCBs	\$177
Electrical Components	\$74
Housing/Connectors	\$101
Total Cost	\$352
Shelf Cost	\$460

*Shelf Cost Selling Direct-to-Customer with 30% Markup

Product Schematic

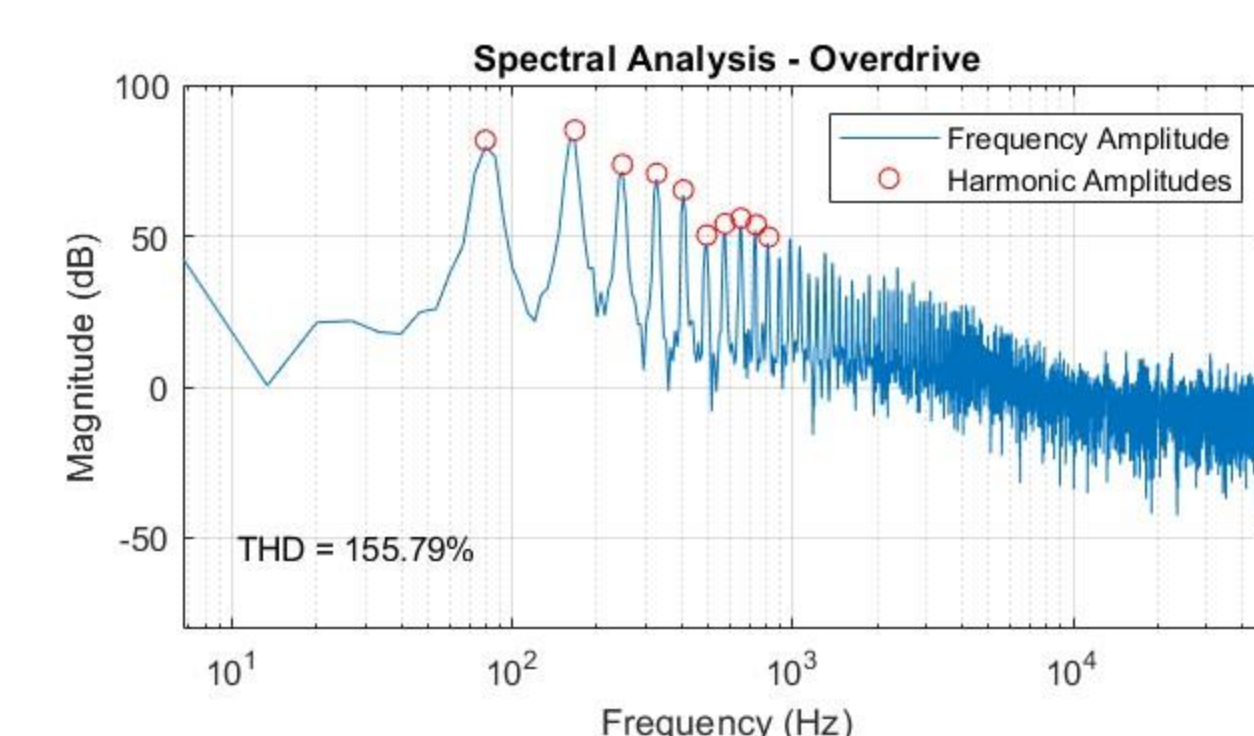
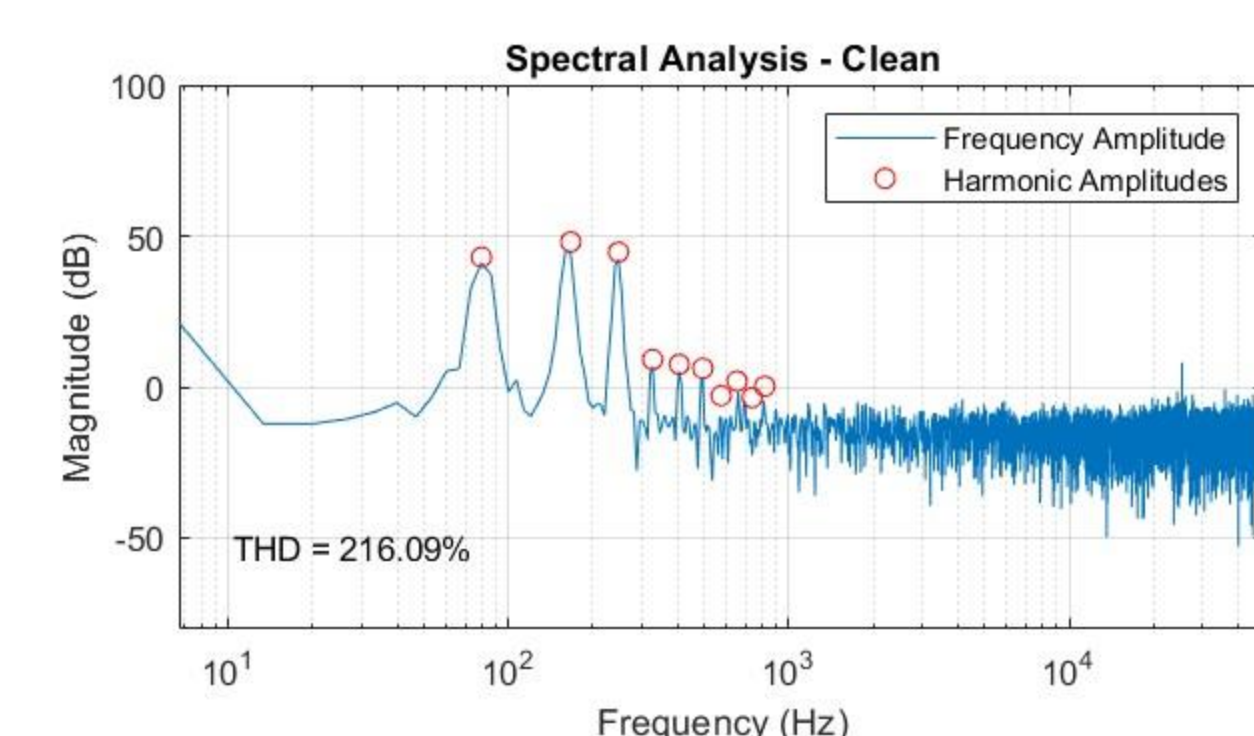


Effect Verifications



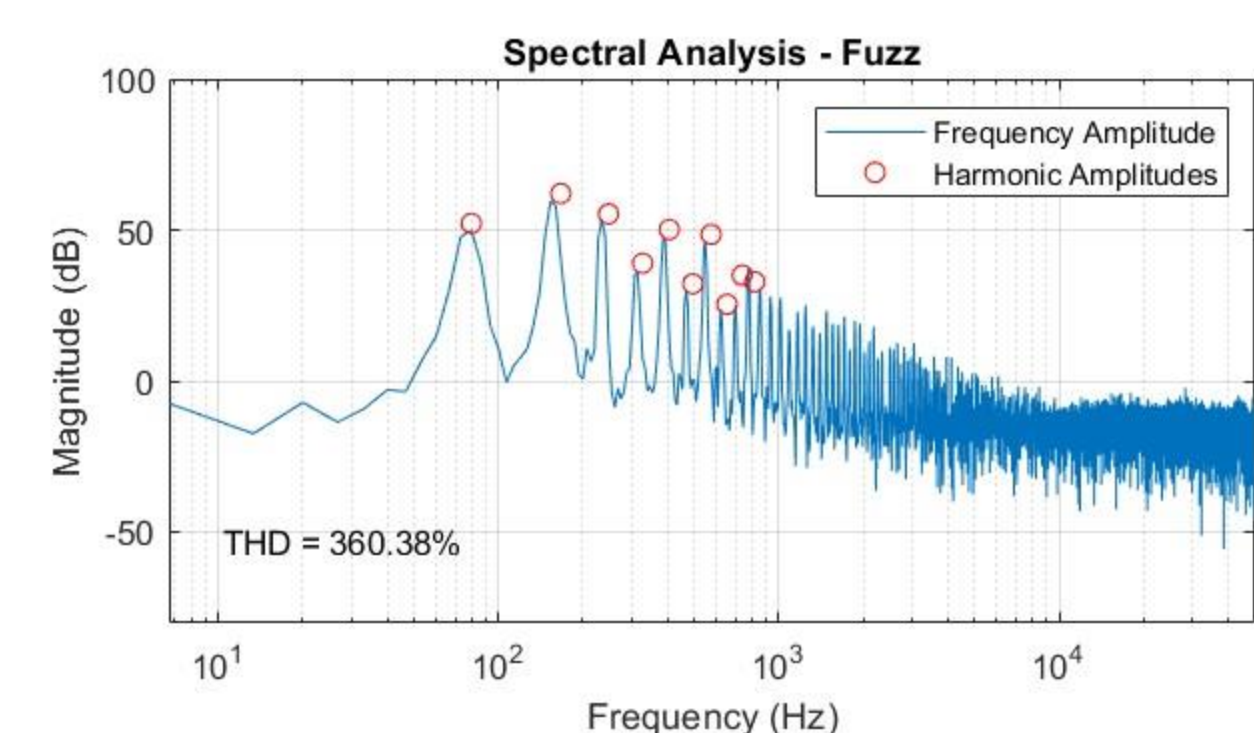
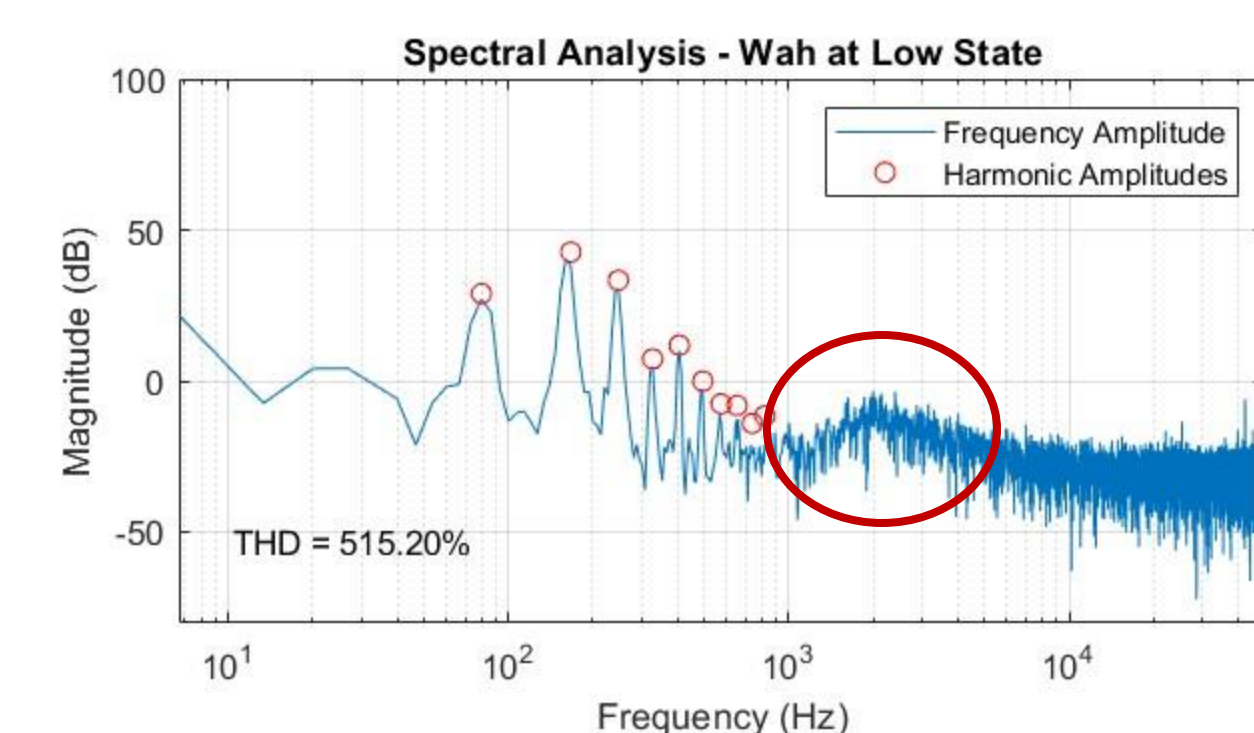
- Signal coming from pickups is noisy and unrefined

- “Soft clipping” transforms signal into symmetric square waves



- Has noticeable noise from guitar pickups
- Sound primarily comes from fundamental frequency

- Amplifies harmonics to create distortion
- Creates a classic, bluesy sound

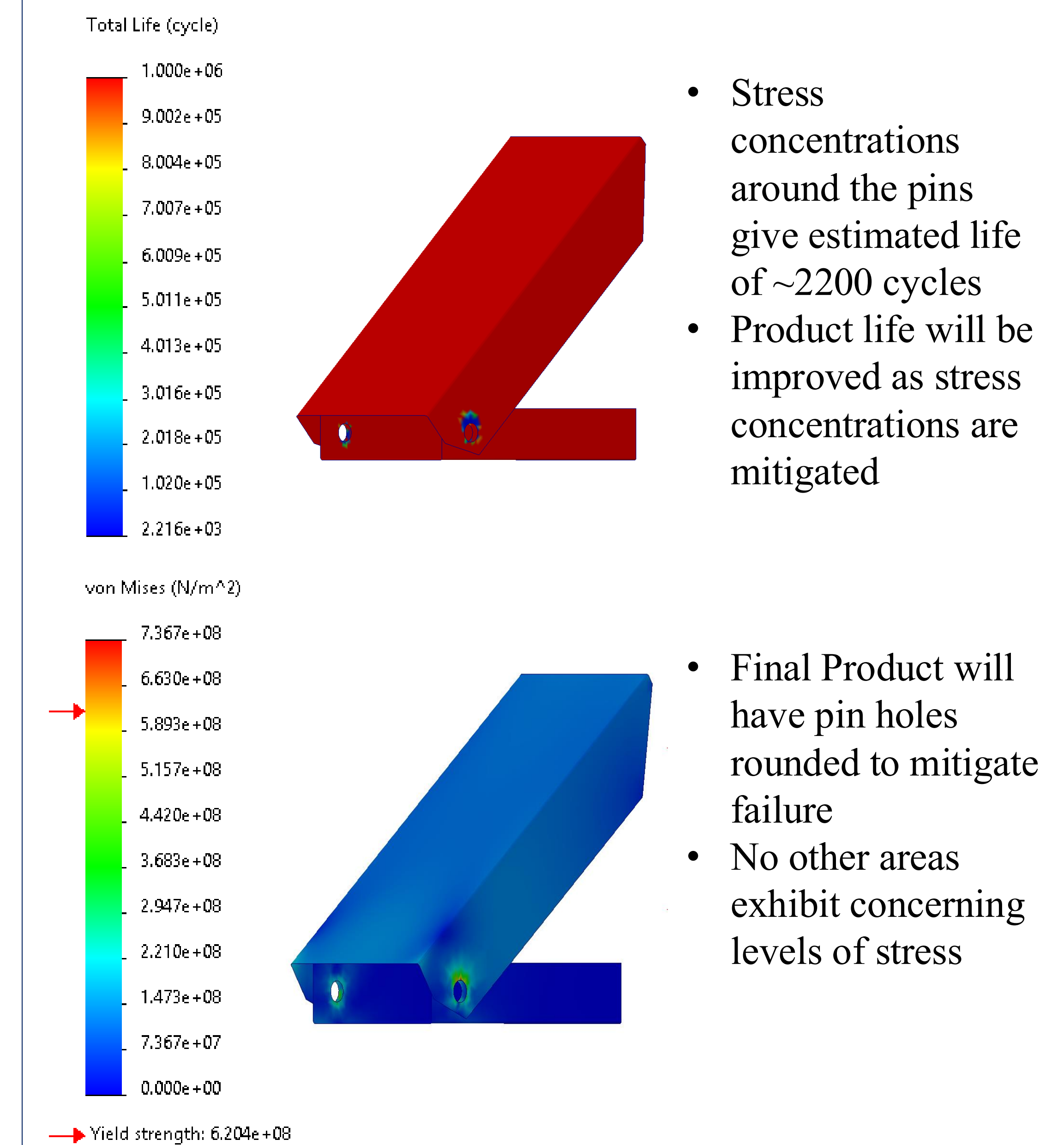


- Applies a bandpass filter that shifts as pedal is pressed
- Emphasizes treble or bass frequencies (as circled in red)

- Amplifies harmonics, emphasizing odd harmonics, to create asymmetric distortion
- Creates a “grainy” or “fuzzy” sound

*Delay analysis in progress, not pictured

FEA Analysis



Design Choices

- 6061 Aluminum was chosen as the housing material for being the most cost effective, durable option
- Torsional springs were chosen over linear springs due to the degree of rotation in the pedals
- Magnetic pogo pins were chosen over options like gold fingers as a simple, prototype friendly connection style
- Commercial Off The Shelf (COTS) PCBs were chosen as a cheap, simple way to prove our concept of pedalboard

Product Future

For our product to allow users to increase their collection cheaply over time, we will be working to increase our available library of effects

- Future Effects:
- Delay (In Progress)
 - Reverb
 - Gain
 - Loop

Acknowledgements

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