(POSTER) Internal Restoration and Modernization of a 1948 WWII era Jukebox

Miles Furr
University of Indianapolis, furrm@uindy.edu

Cristiana Olarinre
University of Indianapolis, olarinrec@uindy.edu

Joel Carpenter
University of Indianapolis, carpenterj@uindy.edu

Elijah Knox
University of Indianapolis, knoxew@uindy.edu

George Ricco
University of Indianapolis, riccog@uindy.edu

See next page for additional authors

Presenter Information
Miles Furr, Cristiana Olarinre, Joel Carpenter, Elijah Knox, George Ricco, Paul Talaga, and Suranga Dharmarathne

Internal Restoration and Modernization of a 1948 WWII era Jukebox

Miles Furr, Elijah Knox, Cristiana Olarinre, Joel Carpenter
P. Talaga, J. B. Herzog, S. Spicklemire, G. Ricco, J. Emery, S. Dharmarathne
R.B. Annis School of Engineering; University of Indianapolis, Indianapolis, IN

Introduction and Overview

The Model 1428 Rockola project looks to bring the retro feel of a mid-nineteen hundreds model Jukebox to the advanced level of modern day technological operation. Modifications to the 1428 platform will solve issues of part expiration, technological voids, and visible ageing. In solving these problems, the finished product must also maintain its vintage look. This involves revitalizing and saving original parts to like new condition. To advance usability of the Model 1428, the team will take steps to build in interface options that advance ease of use.

Fig. 1. Figure 1a is an example of a fully restored Rockola 1428 [1]. Figure 1b is the Rockola 1428 with lights on and front door open showing the internal workings.

Fabricated system

The fabrication for the parts has mainly consisted of 3D modeling and printing. The prototype pieces were fabricated with a LulzBot printer, using PC-Max material. The final design was printed using a FormLab printer with Silicone material. The team has also used the water jet to cut all required metal pieces. Each piece was printed multiple times, with adjustments being made with each design printed.

Acknowledgements: Team 6 would like to acknowledge Brugh Industrial Engineering for their partnering efforts and support throughout this R.B. Annis School of Engineering jukebox Design Spine project.

Testing

The first round of testing was for the nanopixel LEDs, the team wrote an Arduino program to test the lumens of the light being emitted within the visible areas. For testing the 3D printed pieces, multiples were produced, using CAD software to design and adjust aspects of each. Testing for the new coin switches was done on a micro-scale, with only one or two being wired at a time.

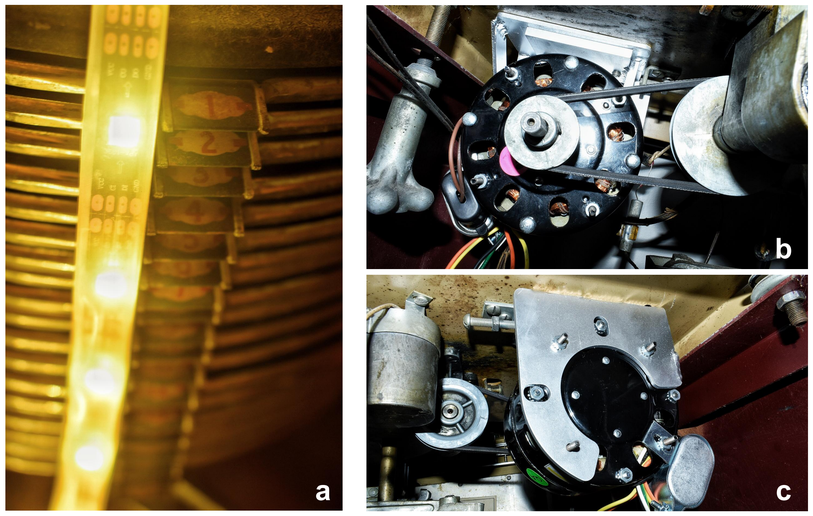

Fig. 2. Everything from light emmision of the LEDs (Figure 2a), to the drive motor tension (Figure 2b) and position (Figure 2c) were tested and validate pre and post fabrication to assure a full understanding of the system was had and the planned final design would meet client expectations

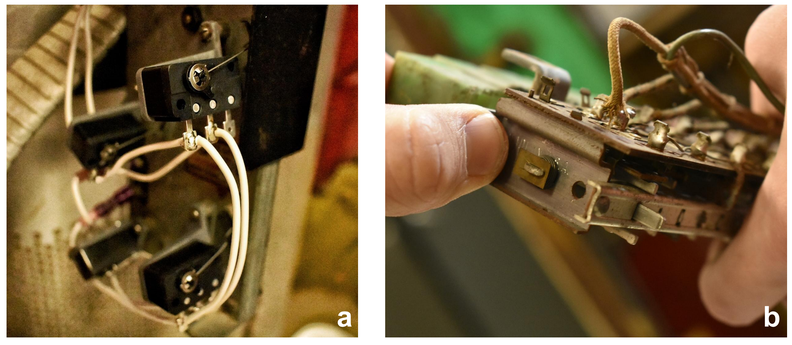

Fig. 3. Details as small as measuring and verifying throw rate differences in the original push button record selection systems to the designed alternative micro switch options were analyzed and verified multiple times over. The same was done with the switches used for the coin recognition system. The coin switches post testing can be seen in Figure 3a and the coin selection switches being measured in Figure 3b.

For more info, visit:
www.uindy.edu/cas/engineering/

Optimization of Design

Lighting has been upgraded from fluorescent and incandescent bulbs to addressable Nano-pixel LEDs. The amplifier, coin system, and record selection system were revitalized to OEM operation standards. All switches within those systems however have been upgraded to micro switch technology. Early design constraints determined that the jukebox will require the amplifier, coin system, and the entire control system to be rebuilt, as well as modifying the turntable to accept variable speed records, 45 rpm and 78 rpm. All internal electrical modifications will result in a decreased current consumption while meeting UL 508A and NFPA 70 standards.

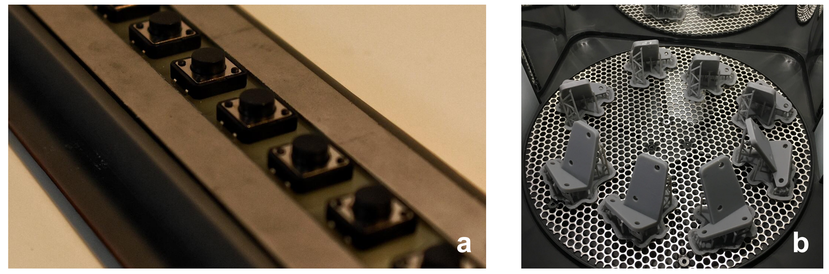

Fig. 4. Each piece of the project, for example the micro switch mounts and record selection micro switches seen above, were put through multiple design phases in order to leach out design failures from any and all angles of approach. Figure 4a sows a finalized model of the record selection switches, and Figure 4b shows the coin switch mounts being printed.

Conclusion and Future Work

In collaboration with Brugh Industrial Engineering, the Jukebox is being retrofitted with a Programmable Logic Controller, PLC, to control modern technology additions that will support internal operation. Future work includes programming finalization, efficiency analysis, and final production.

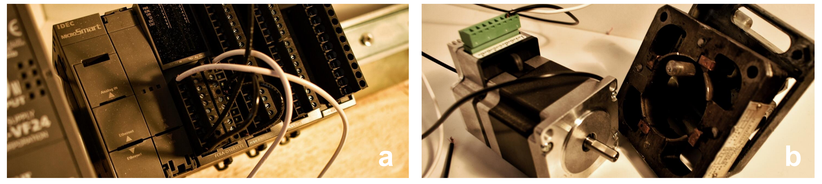

Fig. 5. The PLC mentioned above can be seen here on the left side in testing. The components that make up the turntable drive motor can be seen on the right in the design phase. These things are in the final phases of design and testing now.