# Where Are They Now?

The Q4 2021 Issue of *UV+EB Technology* introduced us to a group of companies (The UV Band) that worked cooperatively to design, prove and implement a UV-based solution for the base coat of a guitar. The link to the original magazine issue can be found at: https://bluetoad.com/publication/?i=730064. This column provides a VH1-inspired update, *"Where Are They Now."*


**Figure 1.** *Robotic arm following the shape of a baseball bat during initial testing of coating. Image courtesy INPRO Technologies.*

### Customer Update

The solution described in the original article was integrated into an existing process with minimal modifications to the production line and has been running on a regular basis for almost two years. The solution freed up precious floor space and reduced the amount of work in process (WIP). The customer reports a 25% increase in line output.

### Feedback

In the audio world, feedback happens when the signal from an amplifier, microphone or other device reaches the same device. A screeching or humming sound can be created, which can ruin the performance or recording.

In the industrial world, feedback in the form of key process indicators (KPIs) is welcomed and is used as a basis for improvement. The installed solution provided the relative intensity of each of the 16 sources to a dashboard that can be monitored remotely via Industry 4.0. The dashboard indicators also allowed the customer and The UV Band to identify, fine tune and balance the cooling air supply to each lamp.

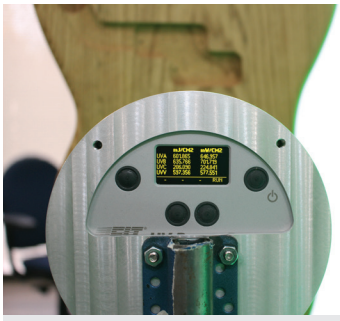

**Figure 2.** *EIT Power Puck II mounted in test fixture outside of the cure chamber. Used to confirm lamp performance prior to starting production, with product in the background. Image courtesy EIT LLC.*

### Band Update

I was hoping I could invoke the *Blues Brothers* lines, "We're putting the band back together. We're on a mission from God," but the band never broke up. We all have been busy and are a boring group. Since the article was published, the band has wrecked zero cars, zero hotel rooms and there have been zero ~~arrests~~ convictions. No band member has left for a solo career due to "creative" differences. The band has "no comment" on any bar bills generated when we are together.

### The Future is Bright

The first solution, with its 16 fixed microwave-powered lamps, is exactly what the customer needed for continuous production manufacturing. Success with UV has the customer looking to UV for other applications.

The UV Band learned a few lessons for the next tour:

- You need to work hard to avoid being labeled a "one hit wonder."
- It is important to listen to what your customer needs.
- New product solutions pay better than the royalties from publishing articles.*

**Note from the Editor of* UV+EB Technology*: This is accurate.*

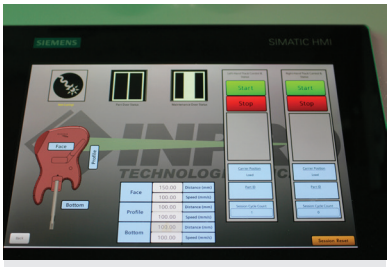


**Figure 3.** *Operator HMI Screen on Chamber Controller. Image courtesy EIT LLC.*

The new system offers flexibility and the ability to support different geometric shapes, coatings and/or UV sources. This flexibility especially is important to the customer from an R&D standpoint. The customer also wants the ability to use UV to produce small, limited quantity production runs, as well as exclusive limited edition signature series products. The solution The UV Band is working on

- has a single microwave lamp on a robotic arm,
- offers the flexibility to use a broadband mercury or LED source on the robotic arm; and
- lowers the initial UV source investment costs but requires an investment in a robotic arm.

**Figure 4.** *The cure chamber has two tracks to support efficient processing and easy loading/offloading of the same or different products. Image courtesy EIT LLC.*


**Figure 5.** *Guitar body with different test areas (letters) marked to allow for testing the exposure and cure conditions. Image courtesy EIT LLC.*

**Figure 6.** *Flexibility of the robotic arm moving the UV source over guitar body for uniform curing. Image courtesy EIT LLC.*

Reducing the number of UV sources from 16 to one reduces electrical consumption, cooling requirements and associated maintenance costs while meeting the new needs of the customer. An added benefit was the reduction of noise from a single exhaust system vs. 16 exhaust systems.

The actual run time for each individual part in the new UV chamber is slightly longer than the run time associated with the original production line using 16 fixed lamps. It meets customer targets, and the robotic concept is scalable if the customer wants to run a higher production quantity. Chambers could be added based on the time of the other operations on the line.

The UV Band is busy testing the cure characteristics on different parts of the objects. The new system features optical part recognition to allow the robotic arm to follow a preprogrammed path of travel for an effective cure over the entire item. Initial work is focused on both guitar body and neck pieces. Early reviews from the music critics (the customer) have been positive.

Baseball bats (a guaranteed hit) also are being tested in the system.

## Summary

The UV Band envisions other 3D objects, including automotive components (body, trim, headlights), EV Battery Dielectric Coatings and hard coats on thermoformed plastics.

**Figure 7.** *Flexibility of the robotic arm moving the UV source over guitar neck for uniform curing. Image courtesy EIT LLC.*

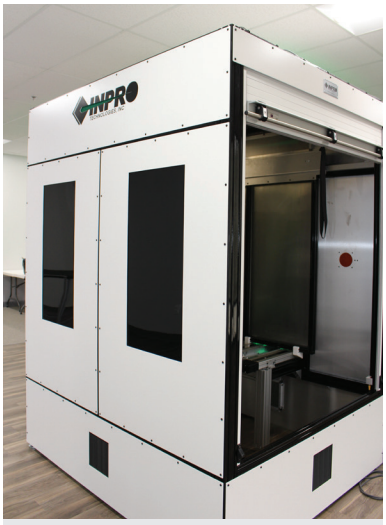


**Figure 8.** *View of cure chamber designed to easily fit into R&D facility or be added production line. Access doors allow for easy maintenance of the UV source. Image courtesy EIT LLC.*

The UV Band also is working together to implement other improvements, including additional feedback and sensors. At the time of writing this column, The UV Band still is in rehearsal, with the goal to take the chamber on tour in 2023.

## Parting Thoughts

I study nuclear science, I love my classes
I got a crazy teacher, He wears dark glasses
Things are going great, and they're only getting better
I'm doing alright, getting good grades
The future's so bright, I gotta wear shades
– ***The Future's So Bright, I Gotta Wear Shades,***
*by Timbuk 3/Pat MacDonald* ◆

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