CUSTOMER SPOTLIGHT

SPLITVISION
SPLITVISION: BUILDING ON MANUFACTURING EXPERTISE WITH AUTOMATED 3D POST-PRINTING

Splitvision, headquartered in Stockholm, Sweden, found the ideal product development formula by combining its talented design team and deep manufacturing experience to deliver competitive solutions for its customers. However, to continually deliver on that promise requires a culture that embraces leading-edge manufacturing methods and process. That is what brought Splitvision to PostProcess, as they explored a better way to streamline and maximize its 3D printing with DLP resin removal innovation.

QUESTION: Can you give us some background on Splitvision and how you utilize additive manufac-turing?

ANSWER: We have been developing products since 1989. From initially strictly offering industrial design, we have broadened our service portfolio over the years to become a full turnkey solution provider for product realization.

We have always made prototypes from Polyurethane (PU) foams or solid plastic materials to evaluate form and ergonomics, which we have traditionally done using hand tools. On more detailed prototypes or models with high cosmetic demands, we used to outsource to either print shops in Sweden, or prototype services in China. In 2019, we decided to invest in a Digital Light Processing (DLP) printer from 3D Systems called Figure 4 to speed up our processes while achieving better mechanical properties and fine feature details. In our experience, this is the only printer that can equip soft parts with Thermoplastic Elastomer (TPE)-like performance.

Since many of the products we develop and produce for the hearing aid industry are comprised of a combination of both TPE and hard plastic, this was a deciding factor. We can now evaluate fit and assembly on a detail level before actually making the injection tools, typically saving us from 1-2 iterations of tool tuning. We also design casings for electronic products, and by using the Figure 4 printer to make small series production of those, it is possible for our customers to do field testing and user studies without investing in mass production tools. Needless to say, the DLP printer has brought massive value not only to our workflow, but to our customers as well.

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Lukass Legzdins
R&D Director
Splitvision
QUESTION: Before introducing the PostProcess solution, what sort of bottlenecks did you experience in your additive workflow?

ANSWER: The design casings that I mentioned often have lots of intricate crevices like screw towers, small slots, and many ribs. It can be a very tedious job to fully clean the resin off of these features with a traditional solution like isopropyl alcohol (IPA). That excess manual labor makes the unit cost for those parts unnecessarily high. Even if the printer used is efficient and several parts can be manufactured in one run, the unit cost still does not go down much since so much time is needed to clean each part individually.

Apart from being time-consuming, the work environment also gets compromised by the strong smell from the IPA. Not to mention, we were always concerned about the fire risk posed by IPA. That is where the PostProcess solution was able to really streamline our post-printing process and improve workplace safety overall.

QUESTION: How did the PostProcess solution fit into your additive workflow, and how has it most significantly improved your efficiencies/work environment?

ANSWER: In January 2020, we got the opportunity to try a resin removal system from PostProcess that utilizes their proprietary Submersed Vortex Cavitation (SVC) technology. The system uses ultrasonic cleaning, agitation, and controlled temperature for the process. The detergent included with the system has a high flammability point, which means it does not ignite from a spark at the machine's working temperature. Apart from being more pleasant to work with, the detergent seems to be especially efficient at dissolving the uncured DLP resin. Usually, it removes resin completely in just a matter of minutes. In some cases, with deep narrow features, the cycle time can be a little longer, but we have never had a part require more than 10 minutes of processing time.

As an example, a small electronics case took about 30 minutes per part for rinsing and drying. Previously, it was difficult to see if it was fully clean before drying off the IPA with compressed air. You would have to rewash it in IPA, use a brush where it was not clean, and repeat it a few times until it looked good. Now, running this same part in the PostProcess solution, the total cycle time for consistently complete resin removal is only 4 to 5 minutes for a batch of 10 at once. The benefit here you can see is improving from 30 minutes per part down to all 10 parts in less than 5 minutes.

“After having tried the PostProcess solution, it’s hard to imagine ever going back to using IPA.”
Thanks to how efficient the PostProcess solution is within our workflow, we can now leave the support structure intact on parts when we need to do UV post-treatment of the DLP resin. This was never previously possible with traditional IPA cleaning because it was extremely difficult to get rid of all uncured resin behind the supports. An added bonus is that we can load printed parts into the PostProcess machine without ever removing them from the build tray, eliminating the need to clean the tray separately, removing another tedious process.

We can now offer printed parts at a reasonable price, especially when printing multiple items in one run. Plus, the nasty bit of the printing process has been eliminated for our staff. After having tried the PostProcess solution, it’s hard to imagine ever going back to using IPA.