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## **How could airlines possibly get the most out of LED Lighting customization regarding passenger experience?**

- The ability to control not only intensity but also color gives the airline an opportunity to send visual clues to the passenger during flight.
- To be able to provide these clues but not disrupt other passengers like is done in the current environment.
- To give a very specific branding experience derived without having to alter the physical construction of the aircraft.

## **What are the advantages of thermoplastic composite panels for retrofitting works?**

- Thermoplastic composite panels can be custom formed without expensive tooling investment or capital investment.
- Interior companies can take advantage of being able to form panels in house eliminating supply chain risk.
- Custom panels can be developed with less expense and leadtime compared with other panel technologies.

## **What is the future of 3D modelling for parts customization, and how to get the best out of this technology?**

- 3D modeling is the gateway to other technologies that allow for more parts customization.
- VR technology can be used to visualize and the customization in the Aircraft environment leveraging the 3D model.
- 3D modeling can also be used in tandem with 3D printing to produce physical parts quickly and without tooling investment.

## **What is the biggest challenge for an integration center regarding product IP and how to work closer with OEMs to overcome them?**

- Aircraft integrators need access to the OEM's data to accomplish the task of modifying the aircraft interior. OEM's have made data access more difficult or impossible to obtain for newer aircraft platforms.
- Integrators need to work closely with the OEM's to define a commercial agreement wherein we can provide modification services required by their mutual Airline customers.
- Airlines can also express the need for third party integrators to keep their fleet competitive.

**What is the impact of 3D printing regarding time to market? How can it be reduced specifically, and what are the benefits to airlines, OEMs and integration centers –or perhaps, to all the supply chain?**

During the development phase we utilize 3D printing to enable us to evaluate design concepts, for example we might 3D print a Lifestage stowage door to ensure that it meets the requirement for passenger retrieval. While closely representing the injection molded production part the capability to test early eliminates months in the design process. Typically we see 3 month lead times for injection molded products. With 3D printing we can see production representative parts in a few days enabling us to integrate our design more quickly and end up with a better final result. Utilizing 3D printing to reduce our development time and improve our design not only enables us to provide better end products quicker but it also allows us to limit the risk carried into the certification. This benefits our OEM and Airline customers greatly.

**Which are the main and most critical applications of 3D printing within the functional interior of an aircraft –ducting, vents, electrical housing?**

One area that we look forward to taking advantage of is the use of 3D printing to allow Airlines to customize their look and branding within our products. We have consciously looked for areas that it will be easy for airlines to customize the look and feel without the typical high expense previously incurred for this type of customization. We also see the opportunity to provide spare parts with 3D printing when the original tooling is no longer available or if the minimum order quantity or leadtime to wait for the next time the tool can be loaded for a production run. In our current projects we are concurrently certifying injection molded and 3D printed parts in anticipation of this future need.



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## Aircraft Seating & Refurbishment

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