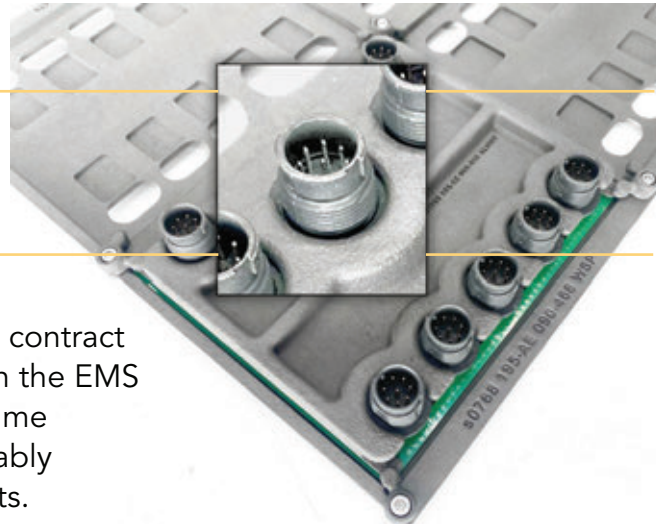


CBAM for EMS Assembly & Production

When metal fabrication is too expensive or complex, Absolute Electronics turns to 3D printing by Impossible Objects.



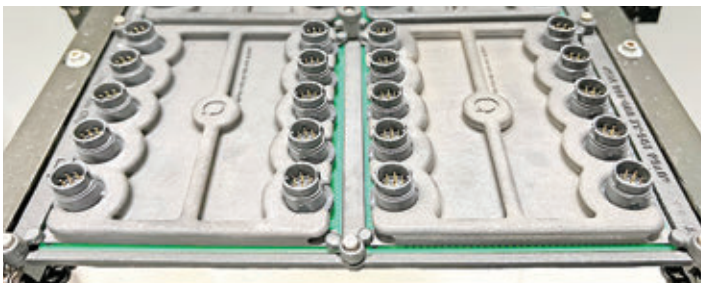
introduction

Absolute Electronics (AEI) is a PCB assembly and contract manufacturer that provides a variety of services in the EMS industry. AEI offers engineering support and volume manufacturing for various applications, most notably PCB assembly for consumer and medical products. When faced with a complex carrier design that was causing problems in the wave soldering process, AEI searched for an alternative solution. What they received from Impossible Objects exceeded their expectations and introduced a new outlook on carrier pallet design and production.

the challenge

Carrier pallets are generally either machined or laser-cut from fiberglass epoxy-insulated material. AEI had a particularly challenging pallet design that caused problems during the wave soldering process. Once heat was applied, the connector pins expand and rise, which forced them out of tolerance. Typically, a 'hold down' would be designed for the top plate, but the problem continued to interrupt the production process.

AEI needed a new design for the carrier, top pallets and hold downs. Unfortunately, costs get quite high when solving this problem using conventional manufacturing methods. Not only are CNC set-up and tooling changes expensive, there is no guarantee that the process or material will work.



"When the Impossible Objects engineering team arrived onsite, they understood our process immediately. There are fewer limitations so we designed what was necessary instead of complicated work arounds. It was a very smooth experience, and we see a faster path towards automation with additive manufacturing."

Tarang Gondaliya

Quality and Production Manager

the solution

Impossible Objects (IO) designed and 3D printed new carriers, top pallets, and hold downs in carbon fiber (CF) PEEK. CF PEEK's mechanical properties are exceptional and an ideal replacement for metal-machined parts. The new design, combined with the high strength and heat performance properties of CF PEEK allowed easy integration into the existing assembly process. The IO 3D printed pallets were 40% lighter, just as strong, and delivered three weeks faster.

"We were able to highlight the issues in our production environment. Impossible Objects provided the solutions that, once implemented, immediately improved our efficiency and quality. With their help, we've been able to create cost effective solutions that lead to record breaking turnaround times on projects we've had for years."

Tarang Gondaliya

Quality and Production Manager

CARBON FIBER (CF) PEEK



High Strength
>140 MPa



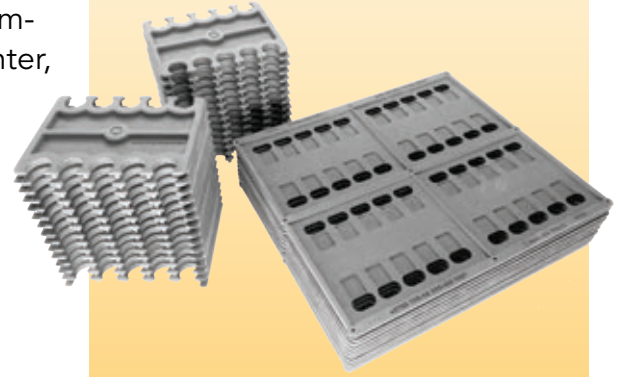
High Heat
Performance
MP 300° C



ESD Safe



High Chemical
Resistance



25 Carriers, 100 Top Pallets, 90 Hold Downs

	Traditional CNC	Impossible Objects CBAM	Impact
Material	Fiberglass	Carbon Fiber PEEK	Better Heat Properties
Typical Cost	\$10,000	\$7,500	25% Cheaper
Turnaround Time	5+ Weeks	2 Weeks	50% Faster

Improved Functionality -

3D-printed carriers achieve better results than CNC-metal carriers. The tolerance issues were eliminated with the thermal strength properties afforded by CF PEEK.

Increased Complexity -

The CBAM process enabled AEI to design carriers that were too challenging or costly for conventional processes (i.e. overhangs).

Reduced Cost & Turnaround

Time - IO designed, printed, and produced 25 carriers, 100 top pallets, and 90 hold downs in less than two weeks.



RETHINK MANUFACTURING

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