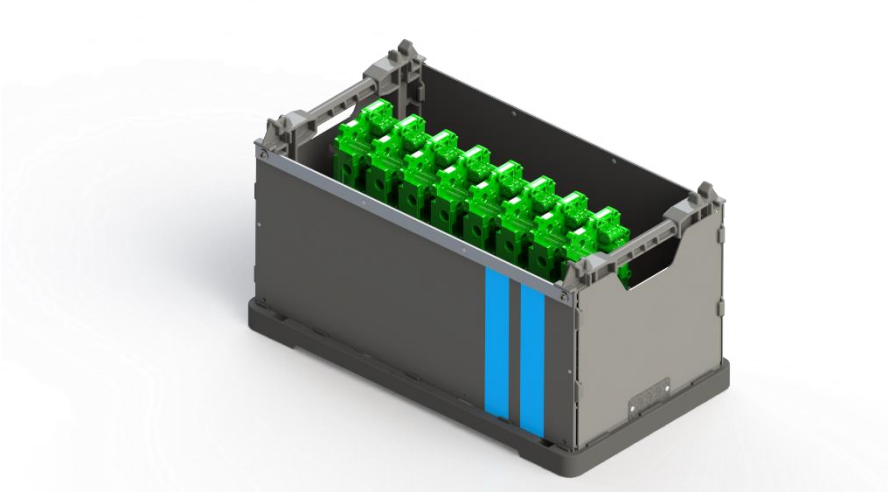
APPLICATION CASE STUDY #107

IN-PROCESS PACKAGING: VALVE BODY BASKETS



APPLICATION:

In-process fixtures for transporting raw and fully machined transmission valve bodies through an OEM's machining centers. The fixtures must contain the parts within a tight tolerance, keep the parts separated, and protect the parts from damage during the process.

PROBLEM:

The OEM was introducing a new fully automated machining line for valve body baskets. The baskets needed to be able to hold the parts to a very tight tolerance and be repeatable from basket to basket as a vision system would not be utilized. In addition there were ergonomic weight limits that needed to be taken into account in the event the baskets needed to be moved manually, limiting the kinds of materials that could be utilized for the application. The parts had to be protected and the extremely sharp machining edges limited what materials could be used to limit contamination. Previously the OEM had resorted to using complicated stainless steel nests to accomplish this which was not cost effective nor lite in weight.

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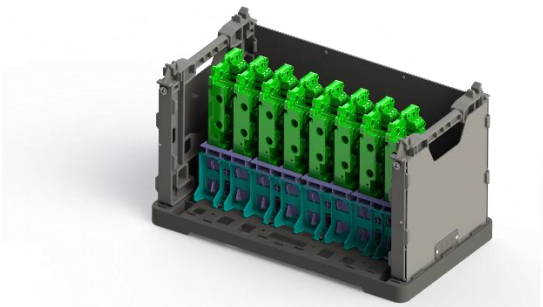
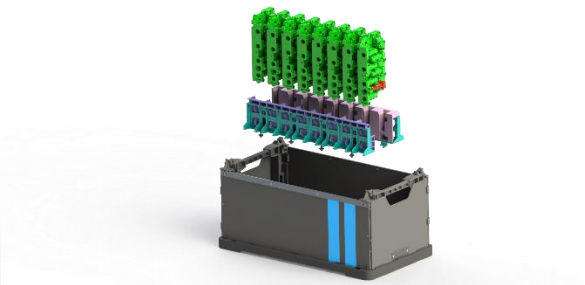
SOLUTION:

PolyFlex Products suggested going with an assembly that utilized multiple engineered materials to tackle the complex problem. In addition to just looking at the current project, PolyFlex recommended looking at past and future products to come up with a universal base that could be utilized on future programs as well to save costs and timing down the road. This modular type design would enable future valve bodies to be added to the new basket with only nest changes.

In order to handle the tight tolerances required, a rigid dimensional stable base material was chosen for its strength and stability. That same material was chosen for the bolt on end frames for its strength, rigidity, and ability to carry the weight of multiple baskets stacked up. To eliminate the contamination concern and move away from the complex stainless steel nest features previously utilized, we chose to go with a shave resistant TPU that was fitted over an engineered material chosen to control the tight tolerance requirements for the robotic pick of the parts during the machining process. HMWPE side shields were developed to limit the possibility of contamination during processing. With this combination of material choices and modular design the OEM was able to successfully launch the line and went on to use the baskets on five additional new line launches.

- **Weight savings of 10 lbs. over previous design**
- **Cost savings of $22 per basket over previous design. Over five successful launches this accounted for $223,000 in savings**
- **Future launches only required new nest changes, allowing base and end frame tooling to be re-used, saving $100,000 in tooling.**





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