CASE STUDY

Improved Product Design Helped Wearable Device Maker Deliver the Win

Specialty Material and Improved Assembly Process Optimized Performance

When wearable sports device manufacturer Humon set out to disrupt the fitness market with a revolutionary product that measures oxygen levels in muscles, the company knew the keys to success were the same as those demanded by the endurance athletes it was targeting: precision fundamentals and exacting performance. There was simply no room for error in the device components that housed the high-technology sensors and delivered the real-time data allowing athletes to push themselves to the brink of their performance limits.

To bring the game-changing technology to market, Humon needed a plastics and process expert supporting its development team to help Humon identify the optimal materials, as well as help them troubleshoot and resolve any design, tooling and process challenges as they arose. The final prototype needed to be as robust and fine-tuned as a high-performance athlete, able to withstand chemical degradation and perform in rigorous environmental conditions.

Working closely with Humon's design team from initial concept through final product delivery, Nexeo Plastics first went to work to help Humon identify the optimal specialty plastic grades for its application. Key components, such as the bonding of the elastomeric pad over the on/off button and the clear lens in the device housing, needed to be absolutely watertight and chemical resistant to weather athletic training conditions, presenting some unique material and assembly challenges. And the components needed to be molded together during assembly, an additional consideration that Humon had to take into account when selecting the specialty plastics.

Working with specialty plastic resin supplier Evonik, Nexeo Plastics identified Evonik's Nylon 12 as a potential material option for Humon due to its high chemical resistance, low UV exposure limit and low-temperature impact. Three specialty grades were selected, so they could be "overmolded," allowing various components to be melted together in the final assembly. Nexeo Plastics also worked closely with the molder to help optimize test molds and arrive at a better solution during this critical part of the process.

AT-A-GLANCE

Recorded Benefits

- Helped decrease engineering time and development costs while accelerating time to market
- Specialty material passed rigorous standards on first test
- Minimized risk of rollout problems

Challenge

Wearable-tech device maker needed help bringing innovative, high-stakes product to market and looked to Nexeo Plastics for plastics expertise.

Solution

Nexeo Plastics provided material selection options from resin supplier Evonik and worked with the customer to improve assembly to ultimately withstand rigorous water-and chemical-resistance testing and help deliver final prototype

Result

Improvements helped Humon unveil a robust, highly anticipated product, reducing critical engineering time and startup costs and minimizing risks of rollout problems.

The final prototype that was created using the Evonik plastic resins was tested using sunscreen and DEET insect repellants and found to stand up to chemical degradation better than other plastics resins. The assembly also passed water-resistance tests and additional testing, resulting in a robust final product that even allowed the product to meet strict USP Class VI requirements for skin compatibility. Nexeo Plastics provided test samples to Humon, as well as extensive data and reporting to support the concept that Nylon 12 grades would meet or exceed Humon's performance requirements.

With Humon's careful due diligence in place at every decision point of the development proces — always focusing on choosing the right material or method rather than the fastest or least expensive — the final prototype met and exceeded all of its product requirements during the initial test trials.

With Nexeo Plastics as an integral development partner, Humon was able to bring a robust, field-tested fitness-tracking product — the Humon Hex — to the market, reducing critical engineering time and mitigating financial risk in the high-stakes wearable-tech space where extra time and error can mean the difference between winning and losing.

Discover how a partnership with Nexeo Plastics can contribute to your bottom line and help achieve manufacturing efficiencies.

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