From concept to concrete

Designing excitement, style and differentiation into three small wrecker offerings

By Will Miller, president and co-CEO and director, Miller Industries

Aesthetics isn't the first thing that springs to mind when one thinks about wreckers, but that's only because it's inherently been absent from the category; after all, this is a highly utilitarian vocation.

However, history shows time and time again that intelligent and creative industrial design can make virtually any product more attractive, more functional, and often more enjoyable to use. The automotive industry is a great example of this premise, year after year presenting us with alluring new designs and must-have technologies that grab our attention and keep us coming back for more.

In fact, the Class 4 and 5 cab and chassis platforms we build upon have continued to evolve in both their form and function. So, when we began contemplating the next generation of our Century, Vulcan, and Chevron small

Brand loyalty runs deep among Miller's customers, so getting the redesign of the venerable Century, Vulcan, and Chevron small wreckers right was mission critical.
Photos: Miller Industries

Each identical lamp delivered stop, tail, turn, backup, and side clearance marker functions, and the entire lighting assembly was able to connect to the vehicle's electrical harness system via one Deutsch connector.

wreckers, we decided to explore making them as style-forward as they were robust. Not just design for design's sake, but as a way of further differentiating our wreckers from others in this space.

One vehicle feature that is undeniably front and center when it comes to vehicle aesthetics is lighting. The advent of LED lighting has forever changed the equation of appearance, functionality, and safety for all vehicles on the road.

Today, one LED lamp gives users the service life of 50 incandescent lamps, and the ability to style the lighting characteristics of a lamp are nothing short of astonishing. One need look no further than automotive advertising to see that today's automotive lighting designs go a long way toward defining the vehicles they enhance, so that's where we began.

Working Our Way Forward

Anyone familiar with a wrecker, whether it be large or small, knows that the business end is in the rear, and that's our realm. We had been exploring an all-aluminum body, clad with highly-durable and replaceable acrylonitrile butadiene styrene (ABS) panels. Working with ABS would allow us to give the rear end a more automotive-like style, and the next logical step was to consider a more automotive-like lighting array.

We had been working with our primary lighting supplier, Optronics, for close to a decade when they acquired our primary harness supplier, USA Harness, in 2019, becoming Optronics I USA Harness. They were our logical choice for the initiative, so we began discussions in earnest to explore the possibilities.

Both our company's design engineers entered into discussions in an effort to define the problem and to look for a solution that would fully meet the practical needs and punishing environment of the towing and recovery business, and would look great doing that job.

The lamp had to be durable, highly functional, and easily reparable. Another factor that was discussed was consolidation of the lighting footprint. This meant moving away from the individual 3" by 5" rectangle lamps and 6" oval lamps to a more modular-looking system. It also meant integrating stop, tail, turn, and backup lighting functions. The team was also interested in eliminating the multiple connection points the lights would have to make with the primary harness system, not to mention the multiple holes in the body structure that the individual lights required.

We decided to explore making our next-generation wreckers as style-forward as they were robust.

A Design for the Real World

Optronics I USA Harness got to work and, after several thought-provoking iterations, brought Miller a design that met all the criteria. The new tail lamp was modular in appearance, but with one distinct advantage—it was comprised of multiple lamps within a modular housing. Each housing had a removable lens that required only three easily-removable fasteners to secure it and contained three, 4" round Optronics Fusion GloLight lamps.

The Fusion GloLight lamps have a high-style automotive look that features smoothly glowing outer rings contrasting with pinpoint LEDs in their centers. These lamps were an intelligent

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choice because of their consolidation of stop, tail, turn, and backup functions in one low-profile format. Already in service for years, the individual Fusion GloLight lamp components required little to no retooling and were simple to access and replace.

Another feature of the lamp was what Optronics called the "C-channel," an elongated c-shaped portion of the lens that partially wrapped around the three interior 4" round lights. The C-channel also took advantage of the GloLight technology.

The lamp was designed to precisely match and be flush with the contours of the rear body and to wrap around the edge just enough to enable it to also serve as a side clearance marker lamp. One of the most unique aspects of the design was an optical illusion that made the lamps appear to flare up on the left and right, even though only one lamp footprint serves both the left and right positions, reducing costs at all levels.

The net result was that the new lamp delivered stop, tail, turn, backup, and side clearance marker functions. The entire lighting assembly was able to connect to the vehicle's electrical harness system via one Deutsch connector. We also felt good about the fact that Optronics' covers these lamps with its no-hassle, one-diode, lifetime-warranty protection that will replace any light if even one diode fails.

Harnessing Collective Experience

The task of delivering power to the newly designed wrecker bed was next on the agenda. The wiring diagram, including the harness layout and modular design that Miller presented to Optronics I USA Harness needed to accommodate all wrecker bed controls, electro-hydraulics, toolbox lighting, safety lighting, work lights, and a tow plug extension harness attachment. It also needed to support 12V power common in North America and 24V power for Miller's European customers. Finally, the harness needed to emanate from Miller's proprietary black box control unit that interfaces with the OEM power supply.

With USA Harness' almost 30 years of collective experience with Miller, this was not our first rodeo together. The design called for nothing to be overmolded on the harness, as there are virtually no splices in the harnessing due to complete utilization of Miller's custom product data management (PDM) and electrical design protocol. Everything on the harness system is wired connector-to-connector and individually fused, greatly reducing failure points and making the need for troubleshooting lighting problems virtually extinct.

The tow extension harness uses tinned copper for the 4-way tow receptacle connection, as every 4-way tow receptacle connection uses brass screw terminals with no real seal option. This approach will buy years more trouble-free tow plug operation for end users. Interestingly, in the past, other harness suppliers have pushed back about using tinned copper wire. But we know that it is more commonly used in the boating and marine industries and does well in harsh and challenging environments.

Customer Response

The first two fully-functional, working Century and Vulcan models were initially shown at a Miller dealer meeting that coincided with a major industry tow show. The response from dealers and end users alike was immediate and clear: They really liked it—and they really wanted it. As a result, Miller will go into full production of our new Century, Vulcan, and Chevron models in early 2023.

The unique wrecker body contours complemented by the custom-designed lighting enhanced the entire vehicle with an automotive style. Most important, however, was the fact that these wreckers have set a new and very high bar for small wrecker design within the industry. In the process this initiative has set Miller apart from other offerings, giving us the competitive advantage we had been seeking. **TBB**

Miller Industries is an American tow truck and towing equipment manufacturer based in the Chattanooga suburb of Ooltewah, Tennessee. Founded by the author's father. William G. Miller in 1990, Miller Industries is the world's leading producer of towing and recovery equipment.

The primary subsidiary, Miller Industries Towing Equipment Inc., manufactures a variety of light- to heavy-duty wreckers, car carriers, and rotators under several brand names, including Century, Vulcan, Chevron, and Holmes.

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