Blue Lasers Poised to Enhance Automobile Fabrication

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Automobiles are becoming increasingly electronic. An array of sensors is nearly mandatory for today's vehicles, to say nothing of the actuators, batteries, and electric motors also becoming pervasive in automobile design. Those electronics bring great capabilities, but they also present a new array of challenges. Specifically, each component, and each element within those components, need to be joined with high mechanical and electrical fidelity. In general, the efficiency of electrical components depends on their density. The number of turns in a solenoid or a motor coil, for example, drives the coupling efficiency, while the density of foils in batteries is directly related to energy storage capacity.

The problem is that current joining methods require a significant area — in addition to being subject to defects that reduce electrical efficiency and mechanical strength. A new industrial blue laser has already demonstrated the ability to rapidly produce high-quality joints in very limited space. For example, the new laser is making it possible for one manufacturer to rapidly produce very dense motor coils, because the blue laser can weld extremely tight radii. Given the growing number of electrical joints required with each new model year, the blue laser is poised to become a significant tool to enhance productivity for future automobile production.

We will cover the fundamental difference between high power, high-brightness, blue laser and infrared lasers as well as green lasers. We will then provide some applications ranging from battery welding (cell and pack) e-mobility and sensors.

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