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For Immediate Release:

Coherent Debuts Another Major Leap in Fiber Laser Welding Technology

Santa Clara, CA, June 4, 2020 – The new Coherent HighLight FL4000CSM-ARM fiber laser builds on the success of Coherent HighLight ARM fiber laser series already qualified for automotive applications. This new laser enables more advanced welding capabilities for high thermal conductivity metals, and aligns to welding requirements for e-mobility, energy storage, and general electrical interconnects consisting of dissimilar materials, such as copper and aluminum, and foil stacks that require precise control.

This new technology represents a significant improvement in simplicity, and overcomes the limitations of other joining technologies. The latter include unstable welds due to welding head wear and the large heat affected zone caused by ultrasonic or standard fiber laser welding. The ability to move beyond the limitations of traditional fiber laser for welding thin conductive materials is possible because of its unique dual beam output (center beam surrounded by a ring beam). The center beam has extremely high brightness (nominal BPP 0.6) allowing a smaller spot size compared to its multi-mode counterpart. The small spot size results in very high laser intensity that minimizes heating of the material, and, together with the pre-heating effect achieved by the ring beam, significantly improves stability of the melt pool and therefore weld consistency that is a challenge when welding thin conductive materials.

The Coherent HighLight FL4000CSM-ARM has been developed at the recently expanded "Center of Excellence for Fiber Lasers" in Tampere, Finland and is available with an output power of 4 kW (1.5 kW center beam, 2.5 kW ring beam). As with other Coherent Adjustable Ring Mode lasers, power in the center and ring beams can be independently varied and modulated. The CSM-ARM is supplied with a 15 m length process fiber, making it easy to integrate in virtually any production environment, and is compatible with the standard process heads from Coherent and other manufacturers.

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