

Visual seam quality in laser keyhole welding

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Abstract

In laser keyhole welding, beam oscillation and filler wire were used to improve process stability and gap bridging ability in a butt joint with an air gap. The so-called buttonhole (a cavity in the molten pool) was observed in certain welding parameters, which allows smooth and ripple-free weld seams. Computational fluid dynamics (CFD) was used to better understand the mechanism because experimental observations are limited due to the high temperature and high brightness during the welding process. The simulation results showed the buttonhole makes the molten pool calm.

Keywords: *laser welding, buttonhole, seam quality, numerical simulation*

Biography

Won-Ik Cho (Ph.D.) has been working as a scientist at BIAS-Bremer Institut für angewandte Strahltechnik GmbH, Germany since 2016. His current research interests include welding and joining processes, welding physics and computational materials processing. He received his Ph.D. in 2012 from KAIST-Korea Advanced Institute of Science and Technology, Korea. From then until 2016 he was a senior engineer at Samsung SDI, Korea for the R&D of welding and joining processes.