

# C-IV Power Beam Processes

## IV-1447-19

8-10 July 2019, Bratislava, Slovakia

Hall 14 (Room: TATRA Salónik Grand)

Chair: Herbert Staufer (Austria)

Monday, 8 July, 08:30h – 12:30 h	
1.	Opening the Meeting
2.	Request volunteer to write the Minutes of Meeting
3.	Approval of the minutes in connection with the last annual assembly in Bali
4.	Brief report of the intermediate meeting at INP in Greifswald, Germany on March, 2019
5.	Adoption and Agreement of Agenda (Doc. IV-1447-19)
6.	Apologies
7.	Proposal Vice Chair for Commission IV
8.	Presentation of documents
[1]	Reduction of distortion by using the Low Transformation Temperature (LTT) effect for high alloy steels in Electron Beam Welding (EBW), Fatma Akyel, Germany Doc.IV-1407-19
[2]	Microstructural and mechanical properties of dissimilar Nitinol and Stainless Steel wire joints produced by Micro Electron Beam welding without filler material S. Hellberg, J. Hummel, P. Krooß, S. Böhm, T. Niendorf, Germany Doc.IV-1442-19
[3]	Closed Keyhole EBW Using On-line Weld Depth Control D. P., Sofia, H. Scott, R. Colin, J. Phillip, UK Doc.IV-1429-19
[4]	Local Vacuum Power Beam welding for Pressure Vessel Fabrication C. Punshon, T. Pinto, B. Nicolson, S. Falder, C. Dumont, G. Coghill, UK Doc.IV-1428-19
[5]	Advancements of mobile vacuum laser welding for industrial thick sheet applications B. Gerhards, M. Schleser, C. Otten, Germany Doc.IV-1448-19
	<b>Coffee break</b>
[6]	Numerical Analysis of Temperature Distribution during Laser Deep Welding of Duplex Stainless Steel using a Two-Beam Method, Fey, A., Ulrich, S., Jahn, S., Schaaf, P., Germany Doc.IV-1406-19
[7]	Numerical simulation of filler wire mixing into the melt pool in LAHW Alexander F. H. Kaplan, Javier Souto Grela, Eva Vaamonde, Jörg Volpp, Spain, Sweden Doc.IV-1439-19
[8]	Pulsed laser beam welding of nickel-based alloys with filler wire for the repair of engine components L. Schmidt, M. Bielenin, K. Schricker, R. Leinhoß, J. P. Bergmann, Germany Doc.IV-1427-19
[9]	Bridging the “valley of death” in laser based metal additive manufacturing R. Bola, E. Assunçao, L. Quintino, Portugal Doc.IV-1432-19



**Tuesday, 9 July 2019, 8:15 – 18:15 @ Room “CP London I & II”**  
**Joint Meeting of Comm.I, Comm.IV, Comm.XII and SG212**  
**“Welding/joining and additive manufacturing technology”**

<b>Morning Session, 8:15 – 12:30</b>	
[J1]	Arc-welding based additive manufacturing for body reinforcement in automotive engineering Ann-Christin Rosenkranz (Germany) Doc. XII-2428-19
[J2]	Optimization of the controlled short circuit GMAW metal transfer process for the deposition rate increasing in Wire Arc Additive Manufacturing D.Kurushkin, I.Mushnikov, A.Popovich, O.Panchenko (Russia) Doc. XII-2352-19
[J3]	Increasing the manufacturing efficiency of WAAM by advanced cooling strategies Lukas Oster (Germany) Doc. XII-2357-19
[J4]	Arc Characteristics and Metal Transfer Mode in Super-TIG Welding of Thick Wall Metal Additive Manufacturing S.M. Cho, G.J. Seo, J.H. Park, M. Cheepu (Korea) Doc. 212-1625-19
[J5]	Multi Signal Sensing, Monitoring and Control in Wire Arc Additive Manufacturing S.F. Goecke, G.F. Gottschalk, A. Babu and M.J.M Hermans (Germany) Doc. 212-1639-19
[J6]	Characterisation of heat transfer in wire arc additive manufacturing (WAAM) Philipp Henckell, Yarop Ali, Jan Reimann, Jean Pierre Bergmann ( ) Doc. I-1417-19
<b>Coffee Break (10:15 – 10:45)</b>	
[J7]	Microstructural development during wire arc additive manufacturing of copper based components Justin Baby, Murugaiyan Amirthalingam (India) Doc.XII-2353-19
[J8]	Wire arc additive manufacturing of high strength Al-Mg-Si aluminum alloys using similar filler wires with additional grain refiner René Winterkorn, Andreas Pittner, Robert Lahnsteiner, Michael Rethmeier (Germany) Doc. I-1410-19
[J9]	Mechanical properties of Wire Arc Additive Manufactured Components of Ti-6Al-4V H. Staufer, Grunwald R. (Austria) Doc. IV-1434-19
[J10]	In situ synthesis of a novel Si-containing FeCoCrNi high-entropy alloy fabricated by selective laser melting Danyang Lina, Lianyong Xua, Hongyang Jinga, Yongdian Hana, Lei Zhaoa (China) Doc. XII-2354-19
[J11]	Streamlining parameter development and minimizing material costs in laser powder bed fusion Colt Montgomery Doc. I-1403-19
[J12]	Multifunctional Large-Scale Machine for Additive Manufacturing – LASIMM E. Assunção, F. Barros, D. Barbosa (Belgium) Doc. XII-2435-19
<b>Afternoon Session, 14:15 – 18:15</b>	
[J13]	The effect of oxygen on the gas tungsten arc weldability of laser-powderbed fusion fabricated 304L stainless steel Devon S. Gonzales, Stephen Liu, Daniel Javernick, Matthew Johnson ( ) Doc. I-1405-19
[J14]	Innovative Laser Beam Joining Technology for Additive Manufactured Parts B. Gerhards (Germany) Doc. IV-1449-19



[J15]	Effect of titanium surfaces thermally pre-treated by laser irradiation on a CMT process for welding and additive manufacturing applications Woizeschke, P.; Radel, T.; Halisch, C.; Seefeld, T. (Germany) Doc. IV-1444-19
[J16]	Laserbeam-Hybrid-Welding – current results and prospect Brozek, S. Keitel (Germany) Doc. IV-1431-19
[J17]	Experimental and numerical study of the influence of the Laser hybrid parameters in partial penetration welding on the solidification cracking in the weld root N. Bakir, Ö. Üstündag, A. Gumenyuk, M. Rethmeier (Germany) Doc. IV-1441-19
[J18]	Laserbeam Submerged Arc Hybrid Welding – A novel hybrid welding technique for thick plate applications. Oliver Engels (Germany) Doc. IV-1446-19
<b>Coffee Break (16:15 – 16:45)</b>	
[J19]	Assessment of thermal cycles by combining thermo-fluid dynamics and heat conduction in keyhole mode welding processes A. Artinov, V. Karkhin, P. Khomich, M. Bachmann, M. Rethmeier (Germany) Doc. 212-1607-19
[J20]	Numerical analysis of weld pool behavior in wire feed laser beam welding with oscillating magnetic field X. Meng, A. Artinov, M. Bachmann, M. Rethmeier (Germany) Doc. 212-1608-19
[J21]	Participatory Design of Laser Keyhole Welding Process using CFD-based Coupled Simulations of Thermal, Metallurgical and Mechanical Behavior S.W. Han, L.J. Zhang, J.X. Zhang, S.J. Na (China) Doc. 212-1612-19
[J22]	Effects of the Shielding Gas Flow on the Blowhole Generation for Aluminum Alloys Laser Welding T. Fujimoto, M. Hirano, E. Fujimoto, Y. Abe, M. Nakatani, M. Shigeta and M. Tanaka (Japan) Doc. 212-1613-19
[J23]	Numerical modeling of keyhole instability and porosity formation in deep-penetration laser welding on NiCrMoV steel Y. Suna, H.C. Cui, X.H. Tang, F.G. Lu (China) Doc. 212-1623-19
[J24]	The visualization of contamination phenomena and countermeasure performance on vacuum laser beam welding via experimental and numerical approaches Y.K. Lee, J. Cheon, B.K. Min, J.H. Cho and C.L. Kim (Korea) Doc. 212-1628-19
<b>Wednesday 10 July, 08:30h – 12:30 h</b>	
[I0]	Properties of Dissimilar Aluminum Alloy Sheet Joints by EBW, LBW, RSW and FSW M. OKUBO, Japan Doc.IV-1433-19
[I1]	Influence of the wire feeding on the wetting process during laser brazing of aluminum alloys with aluminum-based braze material T. Leithäuser, P. Woizeschke, Germany Doc.IV-1435-19
[I2]	Influence of magnesium content on spatter behavior in laser deep penetration welding of aluminum Felsing, A.; Woizeschke, P., Germany Doc.IV-1436-19
[I3]	Laser welding of laser-structured copper connectors for battery applications and power electronics J. Helm, A. Schulz, A. Olowinsky, A. Dohrn, R. Poprawe, Germany Doc.IV-1437-19
[I4]	Research on effect of filling wire on weld shape and joint mechanical properties of laser welding Al-Li alloy CHEN Li, HE Enguang, Gong Shuili, China Doc.IV-1445-19



	Coffee break
[15]	Avoidance of end crater imperfections at high-power laser beam welding of closed circumferential welds S. Gook, Ö. Üstündag, A. Gumenyuk, M. Rethmeier, Germany Doc.IV-1438-19
[16]	Investigation of clad buttering on thick duplex plates for laser welding A. StraÙe, A. Gumenyuk, M. Rethmeier, Germany Doc.IV-1440-19
[17]	Effect of post-weld heat treatment on microstructure and mechanical properties of DP800 & DP1200 high strength steel butt welded joints using diode laser beam welding Raghawendra P.S. Sisodia, Marcell Gáspár, László Draskóczy, Hungary Doc.IV-1443-19
[18]	Thermal-mechanical FE analysis of laser assisted lap joining of plastics and high strength steel Youko Okawa, Yuji Kitani, Yunwu Ma, Ninshu Ma, Japan Doc.IV-1450-19
7.	Recommendation of publication for IIW Journal "Welding in the World"
8.	2019 International Electron Beam Welding Conference (IEBW), Chicago, USA
9.	Decision about Vice Chair
10.	Miscellaneous
11.	Date and place of next meeting
12.	Closure

