



Bonal Technologies Pulse Puddle Arc Welding® Technology Solves Welders Distortion and Cracking Problems

Royal Oak, Mich., November 4, 2005 – Bonal Technologies, Inc., a subsidiary of Bonal International, Inc. (otc BONL), helps solve welders' problems of distortion and cracking by providing Pulse Puddle Arc Welding® (PPAW®). Pulse Puddle Arc Welding® (PPAW®), used specifically for welding, is a variation of Bonal's Meta-Lax® Stress Relief equipment. The product helps welders have less straightening, rework, preheat and other secondary steps, creating better quality welds in less time. PPAW® was specifically designed for the welding and fabricating industries.

PPAW® creates a pulsating weld puddle while the liquid weld metal is deposited. The patented PPAW® process allows for an optimum energy level to pulsate the weld puddle. The puddle pulsation creates a finer weld grain structure and a more homogeneous mix with fewer columnar structures. Fewer columnar structures improve the weld metal's mechanical properties by making the metal more ductile (up to 400%) while increasing its impact strength up to 75% resulting in better crack resistance.

"The idea of pulsating a liquid as it is being poured and solidified is not new. The process has been done for years in the cement, casting, dental and prosthetics industries." said Greg Merritt, director of marketing, Bonal Technologies, Inc. "PPAW® is a simple procedure that can be adapted to most arc welding processes in most industries that weld."

Product Details

The PPAW® system features all front panel controls, connectors and circuit breakers for easy use and accessibility. The system wand controls the speed of the pulsator and pulse level adjustment controls. The patented sensor is mounted to the workpiece.

It records and sends the pulse strength to the control system and wand enabling the operator to adjust the proper pulse rate for welding. The pulsators are available in four sizes to treat weldments up to 40,000 pounds.

Research

Data shows that welders using PPAW have increased weld speed and penetration and reduced porosity and spatter. PPAW-treated welds would have nearly a 22 percent ductility value versus non-treated welds with a 5.5 percent ductility. Plates welded with PPAW have been found to be 307% more ductile than non-treated weld plates. Therefore, PPAW has the potential to gain higher ductility which will extend the service life of a welded product. According to the U.S. Department of Energy in 1989, standard mild steel welds have a weld joint strength of 45,800 psi (310 MPa). However, the weld joint strength improved by 89 percent to 86,500 psi (596 MPa) using the PPAW during the welding.

PPAW can be used by all shops that use arc welding in all types of industries from mining repair, shipbuilding, welding and fabricating shops. It can be used to do repair welding and to improve the quality of their welds. Any company that does MIG/TIG or stick welding can use this product to enhance quality.

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“PPAW is used by all size welding shops in all types of industries to help solve the problem of distortion and cracking for welders. We are currently working to expand our business in the area of robotic arc welding,” said Merritt. “With continued automation in the manufacturing environment, we see it as a future growth opportunity.”

Peninsula Metal Fabrication in San Jose, Calif. recently implemented several Pulse Puddle Arc Welding Systems in their facility. The company researched the product at the AWS Dallas welding show and watched the demonstration on the product.

“Pulse Puddle Arc Welding has certainly made us more competitive from a quoting standpoint since we have less straightening to do on the product since we implemented the systems. We have less labor involved and purchased units for six weld benches because of the great results,” said Jim Scocca, plant manager of Peninsula Metal Fabrication. “We also know that the weld quality is much better when we use it due to better weld penetration with less effort. Eventually we will retrofit the robotic welder with the product too.”

“We had some customers interested in finding a weld shop that was using this subharmonic stress relief technology. We were quite amazed at how the technology worked,” said Paul Eischens, weld manager of Peninsula Metal Fabrication. “We’re a large frame manufacturer and the bulk of our work is stainless steel. We tend to get a lot of distortion and squareness issues. We hoped that the Pulse Puddle Arc Welding product would help with distortion control. Once we had established Bonal’s parameters and fine-tuned the process, we found that not only did we get less distortion, we also got better penetration. PPAW helped us speed up production time and cut down on our setup time.”

“Originally we thought the technology would be cumbersome, but I was quite surprised how it easy it was to implement. We are a lean manufacturing shop and this technology falls right into line with our lean manufacturing methodology. We found the technology easy to use and quick to set up. After minimal training, our welders do the process themselves now,” said Eischens. “It gives us a much better competitive edge in the market since we have much greater flexibility, faster set up and production. The quality of our welds is so much better it is like night and day.”

Bonal Technologies, Inc., a subsidiary of Bonal International, Inc. (otc, BONL) is the world’s leading provider of sub-harmonic stress relief technology for metal improvement solutions with more than 35 years of expertise. Headquartered in Royal Oak, Mich., Bonal Technologies, Inc. provides solutions to prevent distortion and cracking for metal components. Bonal’s patented technology and its three product lines: Meta-Lax® Stress Relief, Pulse Puddle Arc Welding® (PPAW®) and Black Magic® are sold in the US and in 49 countries. The company serves customers in a wide range of industries – aerospace, automotive, construction equipment, defense/ homeland security, die casting, engine building/racing, foundries, machine tool/mold making, mining, petroleum, power, plastic molding, shipbuilding, structural steel construction, steel producers and welding/fabricating industries.

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