

# META-LAX® Works - Here's Proof



**“We love Meta-Lax!”**

*August Beiter, Beiter Moldmaking*

**PATENTED**

**META-LAX**

*Stress Relief & Weld Conditioning*  
by

**BONAL**  
TECHNOLOGIES  
SUBSIDIARY OF BONAL INTERNATIONAL, INC.

“Meta-Lax has been very beneficial to NASA and is used frequently.”

**Gerald Miller, NASA Langley Research Center**

“The Meta-Lax process is our preferred choice of stress relief for many reasons.”

**David Gruzin, General Motors**

“The Meta-Lax process is a proven substitute for 80% to 90% of heat-treatment stress relief in metal-working applications.”

**U.S. Department of Energy**

“In over two years we have never had a case of inadequate stress relief.”

**Elmer Marriott, Giddings & Lewis**

“The welders really like it. Meta-Lax makes their job easier and the distortion is a lot less.”

**Harry Bishar, Hammond Machinery**

“Meta-Lax has improved product quality by 25%.”

**Dave Stover, Chesapeake Machine**

“We Meta-Lax stress relieve after welding, before machining, and the machinability is improved.”

**Kevin Hakes, Hilliard**

“We are very pleased with what the Meta-Lax does. It was worth every penny.”

**Eric Zimmerman, Apex Die Casting**

“Every weldment is now either Meta-Lax weld conditioned or stress relieved in-house for quality assurance.”

**Jim Amos, Detroit Tool**

“The process relieves stress just as well as heat-treating.”

**Jim Gourlay, K & M Machine & Fabricating**

“Meta-Lax has become an intricate part of day to day business.”

**Dean Shoup, Rob's Welding**

“Meta-Lax reduces the amount of effort required in making a good product.”

**Peter Wojnar, The Norton Company**

“Using the Meta-Lax process on crankshafts increases their life from a 10 race average to 30 races!”

**Gordon Jennings, Paul Pfaff Enterprises**

“The results were astounding. We saw our scrap rate go from 50% to 0 and stay there.”

**Tim O'Connor, U.S. Army - Watervliet Arsenal**

“It is amazing that, because of Meta-Lax, we did not suffer a single major mechanical breakdown.”

**Robert Hughes, Miss Madison**

“Based on our experience we have all kinds of proof that Meta-Lax works.”

**Rex Hogsett, Fairfield Engineering**

“We felt the Meta-Lax system was a success.”

**Scott Bagwell, Super Conductor Super Collider**

“NAVAIR Lakehurst has been successfully using the META-Lax stress relief process during fabrication of aircraft Arresting Gear Engine Bases for the CVNs, since about 1988.”

**John Arnao, NAVAIR Lakehurst**

“We're always working with very tight tolerances, if there was any sacrifices in quality we'd know it. But our results with Meta-Lax have been just excellent.”

**Gary Aalbers, Aalbers Tool & Mold**

“Our winning car's rotors that had been [Meta-Lax] stress relieved showed no signs of cracking at all!”

**Mike Mavrigian, Birchwood Automotive**

“We utilized the Meta-Lax vibration during welding and we had no problems at all.”

**Hugh Winthrop, Western Steel & Metals**

“I was curious so we magafuxed everything and found no cracks. Zero, zip, nada.”

**Dave Koehler, Koehler Engineering**

“I fully expect to triple the life from this die. We couldn't get along without [Meta-Lax].”

**Ray Troup, Airtex**

“I am a firm believer in Meta-Lax.”

**Karl Fisher, Pioneer Die Casters**

“Now my customers got to have it – they're hooked!”

**Bob Atchison, Atchison Machine Service**

“Before Meta-Lax we experienced problems with cracking and heat checking of dies. Since adding Meta-Lax to the manufacturing process, we don't have those problems.”

**Al Phan, ITT Automotive**

“After several attempts at welding HY-90 “T” bar Bonal's Meta-Lax technology was called on and the “T” bar was welded perfectly the first time.”

**Lyman Martin, North American Shipbuilding**

*All quotables were taken from published articles or reference letters.*

[www.META-LAX.com](http://www.META-LAX.com)



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***"I've never been disappointed with Meta-Lax, ever!"***

*John Sparovic, Weber Machine*

**EFFECTIVE**

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"Meta-Lax is so effective that it has eliminated the need to stress relieve parts between rough and finish machining."

**Dennis Rakosik, Schill Corp**

"When the [Meta-Lax] vibration was applied to the hull, there was no weld rod splattering and long continuous welds could be produced easily, with no voids or skipping."

**Tom Gentry, Gentry Eagle**

"We've had no problems whatsoever."

**Rocky MacMillan, Alloy Industrial Contractors**

"Meta-Lax has allowed Minco to maintain their high standard of quality yet still cut corners."

**Don Paulus, Minco**

"The results with Meta-Lax have been excellent-zero weld cracking defects."

**Joseph Boone, S&S Fire**

"The initial loss of spring pressure common with all valve springs does not happen after [Meta-Lax] stress relief."

**Paul Pfaff, Pfaff Enterprises**

"To date we haven't had a crack and the bucket is showing no signs of fatigue."

**David Zynda, Kel-Cris**

"The results are super excellent."

**Clyde Hoffman, Heick Die Casting**

"We first used Meta-Lax on a green block, and that engine set a track record first time out."

**Chuck Nicholson, Leitzinger Racing**

"Since using Meta-Lax, we have eliminated cracking in the last 600-700 cross tubes we made over a four-year period. That's unheard of in our business!"

**Jim Kelly, Corrosion Engineering**

"In the first four races before Meta-Lax was used two engines were totally destroyed. After Meta-Lax, no failures!"

**Ed Cooper, Unlimited Ventures Company**

"Meta-Lax provides an important contribution in meeting the demanding crankshaft tolerances required for racing and prototype engines."

**John Callies, Callies Performance**

"Bottom line - after 70-80 hours of Meta-Lax weld conditioning per mold there were NO CRACKS! That's proof positive for me!"

**Bruce Kronk, Modern Tooling Systems**

"We are very happy with Bonal's Meta-Lax technology."

**John Carlson, Komo Machine**

"Welding with Meta-Lax gives us a better and faster weld repair."

**Mark Phillips, Elkton Die Casting Company**

"Meta-Lax weld conditioning eliminated the severe distortion previously encountered in welding 8-ft by 8 to 20-ft segments of 1 1/8-in.-thick stainless steel that make up 61-ft gridplate bases for cokers."

**Chuck Taylor, Cessco Fabrication**

"None of the Meta-Lax treated products have had weld cracks so far."

**Steve Kelly, G.H. Hensley**

"We have no problem with stability at all."

**Ray Brown, Model Die**

"Meta-Lax has played an important role in assisting us in reaching this high level of precision expertise."

**Gary Hansen, Hansen's Welding**

"We use our Meta-Lax system on about everything we do."

**Paul Allen, Traverse Precision**

"We always have good results with the Meta-Lax system."

**Pete Hershberger, Gougler Industries**

"Finish grinding to a tolerance of 0.0002 inch on flatness and parallelism is easily done after this treatment."

**Charles Moffat, Ex-Cell-O**

"Refinement occurred in the cupronickel alloy when vibrational waves were applied. The greatest refinement was obtained when 40% of the resonant peak frequency was induced to the base material during welding."

**Ohio State University**

"In evaluating all of the tests that we have made so far the evidence indicates that vibrating while welding [using Meta-Lax] and also after welding definitely results in less residual locked-in stresses that could be detrimental to the endurance of the welded structure while in service."

**Charles Bronson, LeTourneau University**

"Weld conditioning is a valuable application of the process."

**Jeff Shipstead, Penn Power & Light - Montana**

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# **META-LAX® Works - Here's Proof**

"The findings demonstrate that the frequency [for vibration stress relief] is always in a sub-harmonic range."

**Richard Skinner, Lockheed Missiles & Aerospace**

"The guys in the tool room love it."

**Randy Gruenwald, Direct Tool**

"When welding the crack with Meta-Lax the aluminum seems to migrate out of the crack and we can produce a porosity free weld normally on the first try."

**James Martin, Paterson Mold & Tool**

"Now you can look down the frame and there is NO DISTORTION anywhere! It's a big deal!"

**Dave Jeffers, Walt Austin Racing**

"We use Meta-Lax on all our precision machining work just to make sure we don't have distortion problems including after we shipped the part."

**Mike Dorman, Miller Mold**

"There no longer are any doubts that the Meta-Lax unit will relieve thermal induced stresses."

**John Sherrill, Bico Akron**

"No part is EDMed without first being Meta-Laxed."

**Richard Averill, Hydro-Cam**

"The Meta-Lax system is used quite frequently during welding to control expected distortion due to welding."

**Chris Davis, Purdue University**

"The findings regarding the shift in natural frequency as a result of residual stress may provide a method for examining the effectiveness of stress relieving processes."

**University of California**

"On the basis of these residual stress measurements no degradation of mechanical properties from vibratory [Meta-Lax] treatment during welding is expected."

**Oak Ridge National Lab**

"We interpret these data to show that [Meta-Lax] treatment has completely eliminated the rejects due to distortion apparently caused by residual stresses."

**Alfred University**

"We use Meta-Lax for both stress relieving and right during welding if we anticipate any weld related problems."

**Rob Shoup, Rob's Welding**

"We use Meta-Lax everyday on everything that we machine."

**Terry Dinelli, Craftsman Tool & Mold**

"The vibration stress relieving process is effective in changing the microstructure of the heat-affected zone and causes no degradation to the weldment."

**Utah State University**

"A finer, more uniform weld grain results in a stronger weld with increases in ductility as much as 400%."

**Tom Norton, Ten -Tech**

"The Meta-Lax process is successfully used to relieve stresses in engine components and assemblies, this reduces stress and fatigue failures."

**Scott Wichlacz, Manitowoc Motor**

"We use Meta-Lax about 50% of the time for stress relieving and 50% for weld conditioning."

**Don Whitfield, NASA Dryden Flight Research**

"Since we started using Meta-Lax, we have noticed a definite reduction in early die failures."

**Jack Humphrey, ITT Automotive**

"Even finicky customers are happy."

**Bruce Meihls, Fast Racing**

"There is less spatter, warpage, better weld penetration, and we get a better flow of weld."

**Kenny Marshall, Detroit Tool**

"For the first time, we have verification that stresses have been relieved."

**Gerald Shafer, Cambridge Tool & Mold**

"After the Meta-Lax treatment, 'The World's Fastest Chevy Sprint' turned an E.T. of 9.40 seconds and 143 MPH! That's an increase of 11 MPH and almost a full second off the elapsed time!"

**Mike Rinehart, Southwest Motorsports**

"If you use the Meta-Lax equipment the way you are trained you will find impressive results."

**Dale Green, Gaerte Engines**

"I used Meta-Lax for stress relieving because I wanted the stability for line boring yet I didn't want to sacrifice any strength."

**Al Meckl, Meckl Machine Service**

"We were very successful in achieving weld quality improvement with Meta-Lax."

**Horst Schmidt, Build-A-Mold**



***"Meta-Lax has performed flawlessly."***

***Tim O'Connor,  
U.S. Army -  
Watervliet Arsenal***

**CONSISTENT**

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***"We use it religiously here."***

*Karl Fisher, Pioneer Die Casters*

**CONFIDENCE**

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"In checking all the Meta-Lax-treated spindles after grinding an impressive concentricity of 0.000010" or less was found. We thought our machine was broken.

**George Beal, Toyoda Machinery**

"The Meta-Lax process assures us of stress-free machine components without the need for heat treating."

**Dale Gallant, Heald Division-Cincinnati Milacron**

"Your system helped us win the 1988 National Championship as well as the Great Lakes Trophy and the Central Region High Points Championship."

**Al Gerstenberger, Offshore Racing**

"Meta-Lax has proven to be very beneficial to the longevity of crank shafts, rods, and pistons."

**Ray Shepherd, Ray's Crack Repair**

"Cylinder heads will stay flat and the valve seats will remain where you put them."

**Jake Lamont, Lamont Performance Products**

"We believe that Meta-Lax is enhancing the quality and durability of our products."

**Hal Batters, G.H. Hensley**

"It really only costs us about 10 minutes of a man's time for stress relief."

**Cliff Reeve, Airtex**

"We have reduced our stress-relief costs an average of \$1800 per job."

**George Bihler, Special Machines**

"We have been very successful in improving the stability of both H-13 and mild steels."

**Marty Kuypers, Lansco Die Casting**

"Previously it was difficult to weld 18x24-inch cores and hold straightness any better than .020 to .030-inch. Now with Meta-Lax we hold the cores to about .005-inch distortion."

**Jeff Sukupchak, Tigmaster**

"You can't do precision machining without it."

**Andy Parker, Parker Boring**

"Extremely close tolerances were held and costly re-straightening was eliminated."

**Ron Podolak, Detroit Flame Hardening**

"We expected some warpage, but none occurred."

**Charles Schanke, Purdue University**

"We've been using Meta-Lax equipment for over 10 years and haven't received any negative feedback."

**Lewis Glashower, Paragon Die**

"The Meta-Lax is an important tool in our ever growing business."

**Skip Hollard, Complex Tooling & Moulding**

"The Meta-Lax equipment nearly paid for itself with the first two jobs."

**Brian Bishop, General Tool**

"We've virtually eliminated all of our heat treat stress relief costs without sacrificing quality."

**Greg West, WesTool**

"The quality of repair was every bit as good."

**Al Goscinski, Lear Siegler Progress Pattern**

"Use of this process has helped us control the flatness of the platens."

**Pete Hann, Hann Industries**

"Meta-Lax has substantially reduced distortion and shortened production time from 16 to 9 hr in welding a flange on to a 304-stainless water-cooled manifold."

**Bill Crowley, Owens Corning Fiberglas**

"Meta-Lax improves the welding process by generating a better weld flow."

**Thomas Bandwen, ITT Automotive**

"Meta-Lax has made a dramatic difference in the accuracy of my personal hunting guns by cutting target groupings in half in most cases."

**Wes Bisbee, Northwest Industries**

"It does what they said it will do, I have no complaints."

**Joe Wray, Tool Shop Contracts**

"I think of Meta-Lax as an extra trick up my sleeve for a higher quality product."

**Gerald Miller, NASA Langley Research Center**

"The end result for us is a stronger weld and a longer lasting and safer hull."

**Andy Stanton, Hike Metal**

"Quality of stress relief? We have had no problems at all meeting our tolerance of 0.003-in flatness total over 220-in!"

**John Carlson, Komo Machine**

***Now it is your turn.  
Get impressed with Meta-Lax!***

***All quotables were taken from published articles or reference letters.***

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