

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

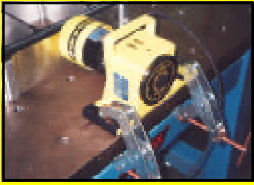
All quotables were taken from published articles or reference letters.

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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

All quotables were taken from published articles or reference letters.

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"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!***

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