

## Featured Company: NASA - Langley

### Meta-Lax Proves Beneficial to NASA

When **National Aeronautics and Space Administration (NASA)** engineers prepare for a test, they do their homework. As a result, they discovered Meta-Lax stress relief and weld conditioning was the additional edge they needed to solve tough welding distortion problems.

“We use Meta-Lax whenever we anticipate a weld distortion problem which may cause an out of dimensional tolerance condition,” said Gerald Miller, the Standard Practice Welding Engineer at NASA’s Langley Research Center in Hampton Virginia.

According to Miller, “Meta-Lax has been very beneficial to NASA and is used frequently. The fabrication shop uses it for weld conditioning and stress relieving, while the machine shop uses it to stress relieve mill induced rolling and process machining stresses. Three years ago on a large facility renovation job we used three Meta-Lax units at once,” he said.

**“I think of Meta-Lax as an extra trick up my sleeve for a higher quality product.** I use it along with weld bead sequencing, back stepping techniques, preheating and proper fixturing,” Miller added.

Recently, NASA applied its Meta-Lax Model 1300 for weld conditioning to a project constructed of 304 stainless steel and A500 Grade B mild steel tubing for a calibration rig.

The calibration rig is used to calibrate the wind tunnel model balance before it is installed on an aircraft model. The balance senses the simulated in flight loads on the model as it is manipulated inside the wind tunnel airstream. The six load readings are critical information to an aircraft’s flight characteristics.

This particular model balance is used in the National Transonic Facility (NTF) typically operating at a



**NASA’s Langley Research Center used Meta-Lax weld conditioning on a wind tunnel model balance calibration rig.**

temperature of -250° F. Therefore this unique balance calibration rig must simulate the temperature of this wind tunnel and the in flight loads the model may encounter.

The tunnel, an ASME code stamped pressure vessel, employs an atmosphere of liquid and gaseous nitrogen to simulate a high density viscous flow medium. The calibration rig was Meta-Lax weld conditioned and stress relieved, resulting in a dimensionally stable project.

**“Since we began using Meta-Lax, we have experienced the ability to hold dimensional tolerances on weldments and machined parts as never before.** It is also obvious the

penetration of the Flux Core and Shielded Metal Arc Welding processes into the weld joint are enhanced when weld conditioning is used. This phenomena helps reduce weld distortion due to residual stresses because we weld with less heat input. The weld bead tends to lay down flatter and more even. Impurities and flux inclusion seem to be less too.

Overall we have a better product,” said Miller. “At NASA, Meta-Lax has repeatedly proven it can handle the pressure.”

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