

Titanium Alloy 500x Magnification

METALLURGICAL LABORATORY

Operating an extensive metallurgical laboratory that evaluates weld quality and joining processes.

The RES Metallurgical Laboratory examines materials used in industry focusing on joining and heating applications. We offer a variety of options with which to assist our customers. Some of our services include:

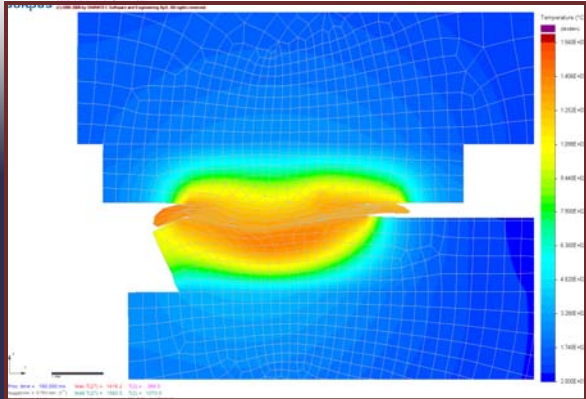
- **Weld Inspection**
 - Dimensioning
 - Photographing
- **Metallurgical inspection**
 - Formed Parts
 - Heat Treated Parts
- **Microstructure and Chemical Analysis of welded/joined components**
- **Fatigue Analysis**
- **Structural Teardowns for weld quality validation**
- **In House Microhardness Testing**
 - Single Line Traverses
 - Custom Path Traverses
 - Color-coded Hardness Grid Patterns
 - Case Hardness
- **Mechanical Evaluation of welded/joined materials**
 - Tensile Tests
 - Shear Tests
 - Bend Tests

We have experience in:

- **Mild and HSLA Steels**
- **AHS Steels**
 - Dual Phase Steel
 - TRIP Steels
 - Boron Steels
 - Complex Phase Steel
 - Martensitic Steel
 - Stainless Steel
- **Non-Ferrous Materials**
 - Aluminum
 - Titanium

Projection Weld on Mild Steel





METALLURGICAL LABORATORY

Employing CAE and Statistical Methods to further enhance process development and stability.

Cross Section of the Final Heat Pattern for a Full Ring Projection—SORPAS

The RES Lab utilizes and evaluates new approaches to process development and stability to lower costs. At our disposal are software available in industry today.

Including:

CAE

- SORPAS
- Mini Tab
- Design Expert
- AutoCAD

Relational Process Changes:

CAE can help answer common RSW questions such as:

- How will this electrode change my process and parameters?
- How will a material change effect my process?

Design of Experiment

- Setup and Analysis
 - Classical
 - Taguchi

Resulting Weld Nugget from a 4-T weld—SORPAS

