



Proto's x-ray diffraction (XRD) measurement services provide characterization solutions for a wide range of applications including shot peening, heat treatment, surface enhancement, grinding, machining, welding, corrosion, and fatigue. Our state-of-the-art laboratories are equipped with specialized instrumentation to ensure reliable and accurate results.



CAPABILITIES

## INSTRUMENTATION

- 11 high-speed laboratory LXRD® residual stress and retained austenite measurement systems
- 9 portable iXRD® residual stress and retained austenite measurement systems
- 4 AXRD® general purpose powder diffractometers
- Laue-HT single-crystal orientation system
- LXRD-SC single-crystal residual stress system
- High-speed hole drilling RS system
- Wet chemistry laboratory for sample prep
- 8818-V3 electropolishers
- Metrology lab with high-accuracy profilometers
- Strain gauging



## OUR OFFICES

With laboratories located across the globe, our team is ready to facilitate all your project needs. Our facilities are equipped with both state-of-the-art instruments and knowledgeable technicians. You'll find a team of highly skilled professionals at all of our locations who are ready and willing to address your specific testing requirements.

TECHNOLOGY THAT DELIVERS ACCURATE RESULTS.

[www.protoxrd.com](http://www.protoxrd.com)

# PROTO

## XRD LABORATORY MEASUREMENT SERVICES

CONTACT US FOR A QUOTE TODAY! 1-800-965-8378

Residual Stress Measurement, Retained Austenite Analysis,  
Laue Single-Crystal Orientation, Powder Diffraction

### USA

Proto Manufacturing Inc.  
12350 Universal Drive  
Taylor, Michigan, 48180-4070  
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[info@proxrd.com](mailto:info@proxrd.com)

ISO/IEC 17025:2017 ACCREDITED  
ITAR REGISTERED

### CANADA

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Oldcastle, Ontario, N0R 1L0  
Tel 1-519-737-6330  
[protocanada@proxrd.com](mailto:protocanada@proxrd.com)

ISO/IEC 17025:2017 ACCREDITED  
CONTROLLED GOODS REGISTERED



**EXPERIENCE**  
IN X-RAY DIFFRACTION



**COMPLIANCE**  
NATIONAL & INT'L STDS



**KNOWLEDGE**  
OF DIVERSE INDUSTRIES



**QUALITY**  
ISO/IEC 17025:2017 ACCREDITED



# SOLUTIONS

Use our ISO/IEC 17025:2017 accredited laboratories to get the most reliable and accurate x-ray diffraction results.

## RESIDUAL STRESS MEASUREMENT

ASTM E915, ASTM E2860, ASTM E1426, SAE HS-784, RS vs. depth, RS mapping

## RETAINED AUSTENITE ANALYSIS

ASTM E975, SAE SP-453, Rietveld analysis, carbide evaluation

## SINGLE-CRYSTAL ORIENTATION

Determine the orientation of single-crystal materials using Laue XRD

## POWDER DIFFRACTION

Phase identification, quantitative phase analysis, nitride layer analysis



# WHY CHOOSE US?

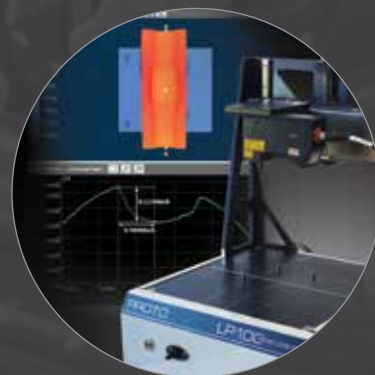
With over 30 years specializing in XRD technology, Proto is proud to be recognized as having world-class x-ray diffraction laboratories. When you choose Proto, you are getting more than just measurements; you become a valued part of our network and gain access to our extensive residual stress and retained austenite measurement knowledge and experience.



COMPREHENSIVE SOLUTIONS



SPECIALIZED TECHNICIANS



ADVANCED TECHNOLOGY



ACCURATE RESULTS

# THE WORK

AUTOMOTIVE - AEROSPACE - POWER GENERATION  
MILITARY - MARINE - MEDICAL - PIPELINES

1 iXRD Modular Mapping system being used to quantify the residual stress around a cooling hole on an aerospace turbine component.

2 MG15 mini goniometer measuring residual stress inside a 60 mm diameter automotive engine cylinder bore.

3 Residual stress map of a brake rotor surface using an LXRD laboratory residual stress mapping system.

4 On-site measurement of a power generation steam turbine blade retention slot using an iXRD MG40 on a FS4 field stand.

5 Characterizing stress corrosion cracking (SCC) susceptibility on an aircraft frame using an iXRD portable residual stress measurement system.

