Reverse Engineering & Design Improvements

Waukesha® Components has built a strong reputation as an industry leader in reverse engineering, design enhancement and manufacturing with exceptional quality and service. Our success in this area can be attributed to a continued commitment to utilizing new materials and technologies to fuel the development of new products and solutions to meet the electric industry's needs.

OUR PHILOSOPHY

Our experts assess the geometry and materials of OEM components, uncovering opportunities for performance and efficiency improvements. By doing this, we create innovative, new replacement components that outperform original specifications.

- Latest technology and design tools
- 3D modeling to test-fit mating parts
- Finite element analysis (FEA) to evaluate mechanical stresses
- Materials analysis for application verification and improvements using current availabilities

OUR PROCESS

Reverse engineering starts with a customer need and full or partial sample component. We begin with a precision assessment and thorough documentation of the component geometry and dimensional information. Component geometry is measured electronically using a coordinate measuring machine (CMM). The measurements are downloaded into an integrated CAD/CAM system with cross-section components integration capabilities.

Exhaustive analysis and testing of materials is then done to establish composition, mechanical and electrical properties. Only materials that are equal to or exceed OEM specifications are used.

Finally, an understanding of the form, fit, function and typical failure modes are reviewed with the customer to gain a thorough understanding of how the component is used prior to the output of manufacturing drawings.

Our organization has a full suite of equipment and tools to create better-than-original components:

- Ability to analyze and test material samples and components
- X-ray fluorescence spectrometry (XRF)
- Feature bases scanning machines
- Coordinated measuring machines (CMM)
- Integrated CAD/CAM systems with cross-section components integration capabilities
- 3D digital modeling

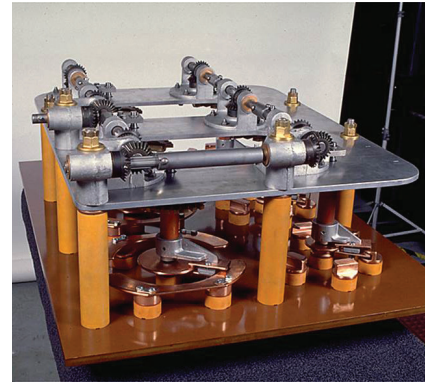We can be your source for obsolete component development!
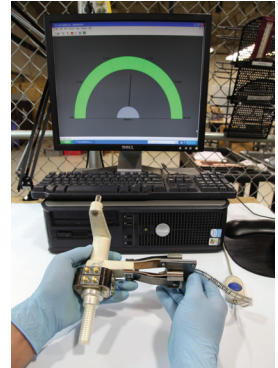
Precision machining capabilities and ISO manufacturing allow for high quality components.
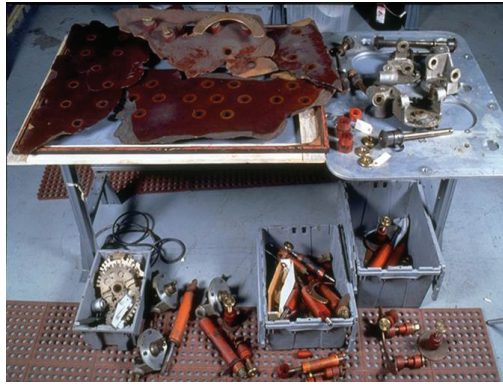
Initial disassembly and inspection of incoming materials.

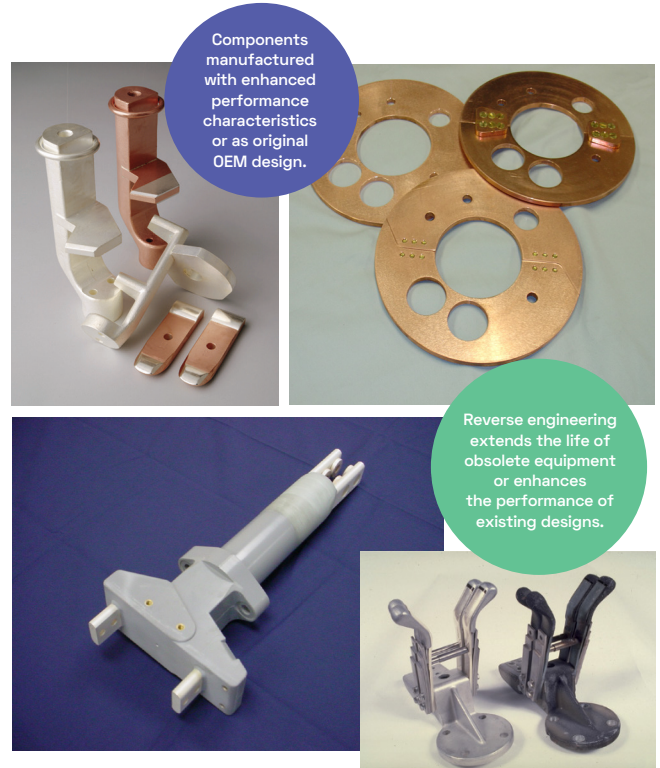Refurbished equipment ready for deployment.

DESIGN IMPROVEMENTS

Whether hardening parts to provide improved performance and reduce resistance or changing designs to reduce mechanical wear and failures, our engineers start with existing designs and apply 21st century intelligence, manufacturing standards and materials to help reduce your routine fleet maintenance and operating costs.

Past successes include:

- Self-aligning selector contacts
- Improved split ring designs
- Redesigned diverter castings
- ELR® (Extra Low Resistance) anti-coking material
- Materials upgrade from moisture-absorbing phenolic to moisture-resistant fiberglass reinforced epoxy

In addition to reverse engineering, Waukesha® Components partners with utilities to provide a comprehensive suite of solutions:

- Transformer parts and components
- Load tap changer and oil circuit breaker parts
- Transformer Health Products®
- Training
- Complete transformer service solutions

Components manufactured with enhanced performance characteristics or as original OEM design.

Reverse engineering extends the life of obsolete equipment or enhances the performance of existing designs.

PARTNERSHIP VALUE

Capital budgets run thin. O&M budgets face pressure from rising costs and organizational desire to reduce spend. Prolec GE Waukesha helps you stretch your budget by providing better-than-original solutions that can lengthen duty cycles and reduce maintenance spend. We serve as an extension of your organization's capabilities, providing resources to help maximize your budgets and reduce the burden on your internal engineering and maintenance resources.

Contact us for more information. To download an order form, technical manual, field maintenance manual and/or technical paper, visit our website.

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