

CPRW

CONTROLLED PULSE RESISTANCE WELDING



CPRW for Fastener Welding

Ver. 2.0



CenterLine (Windsor) Limited
CENTERED ON SOLUTIONS

Welding Fasteners to Advanced Automotive Materials



As automotive designs evolve, more vehicles are being built with ultra-high-strength steels and hot-stamped boron. These materials offer exceptional performance but they also pose serious challenges for welding.

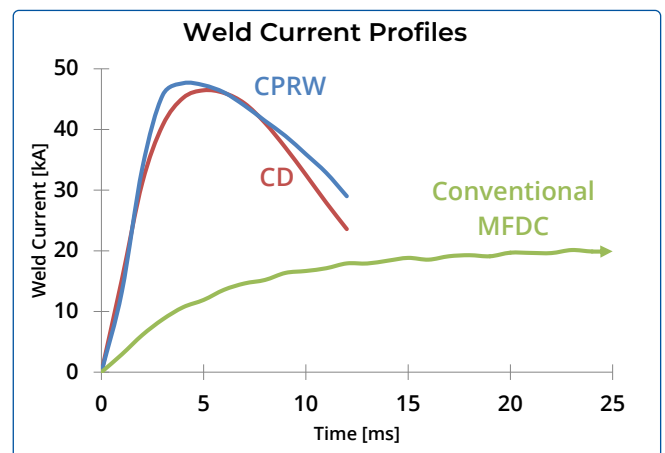
The Challenge: Traditional welding methods often struggle with reliability on these advanced substrates.

The Costly Workaround: Specialized Capacitive Discharge (CD) welding machines are commonly used to address these issues, but they are expensive and application-specific.

The Need: Manufacturers require a dependable, cost-effective solution that delivers consistent weld quality without breaking the budget.

CenterLine's Controlled Pulse Resistance Welding (CPRW) process:

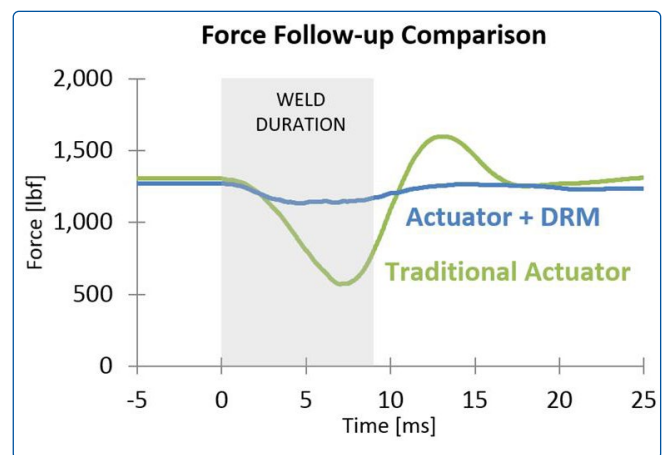
- Provides a **cost-effective** solution for projection welding fasteners to ultra-high-strength and hot-stamped boron steels.
- Delivers **consistent, high-quality** welds without the need for expensive CD welding equipment.
- Offers a **versatile alternative** to traditional, application-specific CD welders. It is ideal for structural automotive components.



CPRW fast high-peak weld current and short weld time, comparable to CD welding.

Features

- **CPRW Process:** Utilizes MFDC weld control and low impedance transformer for high current, higher voltage, short weld time, and fast follow-up with the Dynamic Response Module™ (DRM™). Comparable to CD welding machines but at lower cost and shorter cycle time.
- **MFDC Weld Control:** Enables use of projection welder for various workpieces and fasteners.
- **VeriFast™ Monitoring:** Prevents weld if fastener process parameters are out of tolerance.
- **Increased Electrode Life:** Optimized current density with CenterLine electrode design and CPRW weld times, reducing cooling water needs and extending electrode maintenance intervals.



Fast and consistent weld force follow-up throughout the welding process, ensures consistent and predictable fastener projection weld quality across welds.



Contact CenterLine's applications team for solutions to meet your specific process needs.

Powered by the Patented Dynamic Response Module™ (DRM™)

To ensure the CPRW process performs at its best, CenterLine integrates its patented **DRM**:

- Installed between the actuator and electrode to maintain consistent force during the collapse of fastener projections.
- Enables high-speed weld force follow-up, which is essential for CPRW's precision and reliability.
- Compatible with any actuator, including OHMA Weld Cylinders, Servo Actuators, and Air Cylinders, ensuring flexible integration and consistent performance.



DRM

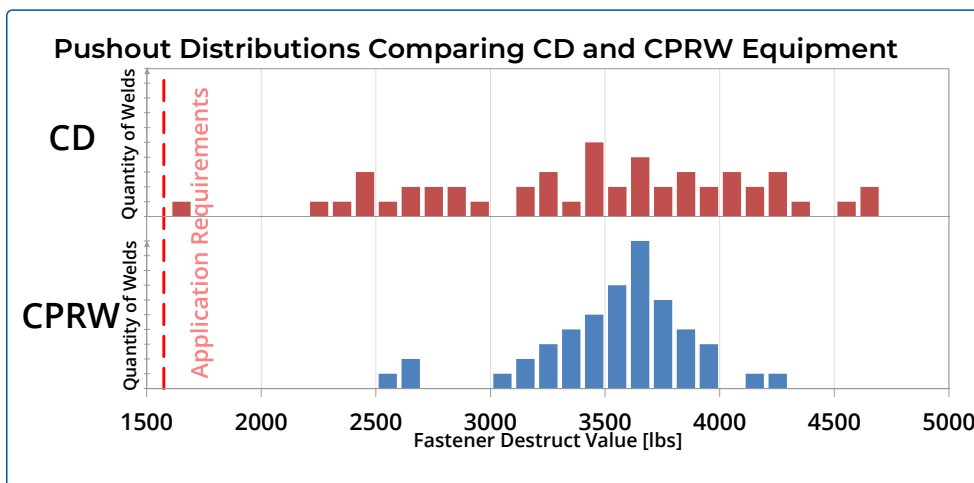
- Actuator Connection Point
- High-Pressure Air Inlet - Connects to Air Booster
- Weld Proceed Switch
- Rod - Connects to the Electrode Adapter

Features

- **Consistent Performance:** DRM offers reliable follow-up independent of welding actuator.
- **High-Pressure Air:** Pressurized up to 285 psi using the CenterLine **Air Booster (shown)**.
- **Process Monitoring:** Integrated Weld Proceed switch ensures proper charge and set weld pressure.
- **High Weld Force:** Maintains 90% or greater weld force throughout the weld event, with max 2 mm travel displacement.
- **Sustainable Operation:** Unlike conventional systems, designed to operate without consuming air from cycle to cycle.
- **Bore Sizes:** Available in 63 mm and 80 mm.

Air Booster

- Boosts air pressure up to 285 psi with a 5.5:1 compression ratio.
- Delivers air on demand, eliminating the need for a surge tank.
- Replaces commercial air booster cylinders that have a limited duty cycle.

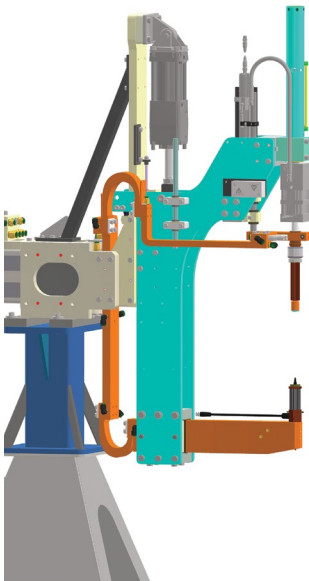


A histogram showing fastener destruct data of a CD machine and CPRW machine welding the same application.

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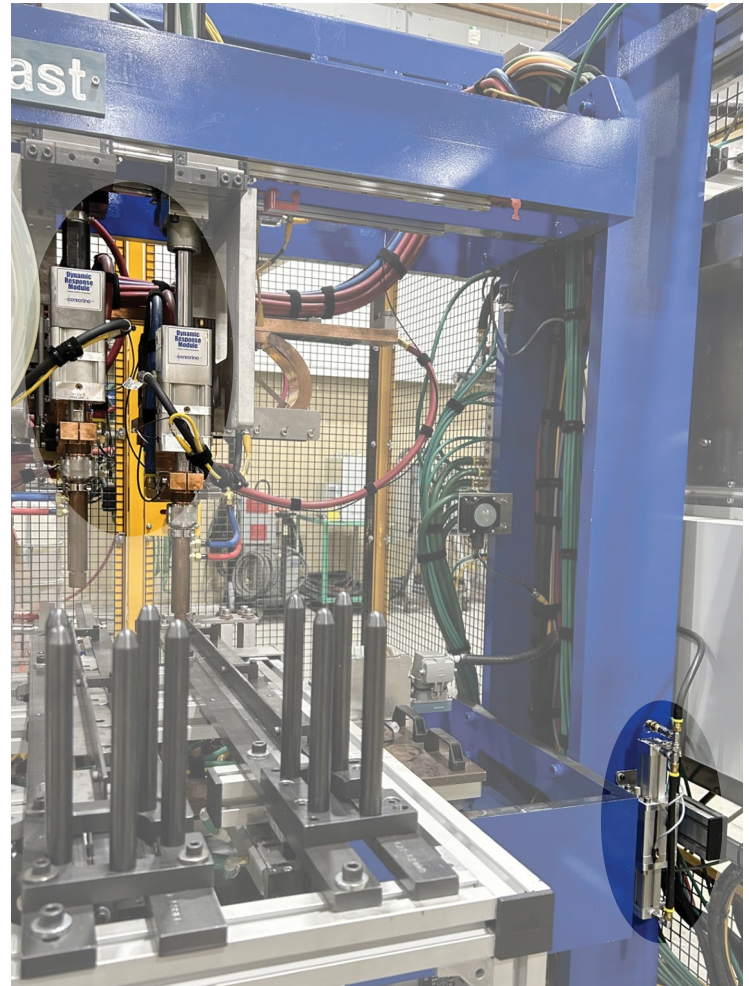
PRODUCTS



FlexGun™ Projection
Welding Gun



SoftMount™ Gun



FlexFast™ Fastener Welder
Uses CPRW process with DRM and Air Booster

Certain products and technologies described in this document are protected by patents or are patent pending. For more information, visit www.cntrline.com/patent.



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