

PWS TEMPERATURE CONTROL

Precision Thermal Control for Catheter Tipping



The PWS Temperature Control System enhances the proven PlasticWeld induction tipping platform with direct-contact temperature measurement, improved thermal stability, and real-time thermal feedback. The result is a more accurate, more consistent, and more controllable catheter tipping process with measurable yield improvement and validation confidence.

Applications

Process	Example Use	Result
Temperature- Controlled Tipping	PTCA, PTA, and neurovascular catheters	More uniform tips; reduced variation
Multi-Step Tip Forming	Soft-to-hard transitions, tapered tips	Predictable heat delivery; stable geometries
Long-Run Production	High-volume catheter assemblies	Lower scrap; improved process capability
Tight-Tolerance Tips	Micro catheters and small-diameter shafts	Accurate thermal control; consistent profiles
Validation-Driven Manufacturing	Regulated product lines	Documented stability; easier validation

Technical Highlights

Direct Temperature Measurement	Real-time, closed-loop control with actual tip temperature feedback for improved accuracy.
Stable Thermal Performance	Reduces drift across runs, shifts, and operators for predictable process windows.
PLC-Based Control + Visualization	Real-time thermal curve display, data capture, and rapid troubleshooting.
Backward Compatible Tooling	Most existing PlasticWeld molds adapt directly, preserving customer investment.
Open Tooling Platform	Supports customer-designed molds for specialized tip geometries.
Solid-State RF Generator	Reliable energy delivery for stable heating cycles.
Integrated Data Logging	Cycle-level parameters stored for traceability and validation documentation.
High Temperature Capability	Up to 500 C for a full range of thermoplastic catheter materials.



Why PWS Temperature Control?

- **Precision Without Variability:** Direct-contact thermal measurement provides stable, repeatable temperature control during tip forming. This reduces scrap and supports high-yield production environments.
- **Validation-Ready Performance:** Each cycle records thermal data and system parameters to support ISO 13485 and FDA validation requirements.
- **Upgrade Without Workflow Change:** Operators familiar with PlasticWeld Systems will run the upgraded platform without retraining. Tooling, workflow, and setup processes remain consistent.
- **Production-Ready Stability:** Eliminates temperature drift and reduces the number of iterations needed to qualify a stable process window.
- **Serviceable & Scalable:** Designed for production lines where predictable uptime, repeatability, and quality documentation are required.

Specifications

Temperature Measurement	Direct-contact thermocouple feedback
Temperature Range	Up to 500 C
Control System	PLC-based logic with real-time visualization
Data Logging	Integrated cycle-level parameter capture; exportable records
Generator	Solid-state RF induction heating source
Tooling Compatibility	Most existing PlasticWeld molds; supports custom designs
Connectivity	Ethernet; factory network integration available
Utilities	120 VAC / 230 VAC power; clean dry air as required