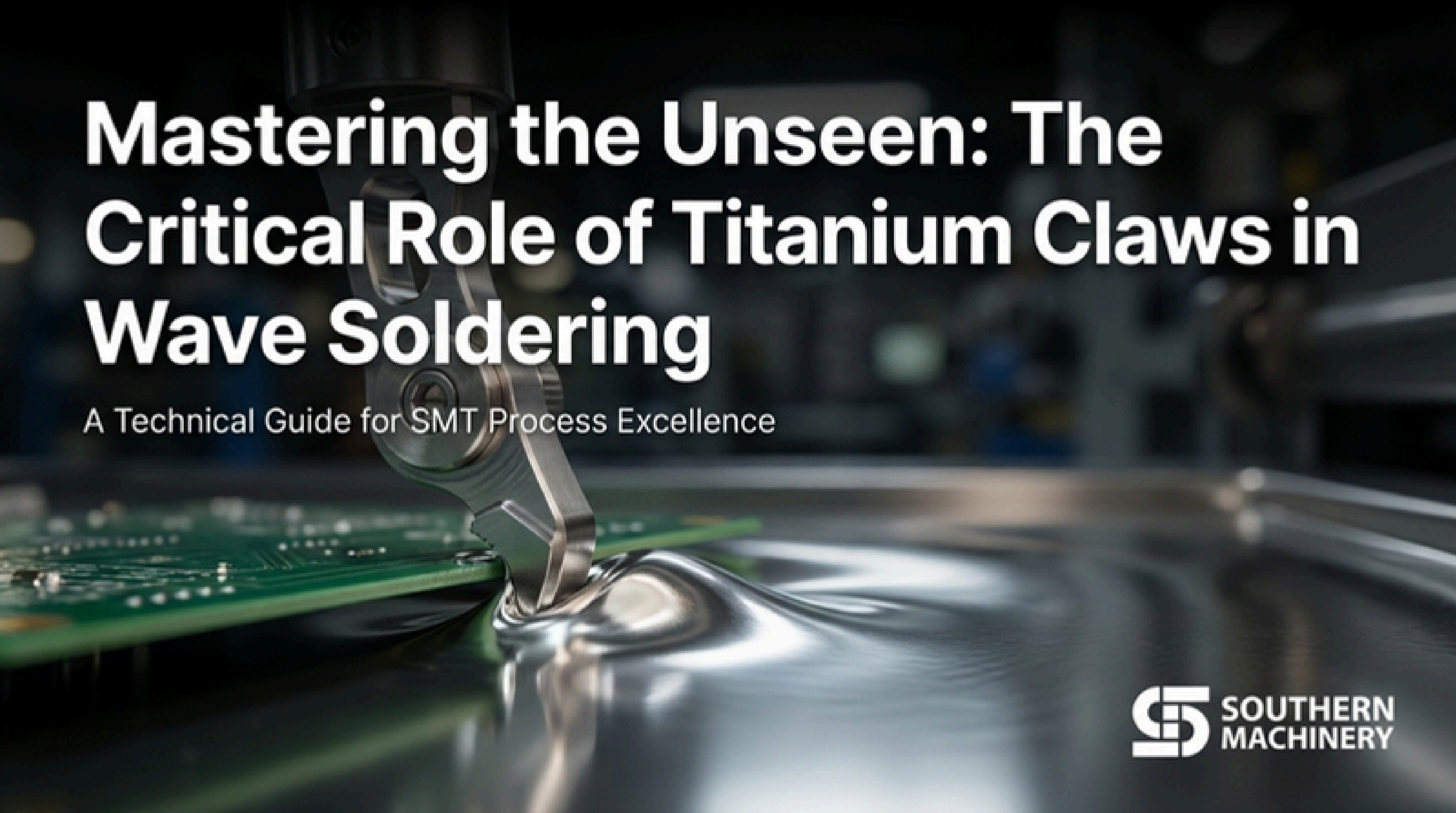


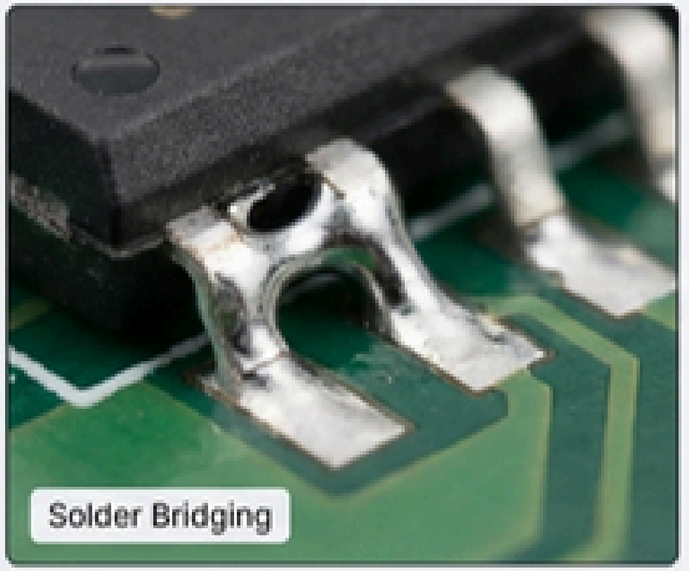
Mastering the Unseen: The Critical Role of Titanium Claws in Wave Soldering

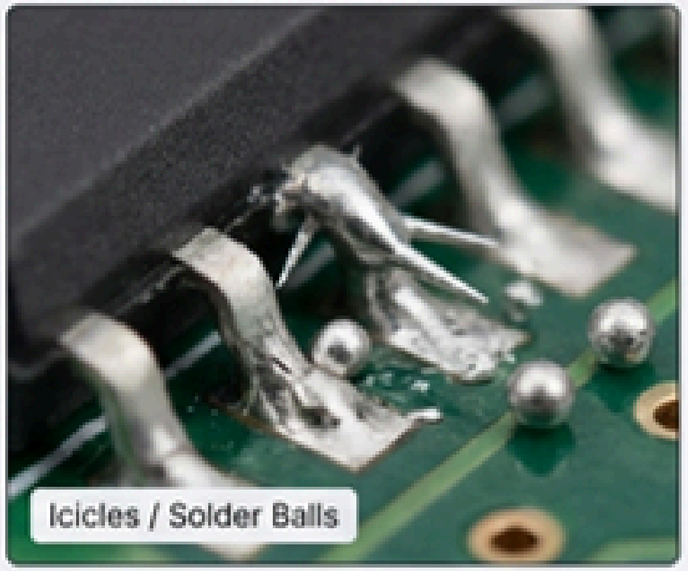
A Technical Guide for SMT Process Excellence

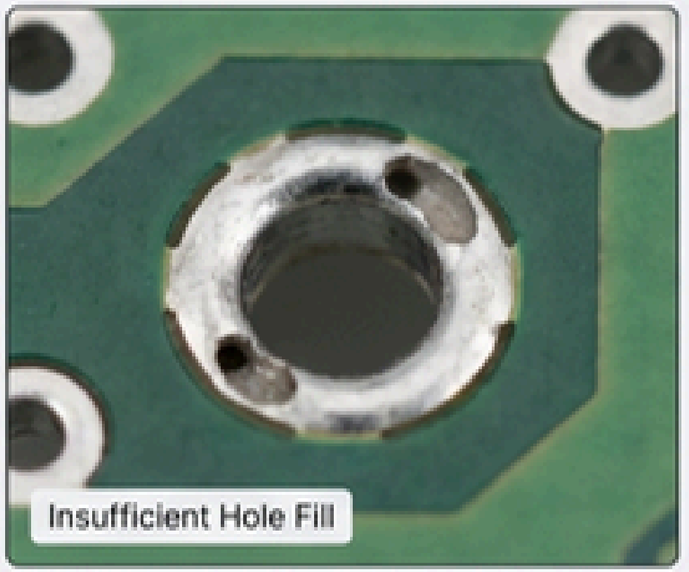
SOUTHERN MACHINERY

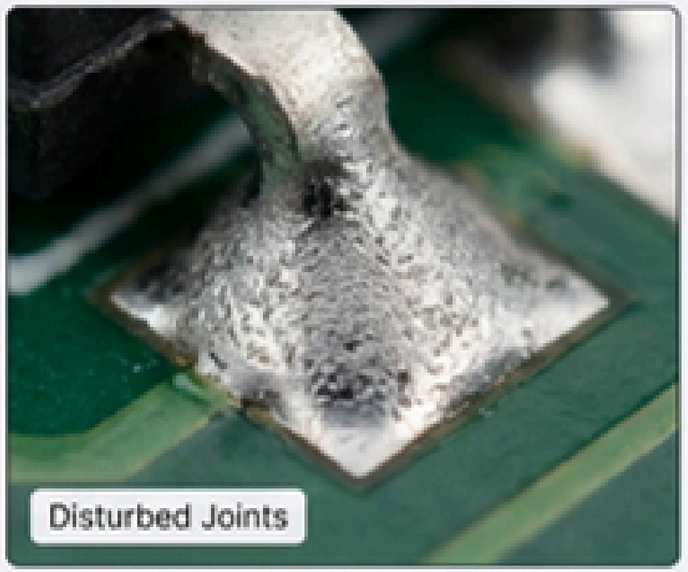
The Daily Battle for Perfect Solder Joints

You've calibrated pre-heat temperatures. You've optimized the flux. You've profiled the solder wave. Yet, defects persist. What if the root cause is hiding in plain sight?





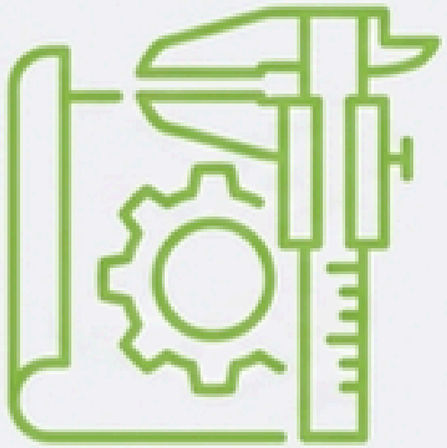




Your Process is Only as Strong as Its Smallest Point of Contact

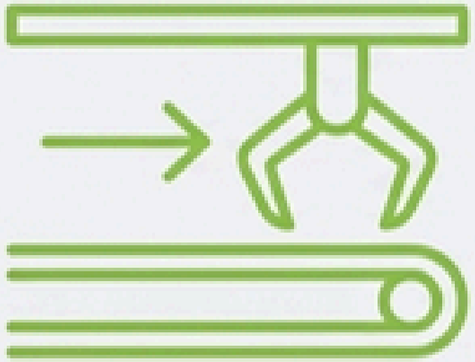
Every board's journey is dictated by the precise, consistent grip of the conveyor claw. It is not a passive component; it is an active participant in quality control.

The Toolkit for Claw Mastery and Defect Elimination



1. SELECT

The Science of Claw Geometry.
Choosing the right design for your application.



2. USE

Precision in Motion.
How the transport system impacts performance.

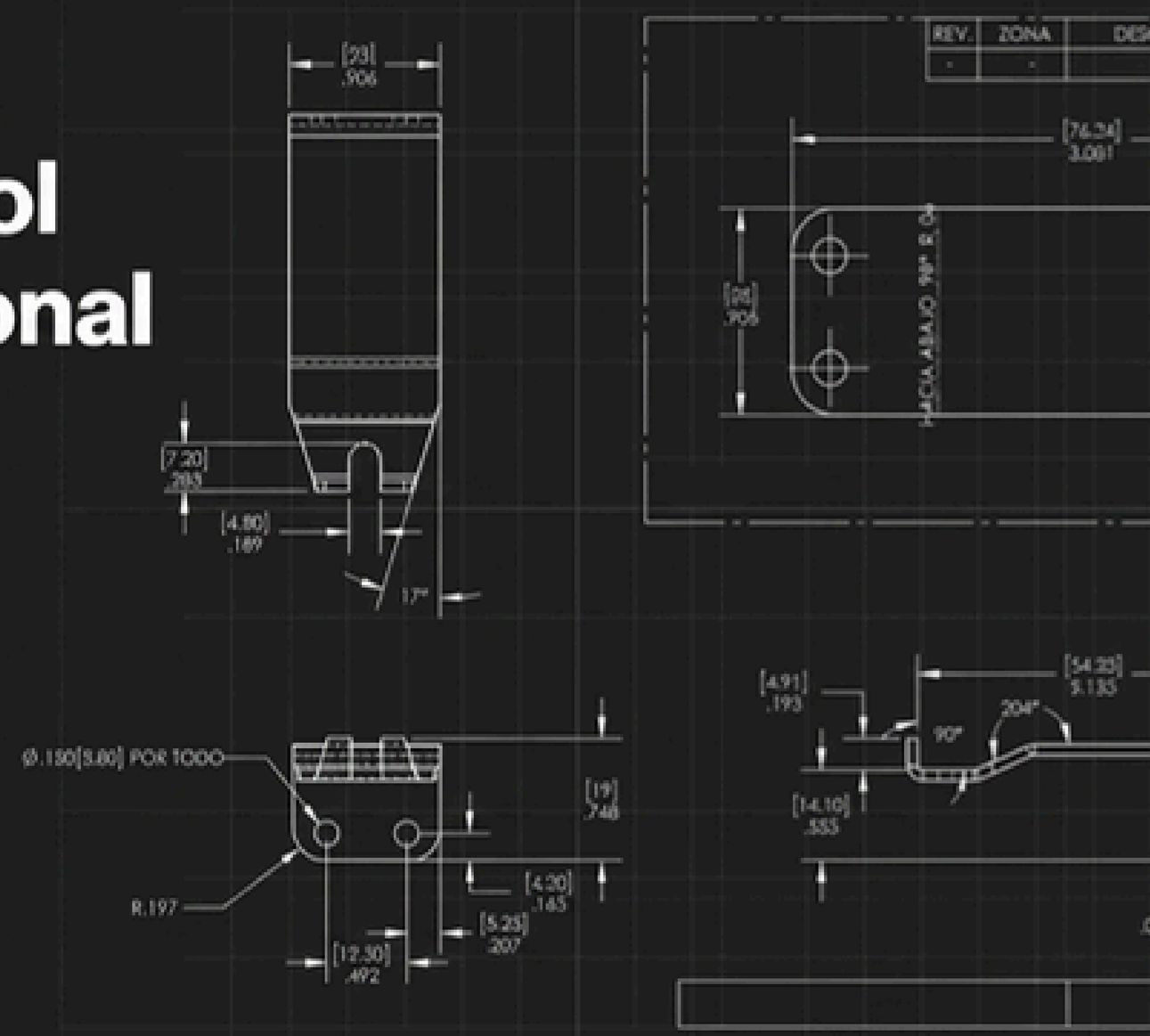
3. MAINTAIN

Achieving Consistency.
The critical role of automated cleaning.

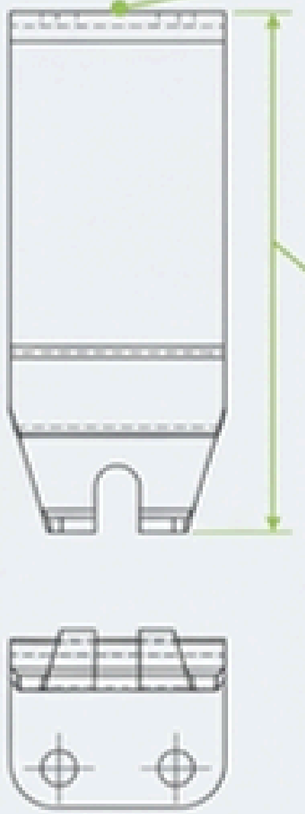
PART 1: SELECT

Choosing the Right Tool for the Job is Not Optional

Claw geometry is a critical process variable. The shape, profile, and material directly influence PCB stability, thermal dynamics at the board edge, and solder flow. An incorrect choice introduces process instability from the very first step.

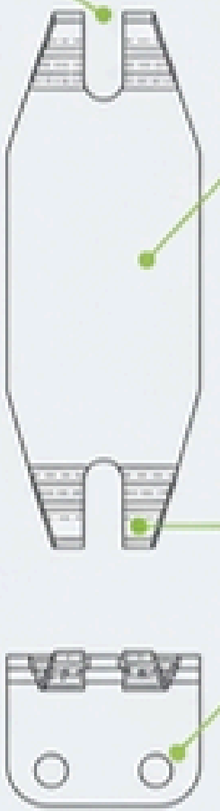


Anatomy of a High-Performance Claw: Key Design Factors



Contact Point Geometry (L vs. V): L-Type offers broad support for heavier boards. V-Type provides **minimal contact** to prevent solder wicking.

Profile & Clearance: The claw's height and shape must provide clearance for components near the PCB edge.



Material Integrity: Titanium is essential for its high strength, low thermal mass, and non-wetting properties in contact with solder.

Mounting System: Our 'dedicated heavy double claw' design prevents deformation and ensures a stable grip, even on large boards.

A Claw Engineered for Every PCB Application

Soltec V-Type

For standard applications requiring minimal contact.

JT10434 Series

Multiple geometries for specialized board thicknesses and edge profiles.

L-Type Finger

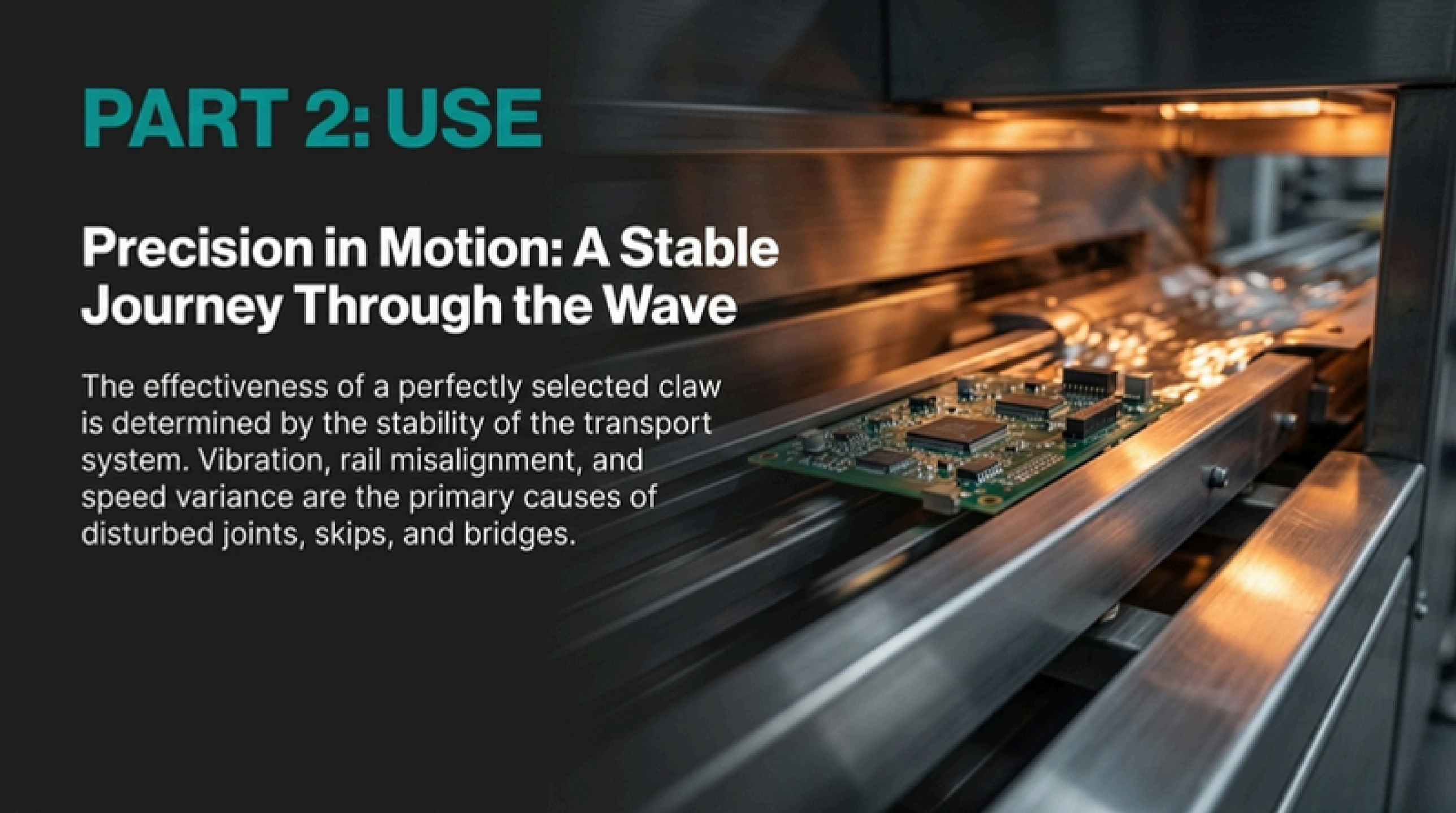
Robust design for maximum edge support.

Our extensive catalog provides solutions for varying PCB thicknesses, weights, and edge-component densities. Match the claw precisely to your product for optimal yield.

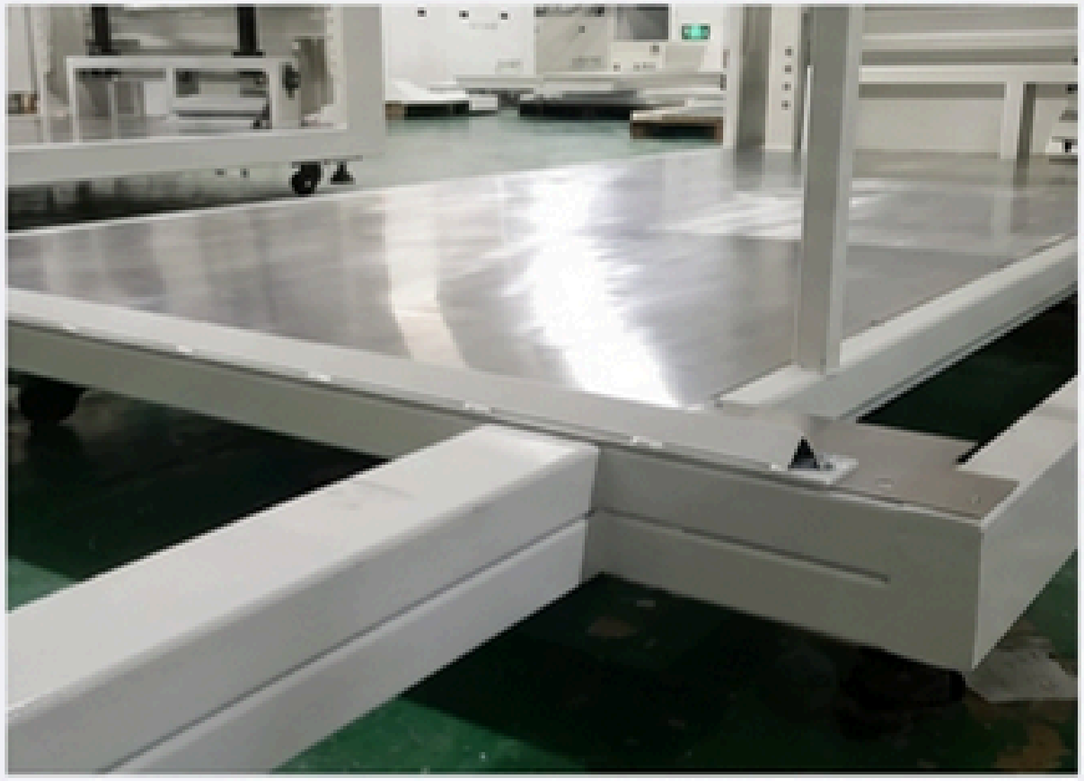
PART 2: USE

Precision in Motion: A Stable Journey Through the Wave

The effectiveness of a perfectly selected claw is determined by the stability of the transport system. Vibration, rail misalignment, and speed variance are the primary causes of disturbed joints, skips, and bridges.



Engineering Stability from the Ground Up



Rock-Solid Frame

- Our chassis uses 120x60x5 square two-layer welding to eliminate deformation and vibration over the machine's lifetime.
- Unyielding guide rail parallelism is maintained with a precision of less than 0.2mm.

Frictionless Transport

- The unique ball structure ensures the claw moves without friction or jitter, guaranteeing smooth contact with the solder wave.

PART 3: MAINTAIN

Consistency is King: The Fight Against Contamination

Over time, even the best titanium claws accumulate flux residue and oxidized solder.
This buildup is the silent killer of process consistency.

START OF SHIFT

END OF SHIFT - UNCLEANED

How Buildup Compromises Your Solder Joints

Thermal Instability

Residue acts as an insulator, preventing consistent heat transfer from the pre-heaters to the PCB edge, leading to poor wetting.

Solder Adhesion & Dross

Contaminated claws are no longer non-wetting. They pick up solder ('adhered tin'), which then oxidizes and introduces dross into your pot.

Loss of Grip & Jitter

Buildup physically alters the claw's geometry, compromising its grip. This introduces vibration at the most critical point: the solder wave.

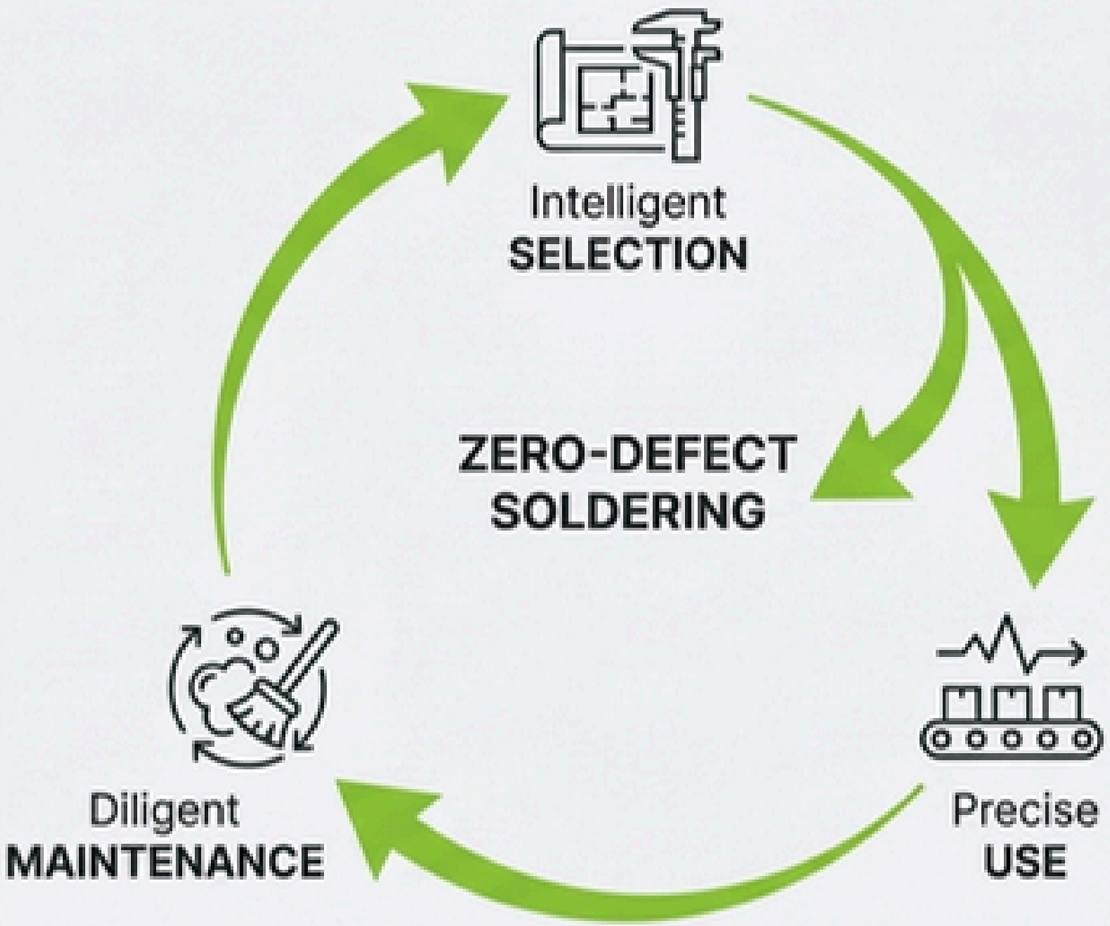
The Solution: Integrated, Automated Claw Washing

Manual cleaning is inconsistent and labor-intensive. The Southern Machinery S-WS series integrates an automatic washing device to guarantee every cycle begins with perfectly clean claws.

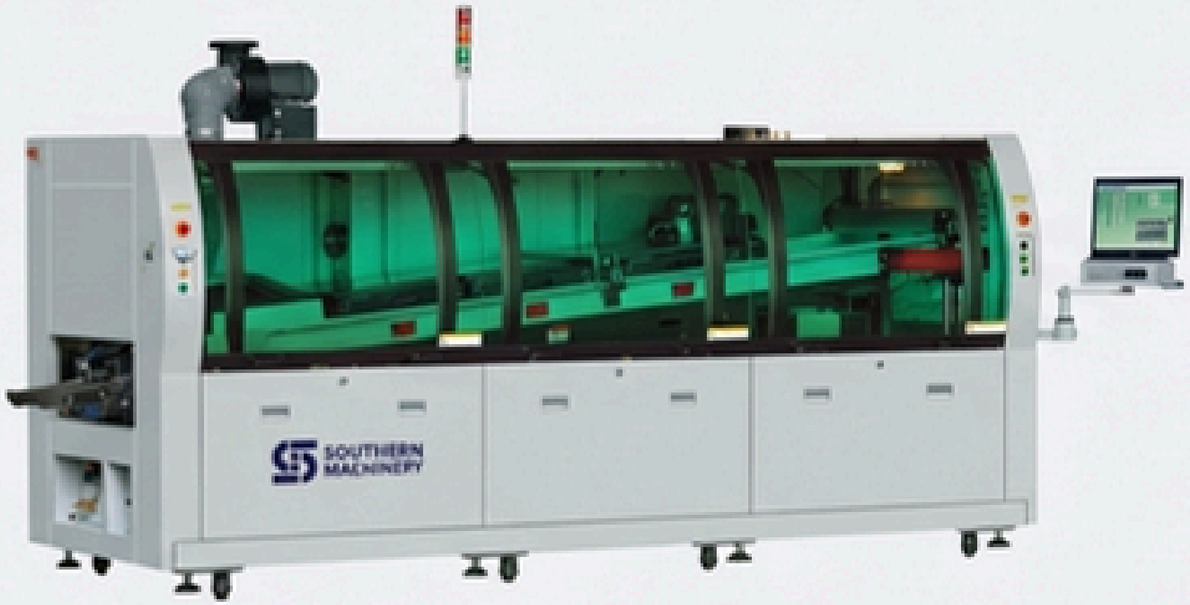
Key Features:

- **System:** Utilizes an imported, anti-corrosion chemical pump for reliability.
- **Method:** Washes claws from both sides using a propyl alcohol solvent.
- **Efficiency:** The system operates in an automatic, recycled cleaning loop, ensuring process stability without operator intervention.

The Path to Process Control: The Mastery Loop



True process mastery is not a single action, but a continuous cycle. By mastering the selection, use, and maintenance of your titanium claws, you gain direct control over soldering quality and yield.



The Southern Machinery Advantage

- **Precision-Engineered Systems:** Robust, stable machine platforms designed to eliminate transport jitter.
- **Application-Specific Components:** A comprehensive catalog of titanium claws to match any PCB design.
- **Integrated Process Automation:** Features like automatic claw washing ensure repeatable quality, shift after shift.
- **Expert Partnership:** We provide end-to-end SMT & THT solutions, from components to full line integration.

Optimize Your THT Assembly Line

Contact our engineering team to discuss your specific manufacturing challenges and explore our complete wave soldering solutions.

Web: www.smthelp.com
Email: info@smthelp.com
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SOUTHERN MACHINERY

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