BUILT ON AUTOBLOCKS · CASE STUDY

# INDUCTION BRAZING GANTRY SYSTEM

3× throughput. 75% less labor. And the customer keeps adding recipes.

HIGH-PRECISION COPPER-TUBE BRAZING · CUSTOM 25-FT GANTRY

**3×**
THROUGHPUT VS. MANUAL FIXTURING

**+12**
RECIPES ADDED BY CUSTOMER TEAM VIA AUTOCODE

**25 ft**
SINGLE CONTROL BLOCK END TO END

**Two work tables. One Control Block. Operators load one fixture while the gantry solders the other — continuous production with no idle time. Built to scale with the customer's process, not freeze with it.**

# The Challenge / The Solution / The Outcome

INDUCTION
BRAZING
GANTRY SYSTEM

## THE CHALLENGE

The customer manufactures high-precision copper-tube assemblies for industrial applications where every brazed joint is mission-critical and a rejected part is expensive to scrap. Their existing manual brazing process couldn't keep up with rising demand: operators hand-fixturing copper tubes, manually positioning the induction coil, and managing process timing introduced variability that pushed defect rates higher than the customer could accept. Three operators per shift wasn't sustainable as volumes grew.

They needed a production system that could deliver process consistency, scale across a wide range of copper-tube sizes, and run with minimal operator intervention — **without** locking them into a vendor's proprietary control stack.

## THE SOLUTION

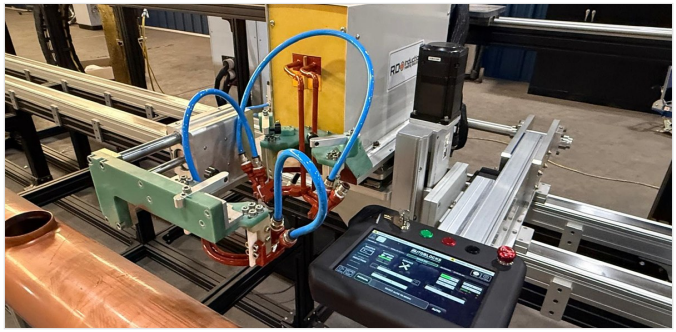
A custom 25-foot Cartesian gantry built on the Autoblocks Control Block, paired with an **RDO Induction Heating Solutions** power supply for repeatable, recipe-driven heat delivery. The gantry positions copper tubes and the induction head with closed-loop precision; the RDO unit handles the brazing process; the Control Block coordinates everything — motion, induction recipes, material handling, safety circuits, and operator interface — from a single platform. No PLC. No separate motion controller. No third-party HMI to integrate.

The entire system is programmed in **AutoCode** — Autoblocks' 27-command human-auditable language — so operators run the cell from the Pendant and engineers add new product variants without writing PLC code.

## THE OUTCOME

**3× throughput** against the manual baseline. Labor reduced 75% — one operator now runs the system that previously required three. Defect rate dropped from over 4% to under 0.5% via closed-loop motion repeatability and recipe-driven induction control. Cost per finished assembly dropped sharply, and the system runs reliably across long production shifts.

The strongest payoff came after deployment. As the customer extended their copper-tube product line, **their own engineering team added more than a dozen new recipes** covering additional tube diameters and joint geometries — all directly through the Pendant, all in AutoCode, all without a vendor callback. The gantry runs the same architecture it shipped with; the customer's process expanded around it. That's the difference between a turnkey machine and a platform.



## CELL ARCHITECTURE

- **Controller:** Autoblocks Control Block — motion, logic, safety, HMI in one
- **Motion Platform:** Custom 25-ft Cartesian gantry built on Autoblocks
- **Brazing Process:** RDO Induction Heating Solutions — precision induction power
- **Material Handling:** Automated infeed/outfeed with part tracking
- **Sensing:** Closed-loop multi-axis position feedback
- **HMI:** 10.1″ Autoblocks Pendant
- **Programming:** AutoCode (27-command, human-auditable)
- **Safety:** Integrated PLe / Cat 4 / SIL3 architecture
- **Customer-added:** 12+ new copper-tube recipes via AutoCode

INTEGRATION PARTNER

RDO Induction Heating Solutions

### THE PLATFORM DIFFERENCE

Most automation cells are **frozen at delivery**. Built on Autoblocks, this gantry kept growing with the customer's product line — new recipes, new tube sizes, new joint geometries — all added by the customer's own team in AutoCode.



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