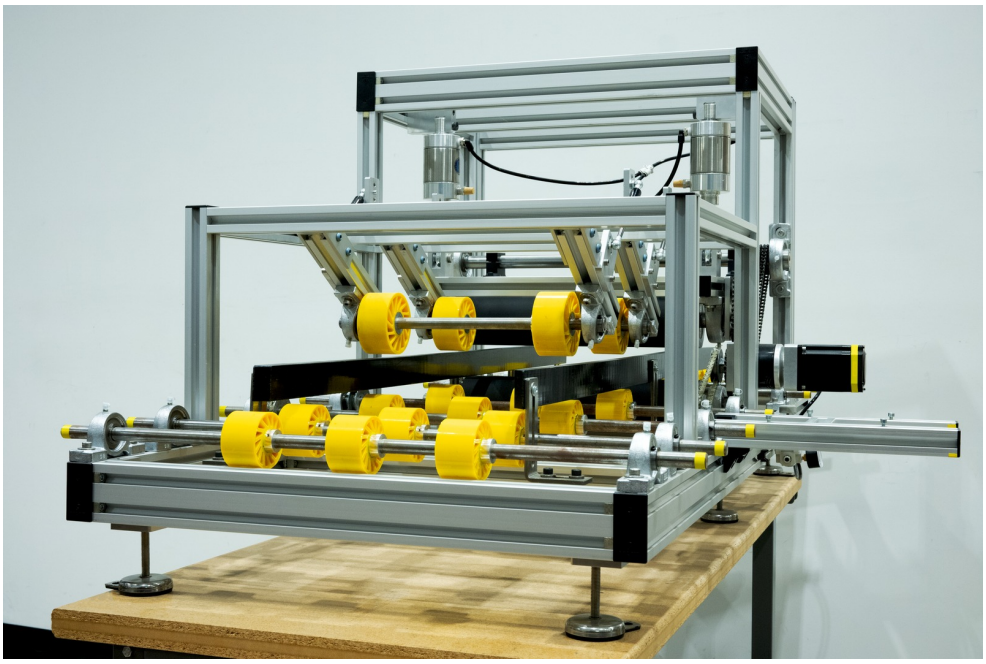
BUILT ON AUTOBLOCKS · CASE STUDY

INDUCTION EPOXY CURING PRESS

Oven eliminated. Energy costs slashed. Targeted induction heat. Standardized control.

STRUCTURAL COMPOSITES · LAMINATED ASSEMBLY MANUFACTURING



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CONVENTIONAL BATCH OVENS REQUIRED IN THE NEW PROCESS

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CONTROL BLOCK ORCHESTRATES SPEED, PRESSURE & HEAT

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ABSOLUTE MOTOR CONTROLS PRESS FEED & FORCE PROFILE

Autoblocks controls the speed, pressure, and temperature of every cure cycle. Targeted induction heat at the aluminum core -- not an entire oven chamber -- delivers massive energy savings and a repeatable process locked in AutoCode.

The Challenge / The Solution / The Outcome

INDUCTION
EPOXY
CURING PRESS

THE CHALLENGE

A manufacturer of laminated structural composites had long relied on conventional batch ovens to cure the epoxy in assemblies built around aluminum core inserts. The process was energy-intensive by design: the oven had to heat an entire chamber -- fixturing, air, and all -- to bring the bond line up to cure temperature. Throughput was limited by oven cycle time, and energy costs tracked directly with production volume.

What the process actually needed was targeted heat at the aluminum core -- not a room-sized thermal event. The challenge was coupling that targeted heat with controlled press pressure in a single, repeatable, programmable cycle.

THE SOLUTION

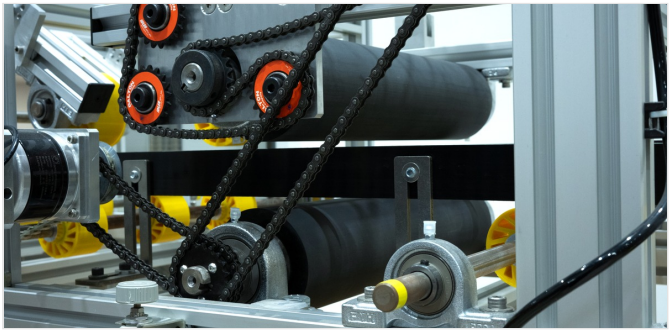
Autoblocks built an induction epoxy curing press purpose-built for this application. An RDO Induction power supply drives an induction coil that heats the aluminum core insert directly -- bringing the bond line to cure temperature without heating the surrounding structure or ambient air. A pneumatic cylinder provides the clamping force; an Autoblocks Absolute Motor controls press feed rate and force profile throughout the cure cycle. The entire sequence -- approach speed, dwell pressure, heat enable, cure timer, and release -- runs from a single Autoblocks Control Block.

The cycle is programmed in AutoCode, Autoblocks' human-auditable 27-command language. Process engineers adjust cure parameters at the Pendant without engineering escalation or downtime.

THE OUTCOME

The conventional batch oven is gone. Energy consumption for the curing step dropped significantly -- induction heats the aluminum core in seconds rather than bringing an entire oven mass to temperature. Cycle time is now defined by the cure chemistry, not the thermal inertia of the oven chamber.

Press speed, clamping pressure, and induction heat are tracked and logged every cycle. Recipe-to-recipe variation -- a persistent problem in oven-based processes -- is eliminated: AutoCode executes the same force and heat sequence exactly, every time. When the customer needs to qualify a new laminate specification, the process engineer writes a new AutoCode recipe at the Pendant and runs a qualification lot. No vendor callback. No re-commissioning. The platform grows with the process.



CELL ARCHITECTURE

- **Controller:** Autoblocks Control Block -- motion, logic, safety, HMI in one
- **Drive:** Autoblocks Absolute Motor -- press feed rate & force profile
- **Clamping:** Pneumatic cylinders -- controlled via Control Block outputs
- **Induction:** RDO Induction power supply -- targeted aluminum core heating
- **Process:** Epoxy cure via inductively heated aluminum insert
- **HMI:** Autoblocks Pendant -- recipe selection & parameter entry
- **Programming:** AutoCode -- speed ramps, pressure hold, cure timers
- **Safety:** E-stop via integrated safety controller; pressure & overtemp interlocks
- **Customer-extensible:** New cure recipes added at Pendant, no vendor callback

INDUCTION PARTNER

RDO Induction Heating Solutions

THE PLATFORM DIFFERENCE

Conventional ovens heat everything to cure one joint. Induction heats exactly what needs to cure. Built on Autoblocks, the press speed, dwell pressure, and heat sequence are locked in AutoCode and repeatable from the first part to the ten-thousandth -- with no oven, no batch queue, and no vendor callback to change a recipe.

LEARN MORE
autoblocks.co

WATCH IN ACTION
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