

SYNTE PRODUCT TECHNICAL GUIDE

Continuous Vacuum Brazing Furnace

A configuration guide for stable part families, defined takt and automated brazing-line integration.

From published reference data to an application-matched furnace specification.



750 / 1300°C

Thermal platform options

Vacuum / gas

Process boundary

Continuous

Production flow

Custom line

Engineered to takt

Use this document to

Screen the application, compare reference configurations, identify the engineering variables that change the proposal, and define measurable quotation and acceptance inputs.

Current online reference

<https://syn-v2.com/vacuum-brazing-furnace/continuous-vacuum-brazing-furnace/>

All published values are reference data for preliminary selection. Final configuration, supply scope and acceptance conditions are controlled by the project proposal and technical agreement.

SYNTE APPLICATION-LED ENGINEERING

01 / APPLICATION

Application fit and process boundary

Use the furnace family as a starting point. The correct configuration is determined by material, complete loaded geometry, process result, throughput and measurable acceptance evidence.

Application 01

Repeat aluminum, stainless, copper or high-temperature assemblies

Application 02

Stable carrier loading and part orientation

Application 03

Production requiring controlled zone-to-zone transfer

Application 04

Lines requiring recipe, traceability and factory handshakes

Typical process route

01	02	03	04	05
Load & isolate	Preheat	Brazing zone	Controlled cooling	Exit & record
Carrier pitch, orientation and lock sequence	Stabilize incoming thermal load	Qualified time-temperature-vacuum window	Protect joints and downstream handling	Release, traceability and line handshake

Stage	Primary control	RFQ / qualification question
Load & isolate	Carrier pitch, orientation and lock sequence	Define input, control limit and evidence owner
Preheat	Stabilize incoming thermal load	Define input, control limit and evidence owner
Brazing zone	Qualified time-temperature-vacuum window	Define input, control limit and evidence owner
Controlled cooling	Protect joints and downstream handling	Define input, control limit and evidence owner
Exit & record	Release, traceability and line handshake	Define input, control limit and evidence owner

Suitable when

Stable part families and repeat takt justify a continuous route | Carrier and zone residence must be calculated from a validated process window | Maintenance access and safe isolation must be designed into the line

Re-check the route when

Mixed low-volume batches with frequent route changes may suit a batch furnace better | Undefined joint preparation or an unqualified brazing window should be resolved before line sizing

02 / ENGINEERING

System architecture and sizing logic

SYNHTE reviews the furnace as a connected process system. Each subsystem is selected against the same loaded cycle and acceptance plan.

Subsystem	Engineering scope	Input that changes the choice
Process chamber	Usable zone, orientation, door/loading route and service clearances	Largest complete production load and site access
Hot zone	Heating material, insulation/shielding, zones and sensor arrangement	Temperature, chemistry, contamination and survey basis
Vacuum / gas	Pump train, valves, gauges, purge/backfill and process-gas control	Pressure range, outgassing, gas purity and cycle time
Cooling / quench	Controlled cooling selected around filler solidification, part mass, distortion and throughput	Target metallurgical result, load density and utilities
Handling / tooling	Tray, fixture, setter, basket, carrier or press interface	Drawing, mass, center of gravity and repeatability
Controls & records	PLC/HMI recipes, interlocks, alarms, trends and batch identity	User roles, data fields, protocols and retention
Installation	Electrical, water, gas, exhaust, floor/loading and maintenance boundary	Site utility data and local safety requirements

Four engineering decisions that should stay connected

Capacity basis Good parts/hour, run time, yield and changeover	Carrier system Pitch, gross hot mass, repeatability and maintenance
Zone design Residence time, isolation, heating and cooling duty	Factory interface Upstream/downstream I/O, recipes and records

SYNHTE project path

Application review → configuration and utility definition → technical agreement → manufacturing and assembly → FAT / documentation → installation, SAT and process handover as agreed in the project scope.

03 / REFERENCE DATA

Published configuration envelope

Continuous-line capacity is calculated from good-part demand, available run time, first-pass yield, carrier loading and the qualified thermal residence time.

Decision area	Required RFQ input	Proposal output
Thermal platform	Material, filler, brazing window and ramp limits	Heating platform, zones, power and cooling
Effective opening	Part/fixture envelope, carrier pitch and load	Quoted W × H × L and carrier limit
Line rate	Good parts/hour, yield, uptime and changeover	Speed, residence length and capacity basis
Vacuum / gas	Pressure, gas purity, outgassing and isolation	Pump, locks, purge/exhaust and tests
Controls	Recipes, records, protocols, alarms and roles	I/O, data and FAT/SAT test cases

How to read the table

The usable work zone must contain parts, fixtures, trays/setters, transfer clearance and the qualified sensor arrangement. Reference load is not a substitute for a gross loaded drawing. Vacuum, temperature and cooling values require an agreed test condition.

What changes the final configuration

Option / feature	Selection trigger	Engineering impact
Loading, isolation, preheat, brazing, cooling and exit zones	Material chemistry or contamination requirement	Changes heater/shielding compatibility and maximum useful temperature
Manual, assisted or automatic carrier handling	Pump-down, cleanliness or working-pressure target	Changes pump train, gauges, isolation and acceptance tests
High-vacuum, protective-gas or combined process architecture	Load geometry, orientation or factory handling	Changes chamber orientation, tooling and clearances
PLC/HMI, recipe control, records and line handshakes	Cooling result, cycle time or surface requirement	Changes gas/oil/water duty and heat-rejection design

04 / QUALIFICATION

RFQ, proposal and acceptance framework

A precise enquiry reduces redesign and makes supplier proposals comparable. Attach drawings and define the pass/fail method wherever possible.

Input block	Information to provide	Preferred evidence
Material / process	Product family and annual/hourly good-part demand	Drawing, value, method or standard
Part / tooling	Joint drawing, materials, filler and cleaning route	Drawing, value, method or standard
Cycle / atmosphere	Carrier drawing, pitch, hot mass and orientation	Drawing, value, method or standard
Production	Validated thermal window and acceptable cooling	Drawing, value, method or standard
Site / utilities	Vacuum/gas limits and utilities	Drawing, value, method or standard
Quality / records	Yield, traceability, FAT/SAT and plant-interface requirements	Drawing, value, method or standard

Recommended acceptance evidence

Thermal

Defined survey or loaded-cycle evidence, sensor locations and allowable deviation

Vacuum / atmosphere

Pump-down, ultimate/working pressure, pressure-rise or gas condition under stated test conditions

Functional

Recipes, interlocks, alarms, manual recovery and agreed utility-loss cases

Process result

Witness-load or sample evidence using agreed hardness, leak, density, dimensional, joint or metallographic methods

Documentation

Approved drawing, utilities, manuals, component list, records and test reports in the agreed scope

Site

Installation boundary, SAT checks, training and open-item closure responsibility

Direct engineering contact

Email info@synthe-corp.com or WhatsApp +86 155 3785 7393. Include this document title and the current product page:
<https://syn-v2.com/vacuum-brazing-furnace/continuous-vacuum-brazing-furnace/>

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