



**NUTEC
BICKLEY**

ENGINEERED THERMAL SOLUTIONS

INDUSTRIAL FURNACES & OVENS

A TRADITION OF EXCELLENCE WORLDWIDE

Nutec Bickley is focused on understanding our customer's thermal equipment needs and working to supply the best equipment to meet those needs at the most competitive price. By applying the latest proven technology, Nutec Bickley is able to provide innovative solutions that meet or exceed our customer's expectations in equipment quality, production efficiency, and operational economy.



With over 1600 heat processing equipments sold and installed throughout the world, Nutec Bickley, has established itself as one of the premier furnaces and ovens engineering /manufacturing companies in the world.



At Nutec Bickley we design and manufacture kiln and furnaces using leading technology for the Ceramics and Metals industries, as well as industrial heating and insulation systems, consulting, and aftermarket services; in order to satisfy our customer's requirements and exceed their expectations.

We achieve this by utilizing a quality system that assures the continuous improvement of our products, processes and promotes the development of our employees and organization, so as to consolidate as world class company.



BOX FURNACES

Nutec Bickley provides a heavy duty box furnace line, from 30 ft³ to over 3,500 ft³, in custom designs to match customer production and process requirements.



Box furnaces and ovens are provided for temperature ranges from 300 °F to 2,350 °F to perform the following process applications:

- Forging of complete large ingots or parts (box type application)
- Forging of ends and small billets (slot type application)
- Flexible heat treating (from 500 °F to 2,100 °F)
- Annealing
- Hardening-Austenitizing
- Tempering
- Normalizing
- Stress Relieving
- Aging of aluminum parts
- And non-ferrous alloy parts



CAR-BOTTOM FURNACES & OVENS

Nutec Bickley provides a heavy duty line of car- bottom ovens and furnaces, from 30 ft³ to over 3,500 ft³ in custom designs to match customer production and process requirements.

The car- bottom design offers a great advantage which is the ability to handle large / heavy loads as the product is loaded onto the car(s) when located outside the actual furnace area; this eliminates the damage to the furnace interiors during loading and unloading.



Nutec Bickley car-bottom furnaces and ovens are provided for temperature ranges from 300 °F to 2,350 °F to perform the following process applications:

- Flexible heat treating (from 500 °F to 2,100 °F)
- Annealing
- Tempering
- Curing
- Normalizing
- Preheating ceramic molds for investment casting
- Stress relieving
- Annealing of aluminum parts
- Preheating of steel molds and dies for hot processing
- Aging of aluminum extrusions, castings and non-ferrous alloy parts
- Homogenizing of aluminum logs and ingots
- Forging of complete large ingots and parts
- Solution heat treat of aluminum and non ferrous alloy parts

TIP-UP FURNACES

Nutec Bickley provides tip-up furnaces and ovens in custom designs and sizes to match customer production and process requirements.



Tip-up furnaces eliminate possible door leakage by allowing the entire furnace bottom perimeter to seal against a fiber / sand seal box. Nutec Bickley tip-up furnaces and ovens are provided for temperature ranges from 300 °F to 2,200 °F to perform the following process applications:

- Flexible heat treating (from 500 °F to 2,100 °F)
- Annealing
- Austenitizing
- Tempering
- Normalizing
- Stress Relieving
- Aging of aluminum and non-ferrous alloy parts
- Solution heat treating



BELL FURNACES

Bell furnaces offer an economical method of heat treating iron castings and steel parts when used with multiple bases.

Nutec Bickley provides custom bell furnaces to match the customer production and process requirements.

Advantages of this equipment are the excellent positive seal between furnace and base and can be used with multiple bases. Different bell lifting methods are available depending on customer's requirements and layout.



Bell furnaces can be provided for temperature ranges from 500 °F to 2,200 °F to perform the following process applications for iron castings and steel parts:

- Flexible heat treating (from 500 °F to 2,100 °F)
- Annealing
- Normalizing
- Stress Relieving
- Tempering
- Stress Relieving of forgings and steel plate formed parts
- Controlled cooling of steel forged parts

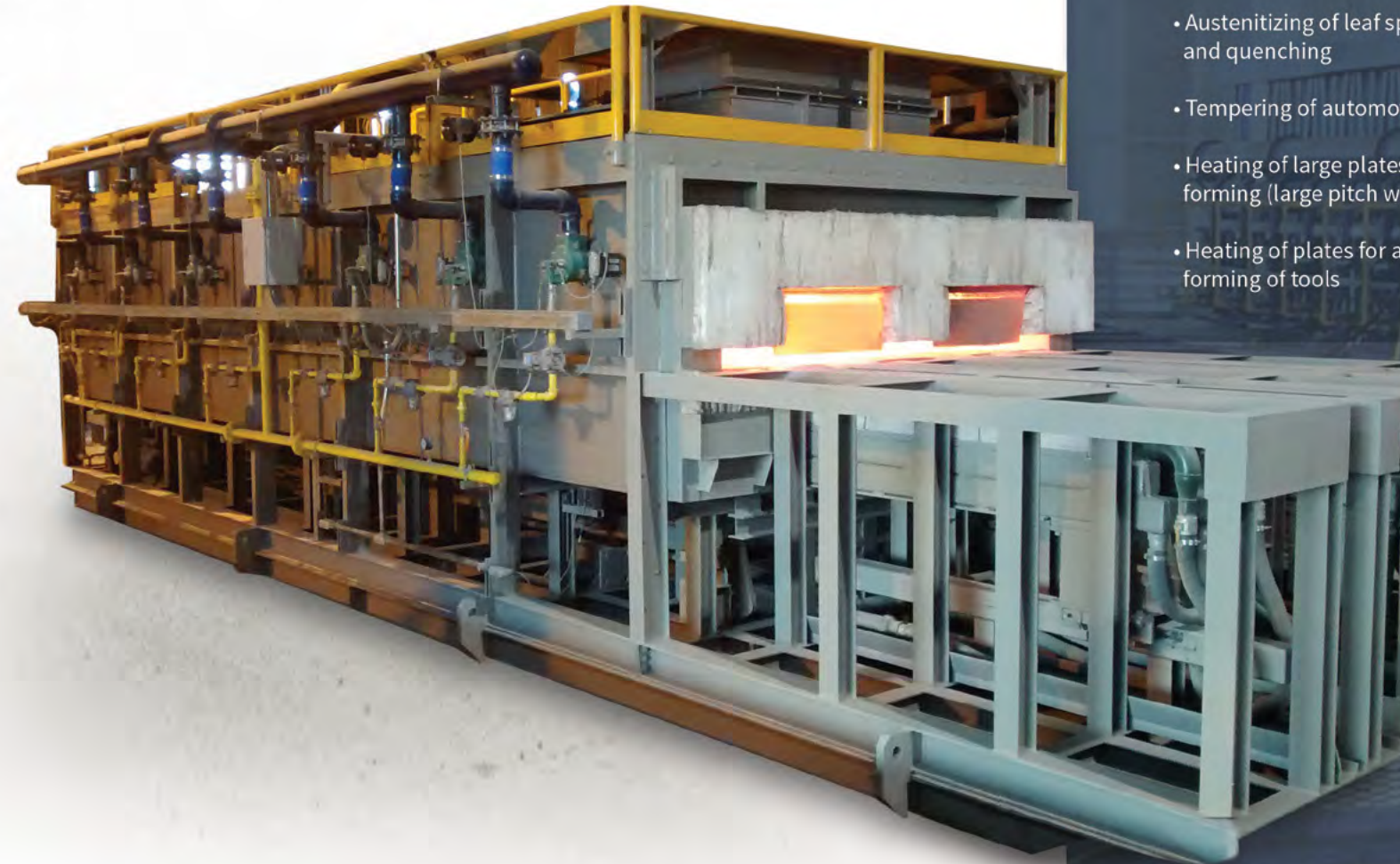


WALKING BEAM FURNACES

Nutec Bickley provides walking beam furnaces for continuous production rates in custom designs to match customer production and process requirements.

The handling system of this type of furnace (fixed beams and walking beams) can be made with hard refractory material or with high temperature steel alloys in custom shapes according to the size of the product.

Nutec Bickley walking beam conveyor system does not require any cooling system (water or air) and maintenance is very low compared to other systems.



Nutec Bickley walking beam furnaces and ovens are provided for temperature ranges from 300 °F to 2,000 °F to perform the following process applications:

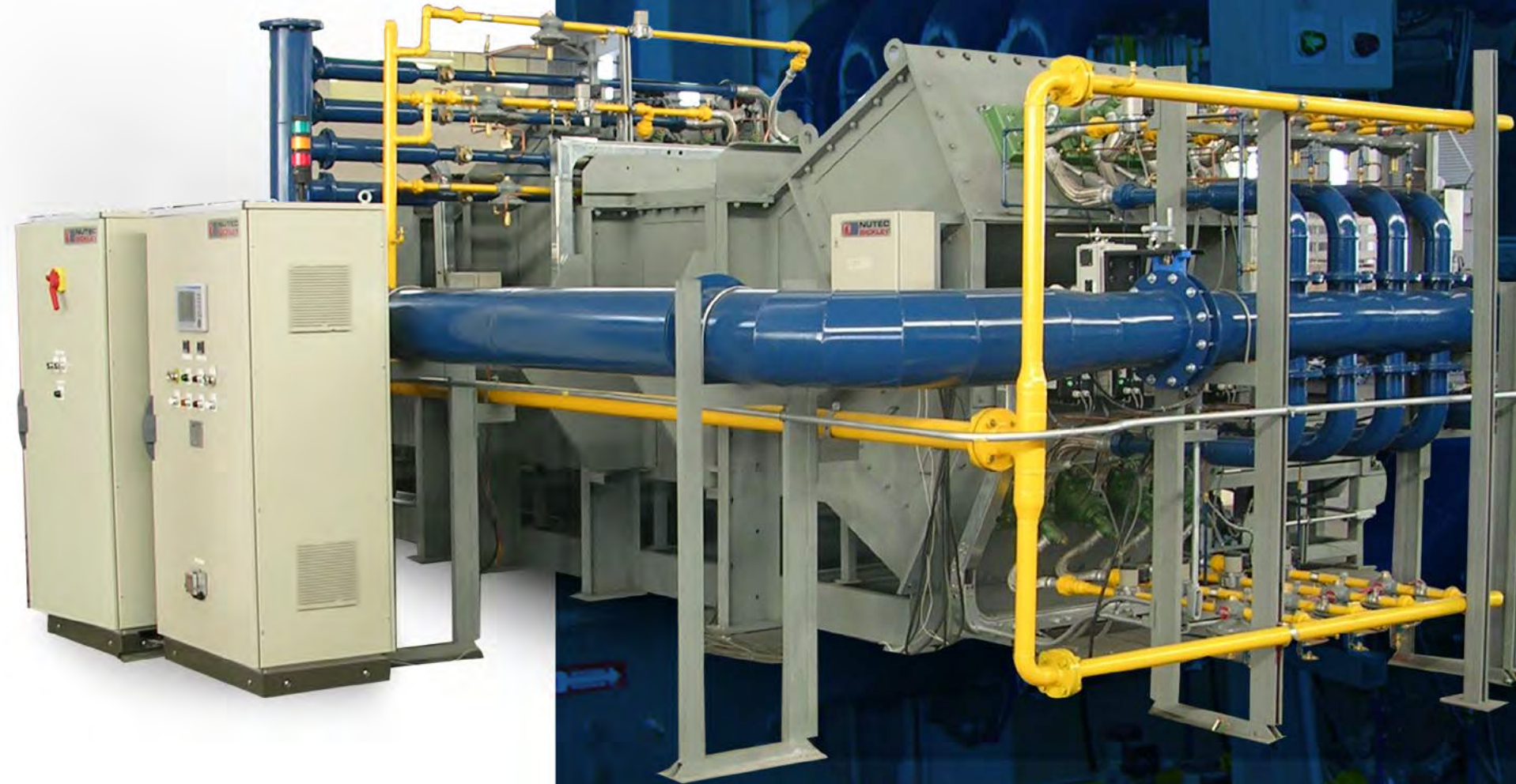
- Austenitizing of automotive suspension parts
- Austenitizing of leaf springs prior to cambering and quenching
- Tempering of automotive suspension parts
- Heating of large plates for normalizing and hot forming (large pitch walking beams)
- Heating of plates for austenitizing and hot forming of tools



CONTINUOUS HEATING FURNACES FOR ENDS & CENTERS

Nutec Bickley provides indexing - continuous heating furnaces for ends and centers of automotive suspension parts (leaf springs, axles, etc.) prior to forging and forming.

The handling system of these units can be with chain strands, chain with cross slats, pusher systems and walking beams. This furnace technology uses the combustion products to preheat the parts at the entrance while obtaining very high thermal efficiency.



These furnaces are provided in custom designs to match customer production and process requirements to perform the following process applications:

- End heating of leaf springs prior to rolling
- End heating of billets prior to forging
- Center heating of leaf springs

CHAIN & MESH BELT CONVEYOR OVENS

Nutec Bickley provides custom continuous ovens and furnaces to match customer production and process requirements.

We review the individual product and process application to determine the best choice of conveyor (mesh belt, cross slats, chain strands, flat wire, etc.) and the best air flow pattern system (vertical flow, side flow, end flow, etc.) to transmit the heat efficiently to the load.

Chain and mesh belt conveyor ovens and furnaces can be provided for temperature ranges from 200 °F to 1200 °F to perform the following process applications:

- Curing
- Tempering of automotive steel parts
- Aging of aluminum castings and non-ferrous alloy parts
- Drying of sand cores
- Preheating
- Aluminum heating for forging
- Tempering of steel tools



🔥 ROLLER HEARTH OVENS & FURNACES

Nutec Bickley provides roller hearth ovens and furnaces in custom designs to match customer production and process requirements.

Roller hearth units are designed for batch process applications and for indexing-continuous production.



Nutec Bickley roller hearth furnaces and ovens are provided for temperature ranges from 300 °F to 1,700 °F to perform the following process applications:

- Annealing
- Hardening – Austenitizing
- Preheating of iron castings for hot processing
- Drying
- Tempering
- Curing
- Normalizing
- Stress Relieving
- Aging of aluminum automotive parts
- Solution heat treating of aluminum automotive parts
- Heating of large plates for normalizing and hot forming



PUSHER FURNACES

Nutec Bickley provides pusher type furnaces for continuous- indexing production in custom designs to match customer production and process requirements.

The indexing pusher mechanism is located outside of the furnace and pushes a whole train of trays or containers along the length of the furnace. This type of furnace has fixed “roll-rails” or “skid rails” on top of the refractory hearth to support the trays or containers along the furnace.



Nutec Bickley pusher type furnaces and ovens are provided for temperature ranges from 300 °F to 2,100 °F to perform the following process applications:

- Annealing
- Hardening–Austenitizing
- Tempering
- Normalizing
- Stress Relieving
- Solution heat treating
- Preheating ceramic molds for investment casting
- Aging of aluminum castings and non-ferrous alloys
- Aluminum heating for forging

AIR “CONTROLLED & BLAST” COOLING UNITS

Nutec Bickley provides air controlled cool and blast cool units as auxiliary equipment for the heat treating and forging processes.

These units are designed for batch applications (air cooling chambers), and for indexing or continuous production (air cooling tunnels), and are provided in custom designs to match customer production and process requirements.

The handling system for batch units can be with car bottom, support piers or roller hearth. For indexing- continuous, the handling system can be with slotted roof monorail chain conveyor or with roller hearth.

The cooling units are provided with the best technology in controls to perform the following process applications:

- Aluminum logs cooling chamber for homogenizing
- Air quench chambers
- Blast cool chambers after heat treating
- Controlled cool and blast cool tunnels after forging

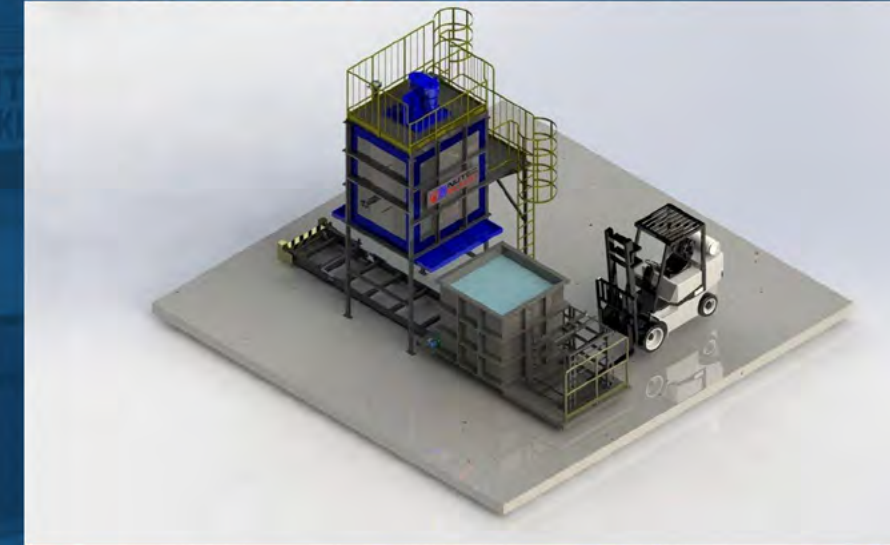


DROP BOTTOM FURNACES

Drop bottom furnaces are the easiest equipment to complete the solution heat treatment and T6 in a batch configuration.

The combination of the main features like customized air distribution furnace system, quick door opening, heavy duty lifting mechanism and quench tank with required agitation makes this furnace the ideal equipment for aluminum heat treat of the castings and forging parts.

Nutec Bickley provides custom Drop bottom furnace sizes to match the customer production and process requirements.



Some of the typical process and design features are as follows:

- Low maintenance fiber lined sections using the large modules system to reduce the amount of joints
- Gas fired, indirect gas fired and electric heating systems available
- Recirculated fan systems to provide large volume and high velocity recirculating air flow through the work to insure the uniformity and efficient heat up of the load
- Customized air distribution designs in order to match the air flow pattern requirements according with product / load arrangement
- Quick opening door system
- Heavy duty mechanism for load lifting and quenching
- Quench system specifically designed depending of product in order to provide excellent quenching results

QUENCHING SYSTEMS

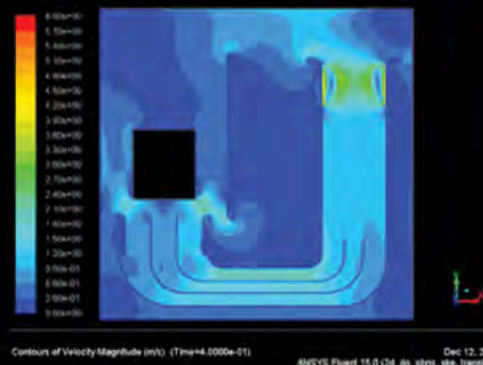
Nutech Bickley provides quenching systems in custom designs to match customer production and process requirements for the heat treating facility.

Process applications include the design and fabrication of immersion quench tanks in customized sizes for water, polymer and oil with integrated elevator option and required agitation systems. Forced air quenching chambers are designed and fabricated for continuous applications to complete the heat treating quenching applications.

Nutech Bickley simulation tools (computational fluid dynamics CFD) is used in order to select the best quenchant agitation system and flow distribution technology.

Nutech Bickley quenching systems are provided for the following main process applications:

- Quench tanks for steel castings and forgings
- Tank elevator systems
- Quench tanks for aluminum castings
- Air quenching chambers for aluminum castings
- Air quenching for steel castings and forgings



MATERIAL HANDLING

Nutec Bickley provides a heavy duty automated systems for loading, unloading and transferring loads during heat treatment operation.

Equipment includes manipulators, transfer cars with roller conveyors & elevators, turn tables with roller conveyors, rollers conveyor with pusher system for heavy duty plates and tray return systems. These are typical examples of equipment Nutec Bickley supplies in order to increase efficiency during production operations.



Nutec Bickley material handling systems are provided for the following main process applications:

- Tray return conveyors
- Transfer car system with motorized rolls conveyor
- Turn-table with motorized rolls conveyor
- Roller load & unload tables with integrated pop-up chain conveyor for load 90 Deg transferring
- Roller conveyors with pusher system for large steel plates

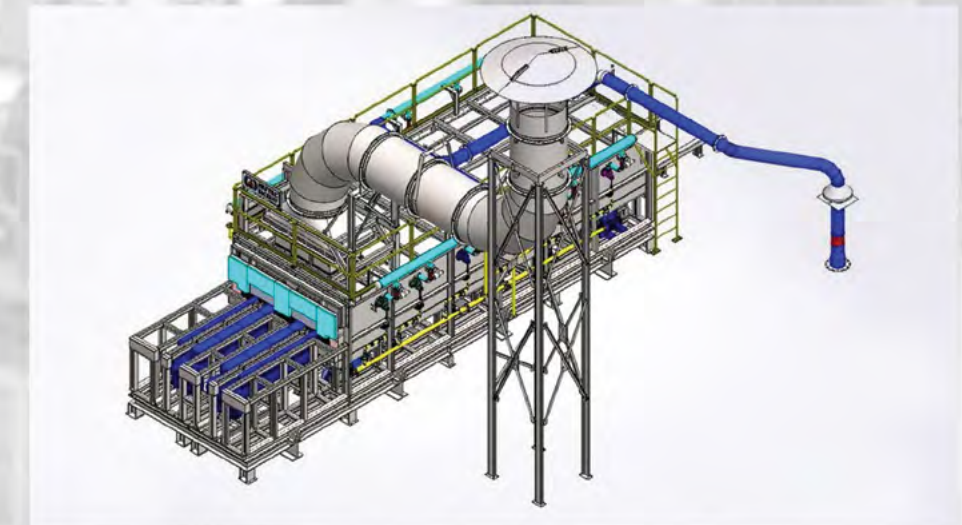
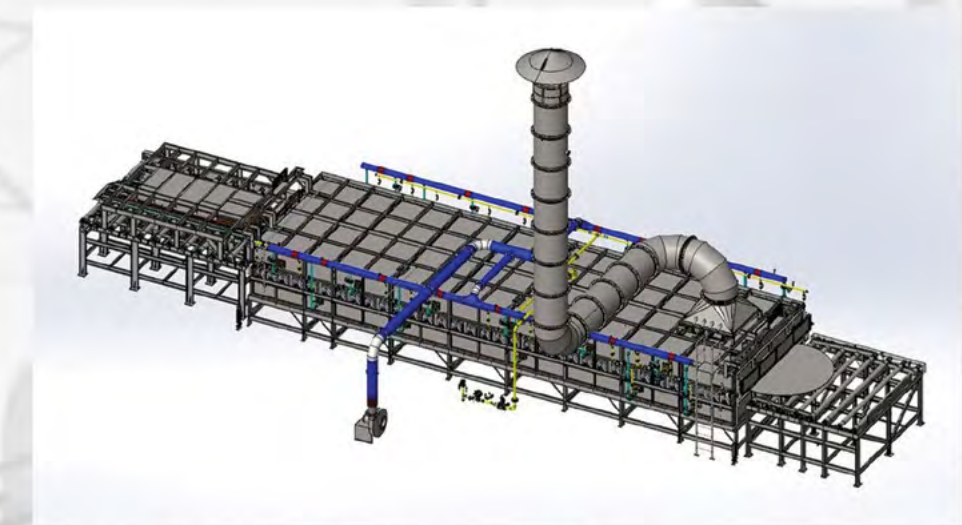
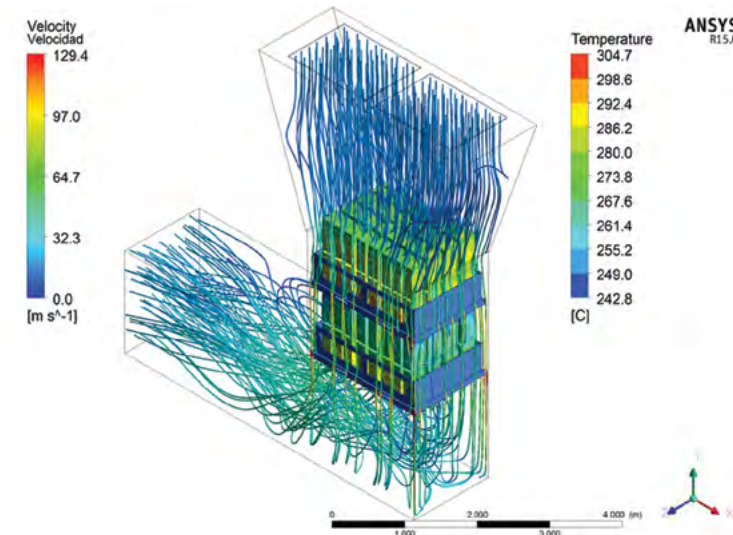
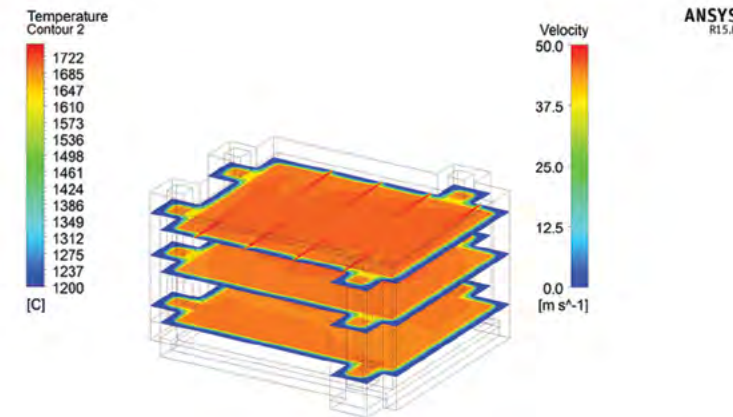


R&D AT NUTEC BICKLEY

Nutec Bickley has invested heavily in an excellent R&D facility in order to offer Furnaces and ovens with the latest technology.

Our R&D lab offers the Following Services:

- Energy Efficiency Analysis.
- Temperature Uniformity Surveys.
- Thermal Process simulation using computational fluid dynamics software.
- Toll Firing (From 100°C up to 1800°C)



SPARE PARTS, SERVICE AND RETROFITS

Nutec Bickley's Service and Parts Group offers quick response times and outstanding technical service to all furnace owners.

You are assured of always getting the correct components on time, every time. Nutec Bickley can also provide regularly scheduled surveys and maintenance visits that will keep your furnace at the peak of operating efficiency.

If advances in heating technology, furnace linings materials, and instrumentation have made your furnace obsolete, Nutec Bickley can update furnaces and ovens to provide "as new or better" performance for a modest capital investment.

Nutec Bickley offers a full range of furnace retrofit services including combustion systems upgrades, heat recovery systems design and installation, full construction and commissioning services, and upgrades of instrumentation.

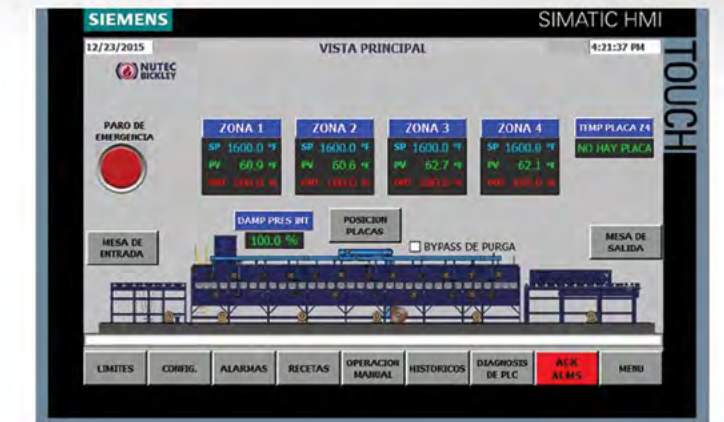
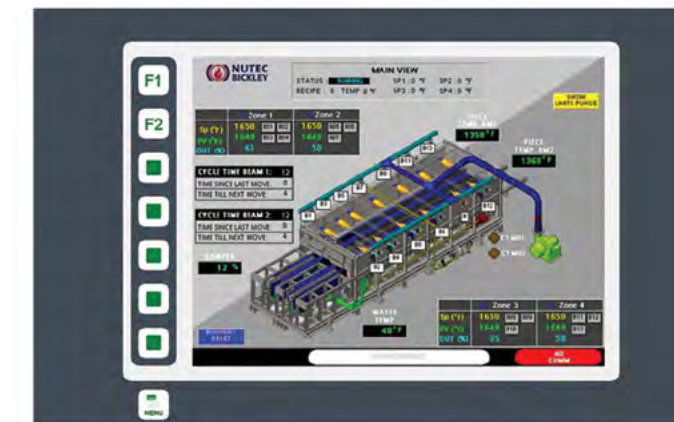


CONTROL AND DATA ACQUISITION SYSTEMS

Nutec Bickley's broad control systems design experience permits exactly the appropriate level of control sophistication required to meet our customer's needs.

Systems span include controllers, hybrid systems, PLC's, operator interfaces, industrial panel PC's, desktop computers, customized supervisory control data acquisition software (SCADA), and more.

In addition to full control over the process, Nutec Bickley's control systems allow for faster service and trouble shooting by providing networking and remote monitoring capabilities.



INSULATION SYSTEMS

Nutec Bickley's reputation as world leader in insulation systems is well deserved.

Our patented ceramic fiber Jointless™ modules (US Patent 6,422,862 B1) for temperatures up to 2,462°F provides for minimal maintenance, fuel economy, and extended service life.

Our Jointless™ system consists of monolithic ceramic fiber modules engineered to cover a complete furnace wall, door, or roof. It's a one piece construction continuously shaped with ceramic fiber blanket folded and anchored. Our Jointless™ modules not only eliminate the joints between smaller modules (as commonly found in ceramic fiber linings), but also eliminate the gaps typically located around the flues which require higher maintenance.

Pressure control high temperature devices



Our Jointless™ system consists of monolithic ceramic fiber modules engineered to cover a complete furnace wall, door, or roof. It's a one piece construction continuously shaped with ceramic fiber blanket folded and anchored. Our Jointless™ modules not only eliminate the joints between smaller modules (as commonly found in ceramic fiber linings), but also eliminate the gaps typically located around the flues which require higher maintenance.



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