NUTEC BICKLEY

WELCOME TO OUR 1ST E-BULLETIN!

1ST EDITION, OCTOBER 2018

BENEFITS OF THE IMPS SYSTEM IN OUR CERAMIC KILNS

BY RODRIGO GONZÁLEZ

Editorial

DANIEL LLAGUNO, CEO

Looking at our plant at full capacity (photos shown are the actual state of the factory at the moment), I can't help but feel a sense of pride in our achievements, allied to a feeling of much gratitude to our customers for allowing us to be part of their success as well.

There will be many challenges ahead, no doubt, but putting our customers first and never letting them down will continue to be our main goal and, I'm quite sure, will prove to be the reason for our shared success. Coupling that with great technology, responsibility, honesty and hard work, and we begin to see the things that underpin the sustained growth we have experienced over the past three decades in the world of industrial furnaces and kilns.

Various pieces of Nutec Bickley equipment – ranging from 350ft+ long tunnel kilns, to large car bottom furnaces and roller hearth heat treating plant – are being manufactured for industries such as automotive, aerospace, oil & gas, sanitaryware, technical ceramics etc, and are currently being completely assembled and tested in our extensive Monterrey facility, to be shipped soon to their final destination. In this brand new bi-monthly bulletin, we will keep you informed about our company's developments, news, trends and other items of interest. I hope you enjoy it!

BENEFITS OF THE IMPS SYSTEM IN OUR CERAMIC KILNS

BY RODRIGO GONZÁLEZ

In an interview with our VP Ceramics, Rodrigo González, we talked about the IMPS system, its applications and benefits in industrial kiln combustion processes. Learn more about this solution and the advantages it offers your own operation.

WHAT IS THE IMPS PULSING SYSTEM?

This particular solution is based on pulsing system technology dating back to the 1970s. Over a period of 20+ years Nutec Bickley has developed new control algorithms and hardware to make this technology more efficient.

IMPS (integrated multizone pulsing system) is a combustion system comprising hardware and software whose purpose is to achieve the best possible temperature uniformity allied to lower fuel consumption.

WHAT ARE THE BENEFITS OF IMPS?

The integrated multi-zone pulsing system allows our customers to use 25% less fuel than with standard technology.

This fuel saving is possible when controlling the variables that affect the heating curve inside the kiln, such as:

1. **Heating rate**
2. **Gas-to-air ratio**
3. **Internal pressure**

Other benefits of this technology for your operation are as follows:

- It links all the kiln's control zones, monitors the way in which they affect one another, and automatically regulates them.
- Temperature variations remain within ±5°C so this is an extremely reliable system.
- Excellent finished product quality due to more uniform firing.

- Reduced manufacturing costs thanks to lower fuel consumption.
- It provides a high level of operational flexibility, as a result of the different firing modes.
- It enables shorter processes, allowing you to complete more cycles per year and therefore increase your total output.
- Works hand in hand with our heat recovery systems to deliver greater savings in fuel consumption.
- Ideal for sanitaryware, refractories, technical ceramics, continuous casting refractories, electro porcelain, electronic ceramics, heavy clayware, abrasives etc.
- Suitable also for steel and alloy heat treatment processes.

WHY IS IT NECESSARY TO HAVE A PULSING SYSTEM?

Without this type of system you need to use high levels of excess air in order to maintain temperature uniformity and this entails additional cost as this air also needs to be heated.

Temperature uniformity is an overriding factor in achieving consistent product quality and to get it you need a system that is geared to constantly monitor temperature.

HOW DOES IMPS HELP IN GETTING BETTER PROCESS CONTROL?

IMPS facilitates excellent control along all segments of the firing curve, as across the firing modes it is possible to change the behaviour of the kiln in order to adapt to the specific requirements of each process.

FIRING MODES – TWO MAIN TYPES

- **Heating modes:** Steaming, Partial excess air firing, On-ratio firing.
- **Cooling modes:** Normal cooling, Slow cooling, Max cooling.

Heating modes allow us to control the curve from as low as 90°C, making it possible to vary the gas-to-air ratio according to process demands. This in turn allows us to operate with a stoichiometric mixture in order to achieve the optimum fuel efficiency.

Cooling modes allow us to vary the quantity of air injected into the kiln, making it possible to have faster cooling rates in the zones that need it and, on the other hand, to switch to slower cooling rates in the quartz inversion zones.

The ' **Max Cooling**' mode is slightly different, and allows us to make our kilns more productive by reducing the cycle time while speeding up cooling once the temperature of the product falls below 400°C.

With this mode, in addition to introducing air through the burners we use nozzles to inject additional air. To achieve this, we have a secondary air loop that comes into play when the quantity of air being introduced by the burners is insufficient.

WHAT ARE THE COMPONENT PARTS OF THE IMPS SYSTEM?

Our kilns are fitted with a combustion and control system comprising burners, valves and fans.
Apart from the physical components, we have a PLC that serves as an operating system and that is set up to automatically control the process variables.

We have developed burners, valves and fans that allow IMPS to be in continuous operation. Additionally, we work constantly on improvements to the associated software to ensure the system delivers the highest possible processing quality.

At Nutec Bickley we have great expertise in developing solutions for the ceramic industry, providing custom designed kilns for all needs and for specialized applications. Get in touch with our qualified advisory team to learn more about IMPS, our heat recovery systems etc.

RECENT PROJECTS!

BELL FURNACE

- Location: Monterrey, Mexico
- Installed earlier this year; currently operating
- Normal Operation Temperature: 450 - 950 C
- Industry / Segment: Steel Heat Treatment
- Used for gray steel molds
- The furnace has two stations and it is carried with a 10 ton crane, which gives a high productivity for customer operation
- Combustion System: Pulse Firing with High velocity Burners

BOX FURNACE

- Location: Quebec, Canada
- Currently the equipment is being tested
- Segment: Steel Heat Treatment
- Normal Operation Temperature: 600 - 960 C
- Used for carbon steel parts
- Installed Thermal Capacity: 9,400,000 Btu/h
- Combustion System: Pulse Firing with High velocity Burners

CAR BOTTOM FURNACE

- Location: Quebec, Canada
- Currently the equipment is being installed in customer's facilities
- Segment: 'Forging
- Operation Temperature: 1,600 - 2,350º F
- Used for heating steel parts prior to Forging
- Installed Thermal Capacity: 13,600,000 Btu/h
- Combustion System: 1 pair of Regenerative Burners

A FULL RANGE OF PRODUCTS FOR:

Ceramic Kilns

Metal Furnaces and Ovens

Combustion, Control and Services

Fabrication and installation Services

Our highly-qualified engineers serve clients through the design, building and installation of combustion systems, thermal insulation and complete industrial furnaces and kilns.

WE ARE AN EXCLUSIVE AUTHORIZED DISTRIBUTOR IN MEXICO

Fives North American Combustion has supplied equipment and control for nearly a century. Its engineering and extensive experience result in quality products and world class technology and the company is distinguished by its excellence in the field of combustion.

Burners

Regulators

Turbo blowers

Strainers

Limiting orifice gas valves

Wafer Butterfly Valves

HOT SPOT- NB
COMBUSTION SEMINAR

CAMINO REAL HOTEL
OCTOBER 3-5, MONTERREY

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MANUEL MONTES

ROBERTO REYES

RAFAEL DE LA TORRE

ERNESTO PÉREZ

ANDREA CÁRDENAS

ALBERTO CANTÚ

RAFAEL VELA

Attend this seminar to learn about working more safely, in line with relevant standards, and increase your productivity, reduce fuel consumption and improve the quality of your product by reducing pollution.

The Seminar has a charge for each participant.
For more information contact us at
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or +52(81) 2354 6445.

WE HOPE YOU'LL JOIN US
AT ONE OF THESE EVENTS

FNA 2018
Oct. 8-10, 2018 • Indianapolis, Indiana

October 8
Furnaces North America
Indiana
Booth 514

Investment Casting Institute

October 23
Investment Casting Institute Expo 2018
Kansas City
Booth 217

XXI FUNDIEXPO GDL 2018
Es tiempo de renovación
Congreso y Exposición Internacional

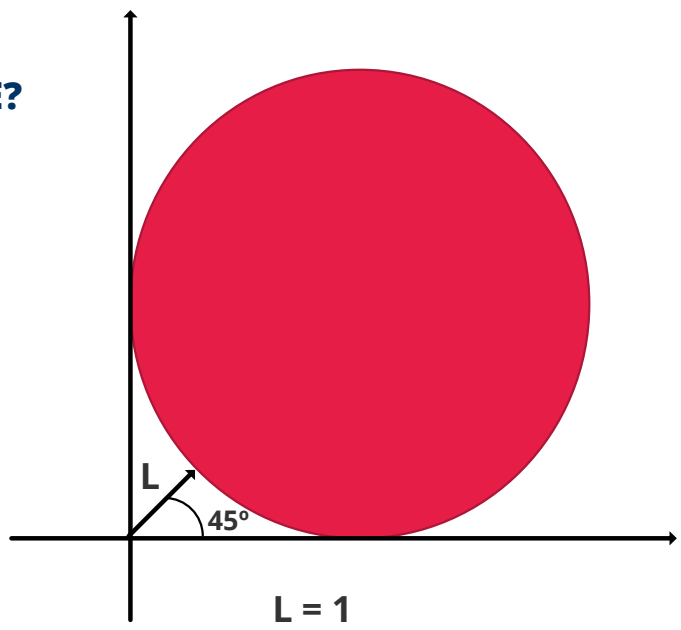
October 24
XXI Congreso y exposición internacional de la industria de la fundición
Guadalajara
Booth 395

ENGINEER'S CHALLENGE

WHAT IS THE DIAMETER OF THE CIRCLE?

INSTRUCTIONS:

The axis 'x' and 'y' are perpendicular



NUTEC BICKLEY
ENGINEERED THERMAL SOLUTIONS

DO YOU NEED A QUOTE FOR ANY OF THESE SOLUTIONS?

Contact us describing your project so that we can help you better. **bulletin@nutec.com**
We look forward to hearing from you.