

# Dragon&TCKilns Sanitaryware Success

Dragon&TCKilns have successfully installed and commissioned a massive 160 cubic metre gas-fired shuttle kiln for the production of high quality vitreous china sanitaryware. The contract was awarded to Dragon&TCKilns by one of the emerging sanitaryware manufacturers in Far East Asia and represents a major investment by the company.



**160 cubic meter capacity Shuttle kiln**

The 22.5 metre-long shuttle kiln is believed to be one of the largest two-deck intermittents in use in ceramic sanitaryware production and has succeeded in pushing out the boundaries of shuttle kiln capabilities by some considerable distance for improved firing efficiency, lower operating costs, greater flexibility and improved product quality and yields in both first fire and refire.

Daily output capacities from the shuttle kiln match many tunnel kiln installations in the industry today. First firing twice a day with a load of 1100 pieces, the customer could achieve production levels of up to 770,000 pieces per year and yet enjoy all the flexibility that intermittent

firing offers, in terms of production planning and quick reaction to market demands and orders.

The kiln itself contains 14 double-deck kiln cars and has a guillotine door and straight-through track extensions at each end. Each car is 1.6 metres long and set to a width of 4.5 metres. A key factor in the highly successful kiln performance is the high velocity burners being arranged in a multi-zone configuration that ensures excellent temperature uniformity in both heating and cooling.

There are 56 burners arranged in 28 automatic temperature control zones that maintain each part of the kiln at the set point generated by the selected programme profile

throughout firing and cooling. There are four burners for each kiln car and two temperature control zones.

Each control zone has a motorised modulating gas valve to control thermal input to each zone throughout the firing cycle and a motorised modulating air valve during cooling stages to ensure excellent temperature distribution. The control of ideal pressure conditions inside the kiln and the remarkable temperature uniformity of two Bullers Ring points across the whole kiln are major selling points for this design to routinely enable firing cycles of 12 hours for first firing and 16 hours for refiring.

The fixed but 'intelligent' combustion air supply is automatically adjusted to a preset fixed position at different stages of the firing cycle to give excellent control of the oxygen levels and kiln atmosphere. This is crucial in order to achieve good glaze appearance with vitreous china sanitaryware. Maintaining high quality standards and a zero reject target is important to the customer which has its production processes accredited to many of the international standards.

A clear demonstration of the superior performance offered by the Dragon&TC shuttle kilns exists on this particular customer's site. Although the new kiln is four times the size of another shuttle kiln installation, from a different manufacturer, it uses only 1.5 times as much LPG for each firing. This massive saving in fuel costs is on its own an impressive endorsement for the system.

Added to this already completed successful installation, Dragon&TC Kilns are now starting construction in their Shenzhen factory of a modular Tunnel Kiln and Glaze Dryer for a major sanitaryware manufacturer in Russia.

The 105 metre-long tunnel kiln is an open-flame, gas fired design and contains 68 kiln cars, each 3.5 metres wide and with a single setting deck of 32 mixed sanitaryware pieces and a production capability of more than 1.5 million pieces per year. It is of modular design with the sidewalls pre-constructed into 52 steel framed sections. There are 84

burners arranged above and below the ware that are divided into 10 individual temperature controlled zones.

High quality components and materials are used throughout and stainless steel has been used for all the air ducting, gas distribution piping and all of the fans to ensure cleanliness and to give an extended service life.

Kiln car movement is via a PLC-controlled, fully automated kiln car handling system with auto/manual stations for emergency use. The system is fully integrated with the kiln requirements and based upon loading and unloading of kiln cars on a 24-hour, three shift per day basis with no storage facility.



State-of-the-art supervisory and data acquisition packages will be installed based upon Intellution® iFIX™ software, the HMI/SCADA component of the Intellution Dynamics™ family of

automation software. This allows for easy operational and engineering use and provides for real-time and historical trending, data collection and data management, comprehensive reporting, alarming and alarm management, user-based security and overall supervisory control functions.

Everything has been configured to extract the highest quality, maximum efficiency performance from the new kiln and the design specification requirements of the customer.

Dragon Director Adam Slater said: "We have been in discussion with a number of sanitaryware groups over the past two years and the faith shown in our abilities through the award of these contracts is testimony to the sound technical detail and highly cost effective approach reflected in our bids.

"They are major contracts for Dragon&TC Kilns and further consolidate our credentials in the field of modern sanitaryware firing. We have taken the intermittent side of the firing operation to a new level and expect to see a good deal of interest from elsewhere."

For full details on Dragon&TC Kilns and its Kiln and Dryer range for Vitreous China and Fine Fireclay Sanitaryware, please contact:

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