

## Volume & Flexibility: Dragon Shuttle Double Delivers for Asian Sanitaryware Boost

Dragon&TCKilns has announced the installation of a massive 160 cubic metre gas-fired shuttle kiln for firing high quality vitreous china sanitaryware, both first fire and refire, at capacities which match many tunnel kiln installations in the industry today.

The contract was awarded to Dragon&TCKilns by one of the emerging sanitaryware manufacturers in Far East Asia and represents a major investment. The 22.5 metre-long 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.

Rather than using a conventional kiln car transfer system, access to doors at both ends of the 5 metre-long kiln is provided with a straight-through car track, in the case of this installation based on a 14 cars in, 14 cars out load/unload. Each car is 1.6 metres long and set to a width of 4.5 metres. There are 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. Typical firing cycles would be 12 hours for first firing and 16 hours for refiring.

First firing twice a day with a load of 1100 pieces, the customer could achieve around 770,000 pieces per year and yet enjoy all the flexibility that intermittents offer. In addition to the benefits that this brings in terms of production planning and quick reaction to market demands, the kiln also sits on a relatively small footprint in the context of its capacity.

There are 56 high velocity burners, four for each kiln car. These are set so that one pair of burners fires underneath the bottom setting deck and the other pair directly opposite fires above the ware placed on the top deck. Overall firing height is 1.6 metres. The guillotine vertical lifting doors at each end of the kiln have been designed to provide a tight compression seal when closed, minimising the possibility of heat leakage. Optimum firing temperatures are 1220 °C for first fire, 1180 °C for refire, with a maximum safe working temperature of 1300 °C.

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, especially as the customer has its production processes on this site accredited to ISO 9002, ISO 9001, JIS, KS, CAS and ANSI.

Each control zone, two for each kiln car, 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 maintenance of ideal pressure conditions and the remarkable temperature uniformity, never more than two Bullers Ring points across the whole kiln and usually less, are major selling points for this design.

Added to this, the straight-through load and unload configuration on this kiln both speeds up production and also reduces the total required floorspace for the installation and operation. Both these factors ultimately add to the bottom line.

Dragon Director Adam Slater said: "This is another major contract for Dragon&TCKilns and further consolidates our credentials in the field of modern sanitaryware firing, following closely on from our high volume installation at Lobnya in Russia. We have taken the intermittent side of the firing operation on to a new plane and expect to see a good deal of interest from elsewhere in the solutions we have to offer on this front.

"The planning of shuttle kilns into factories such as these need not be constricted to vitreous china production, but works equally well for fine fireclay and of course extends right through to tableware, bricks and refractories."

A clear demonstration of the superior performance offered by Dragon&TC shuttle kilns exists on this particular customer's site. Despite the fact that the new kiln is four times the size of the previous shuttle kiln installation, from a different supplier, 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.

For full details on Dragon&TCKilns and its kiln and dryer range for ceramic sanitaryware, please contact:

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