

Application Report

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HIGH VELOCITY BURNERS IMPROVE QUALITY AND EFFICIENCY

Nobel Cermaiek, a company in Holland, manufactures ceramic items such as vases, jars, and pots. Nobel was using three kilns to fire their products in a six step process lasting approximately twenty-four hours. The kilns were being heated by atmospheric burners which were unable to produce the reducing atmosphere necessary to color the pottery. In order to provide better control of gas/air ratio and kiln temperature during each of the six curing steps, Flameco installed two 84 HVTA Burners in one of the kilns (Figure 1).

Pottery is stacked on a platform which is rolled on a dolly into the furnace and lowered onto the side benches. The dolly is then removed, the kiln door closed, and the firing process begun. Previously, the atmospheric burners were mounted in the rear wall of the kiln firing parallel to the side benches. To prevent impingement of the long atmospheric flame on the load, the rear section of the kiln was left empty. By mounting the HVTA Burners in the side wall and stacking the load so as to leave two gaps for flame clearance, kiln capacity was increased by 24%.

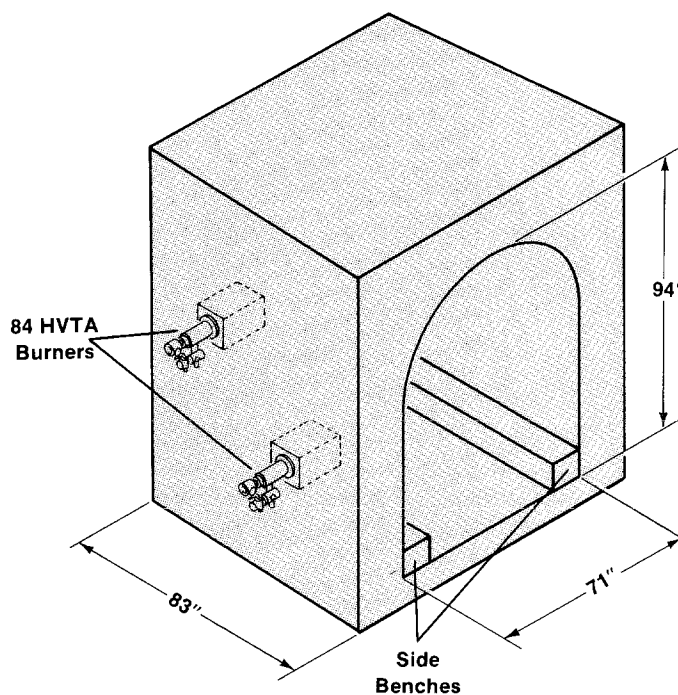
The control system for the kiln is shown in Figure 2. The main gas butterfly and main air butterfly were manually adjusted by the kiln operator to produce the six processing steps. Set points on the valve scales aided the operator in controlling the sequence. Advantages of the new system included:

- Gas savings of 22% due to accurate gas/air ratio control.
- Desired control of product color due to HVTA excess air and excess gas capabilities.
- Better product quality and uniformity due to circulation induced by high velocity burners.
- Process time reduction of 30%, from 24 hours to 17 hours, due to shortened heat-up time.

Pleased with these results, Nobel asked Flameco to convert a second kiln and to provide an automatic controlling system for both of the HVTA equipped kilns. Flameco installed motor operated butterfly valves for main air and

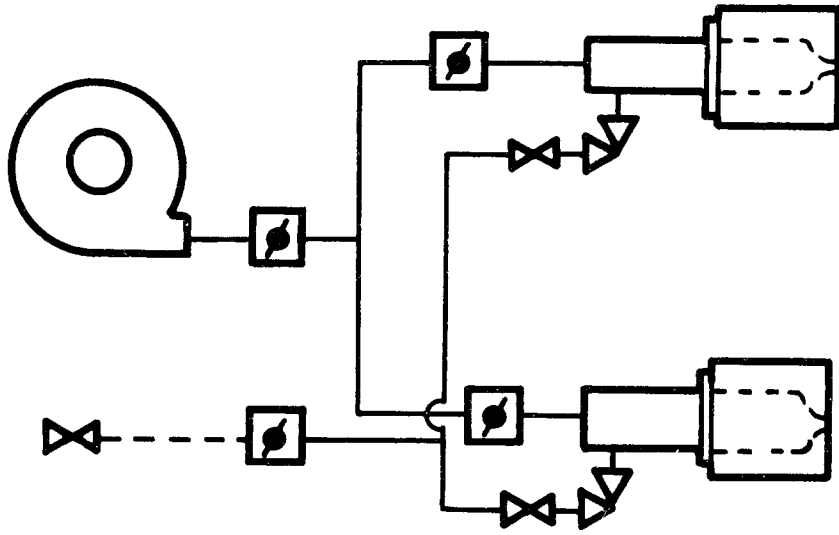
main gas control. A switch driven by a timing motor sequentially connects each of six potentiometers into the control motor circuitry, causing the motor to move to the position required during each step of the process. The duration of each step is controlled by adjusting the movable contacts of the timer driven switch. Air and gas settings for each process step are controlled by adjusting the corresponding potentiometers. The automatic controlling system worked well, eliminating the need for constant kiln supervision.

FIGURE 1



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FIGURE 2



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