

The Hoffmann Kiln

Built in the late 19th century, the Hoffmann kiln at Langcliffe was once the source of a key local industry. It now stands as an important part of Craven's industrial past.

The kiln at Langcliffe

The Hoffmann kiln was built at Langcliffe, near Settle, in 1873. It is an industrial scale lime kiln which was constructed for the Craven Lime Company. The Hoffmann Continuous kiln had been patented in 1858 by its German inventor Friedrich Hoffmann. The version built at Langcliffe had 22 individual burning chambers. Langcliffe's Hoffmann kiln is fairly unique to Britain; most others of this kind that once existed have either been demolished or have simply crumbled away.

Having a kiln like this, which processed limestone into burnt lime, was extremely useful and many different people in the area bought lime. Farmers who didn't have limestone on their land or couldn't burn it themselves, used lime on their fields to help crops to grow. Many local building companies used lime in their mortar. Lime was also used in local industries such as tanning (leather making), textiles and paper making.

Construction

The kiln is lined with firebricks to withstand the intense heat produced inside. Behind the firebricks is a limestone rubble core, which helped to keep the heat in. In the roof are the small chutes down which crushed coal was dropped to keep the limestone burning. At floor level, there are flue holes in the walls. Air was drawn from the outside under the burning limestone and the smoke went up the central core of the kiln to the chimney. Iron dampers on the roof allowed workers to regulate the draught in the flue system.

The yard outside the kiln had a network of rail tracks which were used to bring coal into the kiln and take the process limestone (now burnt lime) away. South of the kiln was a water balance hoist, used to lift wagons of coal onto the top of the kiln. There was also a huge chimney.

How it worked

Limestone blocks from the nearby quarry were barrowed in and carefully stacked by hand in the burning chamber. Coal was mixed in, and once lit, more was added through small coal chutes from the top of the kiln. The complicated flue system allowed the heat and speed of the burn around the kiln to be carefully regulated. As one chamber burned, waste heat warmed limestone blocks in the next two or three chambers. Behind the burning zone, two or three chambers were left to cool down before the lime could be shoveled out and loaded onto railway wagons waiting in the sidings beside the kiln. Limestone was burned continuously in a circuit around the kiln and it took an average of six weeks to complete one whole circuit.

Four men worked inside one chamber. They packed fist-sized lumps of limestone up to the roof and it could take as

much as 5 days to fill a chamber. These men were paid for the amount of work they actually did so if bad weather meant no limestone was quarried and brought to the kiln, then the kiln workers didn't get paid. At the other end of the process were the 'drawers'. They were paid a higher wage because their job of emptying (drawing) the kiln was considered to be one of the worst. The burnt lime in the chamber still looked like lumps of stone but because of the chemical changes that took place during the burning the process it became much lighter. However, the heat from the fire had turned the stone pieces into a solid mass and this meant that it was not easy to remove. The workers had to try and break up the lime by hitting it with picks, and then remove large pieces that broke away with a fork or shovel. Whilst this was going on the temperature inside the kiln chamber was still very hot. This not only made the work very hot and sweaty, but also dangerous. Powered lime often ended up in the men's clothes and boots, and it stuck to their moist skin causing an itchy rash. The dust could also become airborne and so got into their throats and lungs. These terrible working conditions helped the demise of Hoffmann kilns because no mechanical method for emptying the chambers was ever used.

The end of an industry

The Hoffmann kiln at Langcliffe closed in 1931. Competition from elsewhere and a general downturn in sales had led to the closure of the kiln and its associated quarry. The kiln was fired up one more time in 1937, but in 1939 it was shut down permanently. In 1951, arrangements had been made to ceremoniously demolish the chimney, but it came down of its own accord the day before with no one there to see it.

Information provided by Dr David Johnson.



Inside the Hoffmann kiln today

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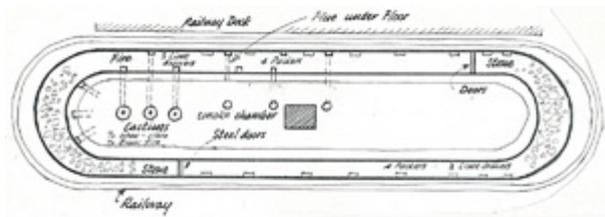


Diagram of the Hoffmann kiln based on sketch by H.B. Worthington