

MEMO

TO	Rhys Evans	FROM	Russell Thomas
DATE	01 February 2021	CONFIDENTIALITY	Confidential
SUBJECT	Gas Holder at the British Steelworks, Port Talbot		

The following Memo provides information on the former gasholder located at the former British Steel Works which was located in Port Talbot.

Gasholder, British Steel Works Port Talbot

Between 1933 and 1934, the British (Guest, Keen and Baldwins) Iron & Steel Co. Ltd. constructed a Klönne waterless gasholder (Figure 1) at Port Talbot to store and use blast furnace and coke oven gas in an attempt to improve fuel efficiency.

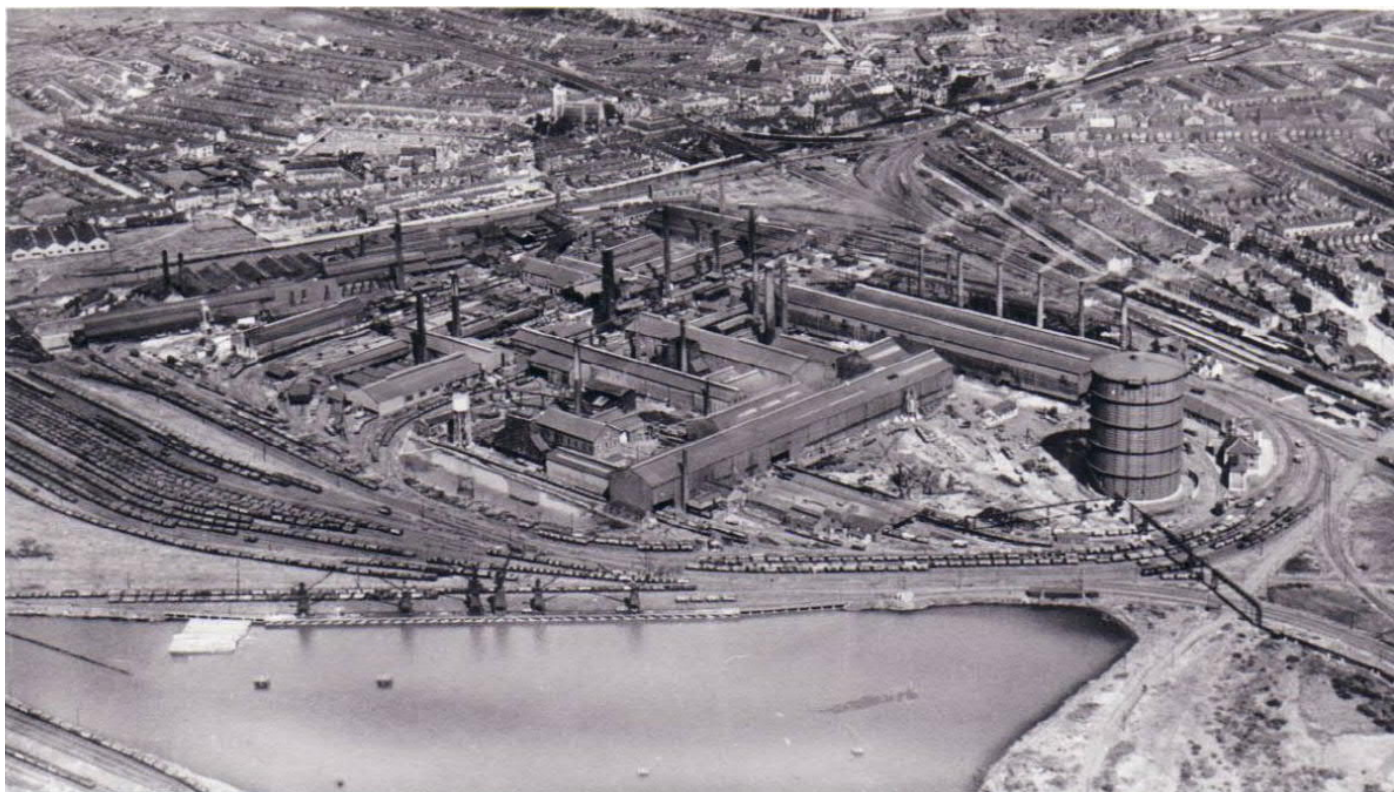


Figure 1. The British Steel Works, Port Talbot, showing the gasholder of interest to the right of the picture (From Parry, S., History of the Steel Industry in the Port Talbot Area 1900-1988, PhD thesis, University of Leeds.

The Klönne gasholder was a German design of gasholder, referred to as a dry gasholder. This design allowed the heavy water tanks used on water-sealed gasholders to be dispensed with, requiring less expenditure on the foundations and tank. Another benefit would be that gas would remain dry.

The construction of an effective dry gasholder was first achieved in 1915, the original design had been patented by the German company Maschinenfabrik Augsburg-Nürnberg AG, in 1913 and known in the UK after the initials of the Company, as a MAN gasholder.

A later form of dry gasholder was constructed by Messrs Aug. Klönne of Dortmund, Germany, who developed a wide range of gas plant. They first took out patents for their waterless gasholder in 1882. But the first example was not built until 1927, in Dortmund, The Klönne design was cylindrical rather than the MAN Polygonal shape. Close up this gasholder would have the appearance of the photograph shown in Figure 2 below.

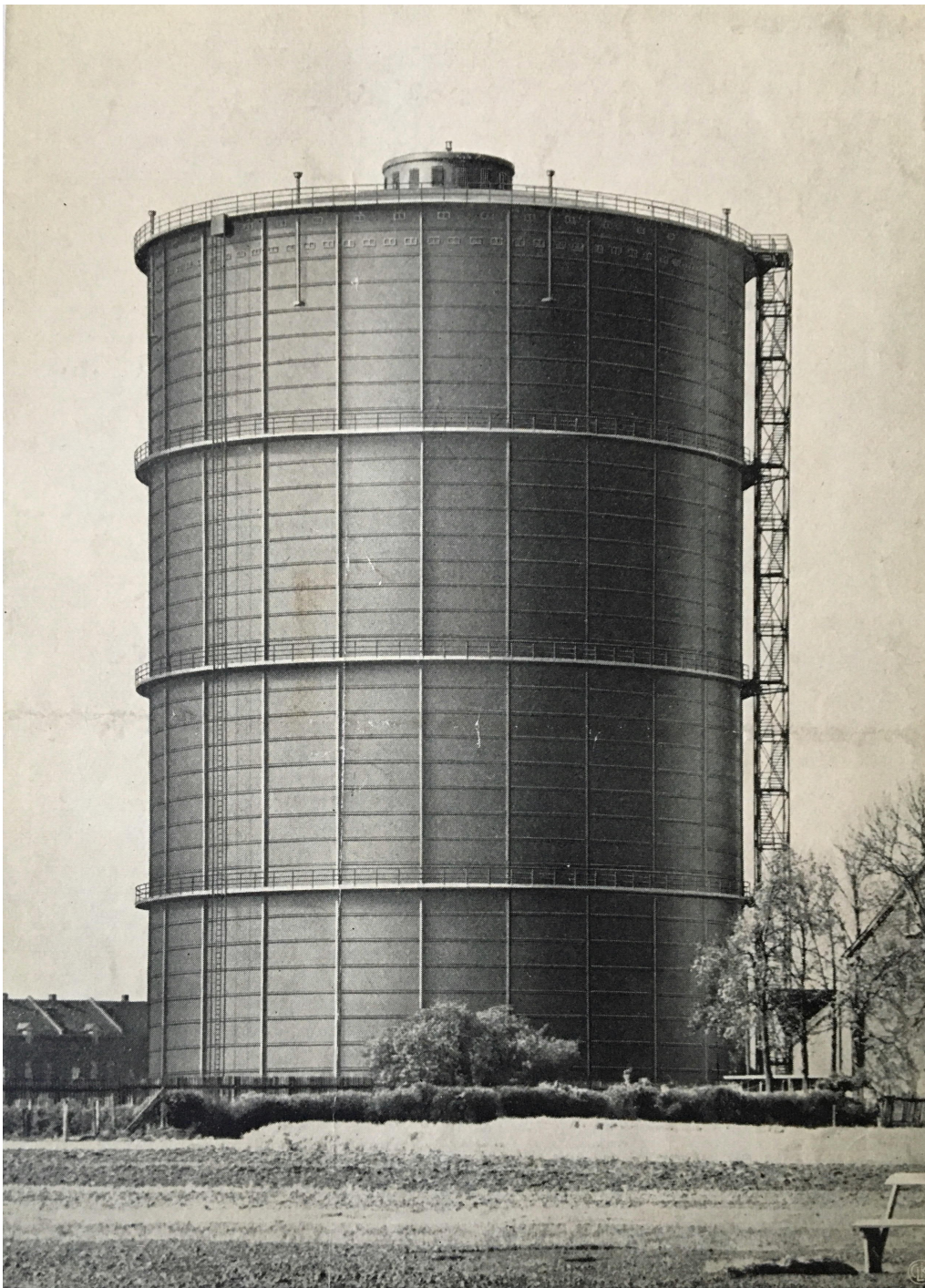


Figure 2. A Klönne dry gasholder.

The gas was sealed within the Klönne dry gasholders tank by a flat circular shaped piston, which was stabilised with two set of rollers, both radial, mounted around its edge (Figure 3). The piston was sealed around the edges by a ring of grease, the seal is kept in place by counterweights as can be seen in Figure 3.

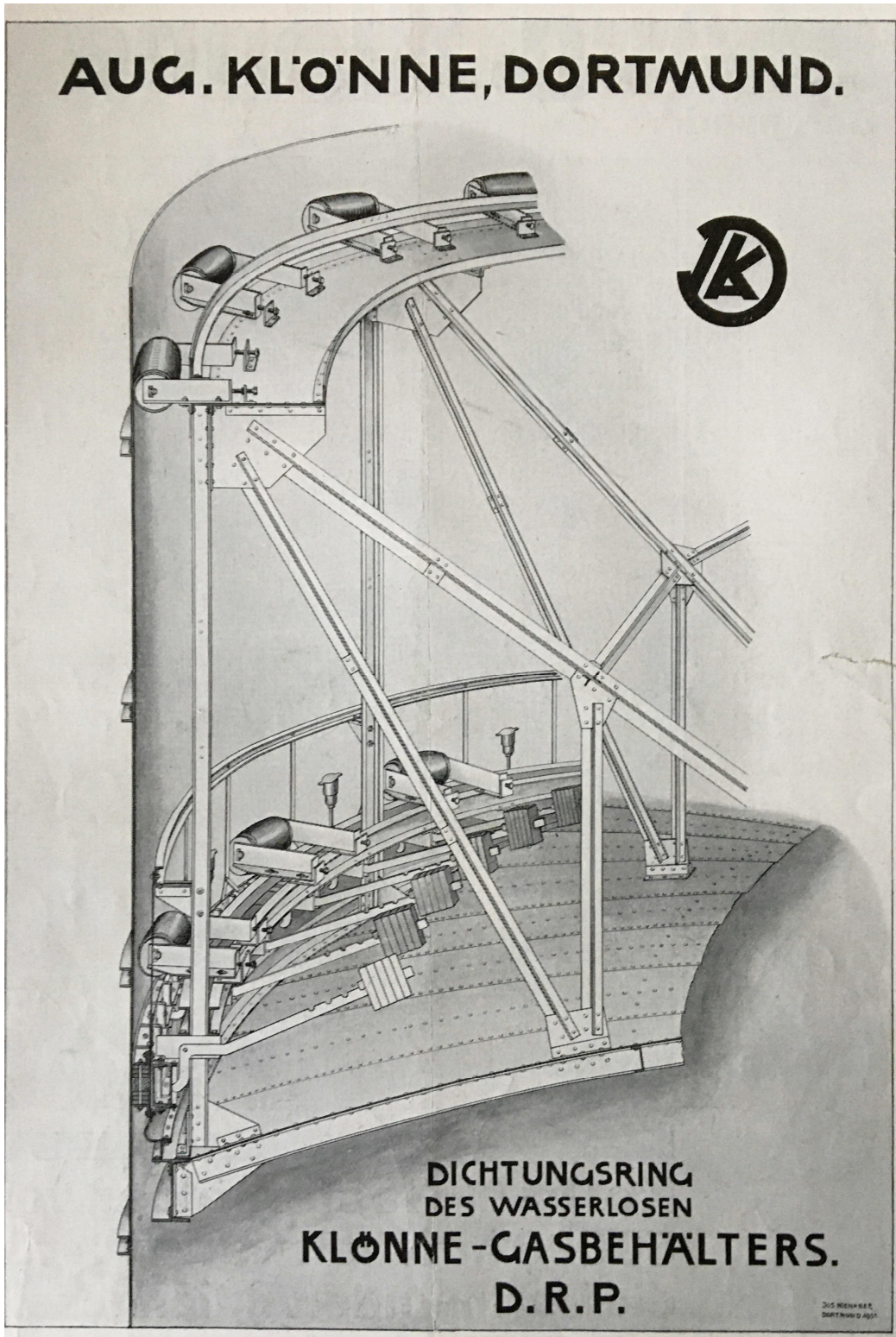


Figure 3. The seal and roller mechanisms on the piston of the Klönne dry gasholder.

As described earlier, the dry gasholder had no water filled tank. The water filled tank formed a key part of the water sealed gasholder and it was this tank which contained tarry sludge typically associated with a gasholder tanks. The base of the tank can be seen in Figure 4, this tank was constructed from steel, built on concrete and steel foundation.

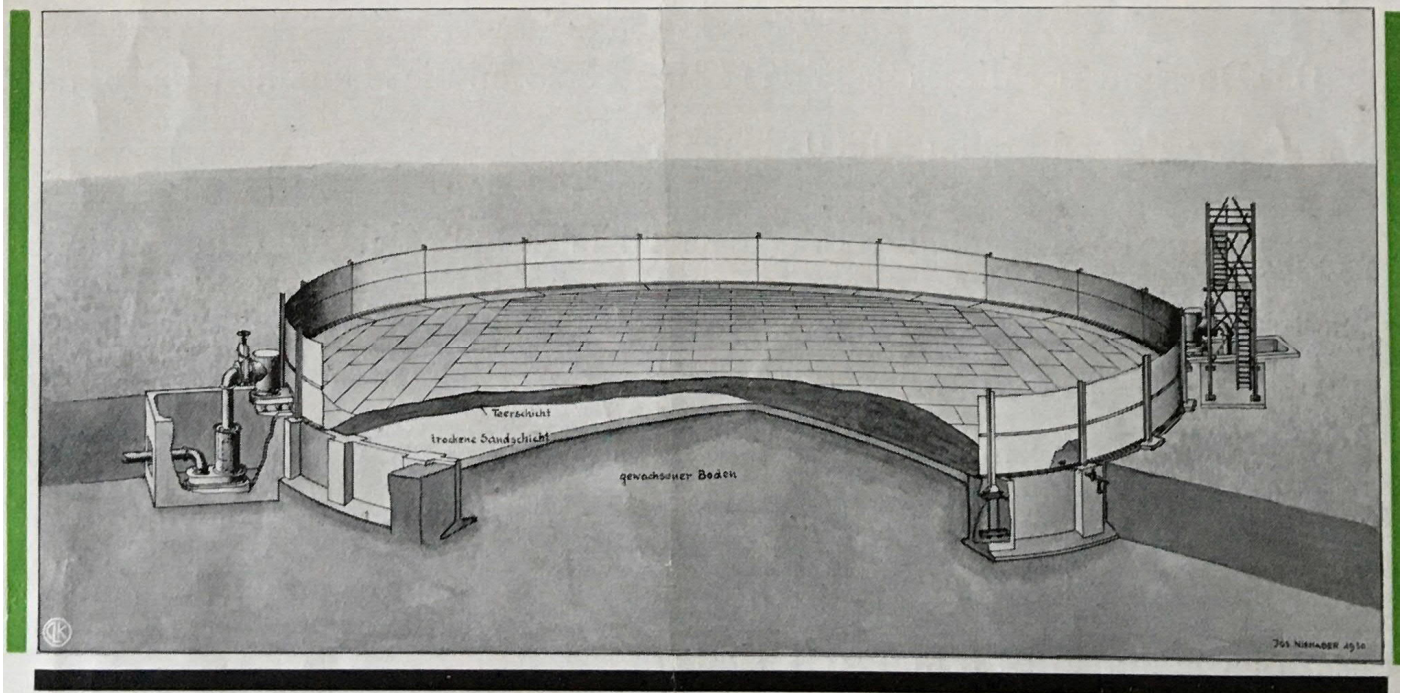


Figure 4. The foundations and base of the tank associated with the Klönne Dry Gasholder.

The Klönne dry gasholder lacked the tar seal of the MAN dry gasholder. The MAN tar seal involved the recirculation of tar from the piston down the walls of the gasholder tank to the base, where it was collected and recirculated back to the piston. Tar could be lost from this system to the ground, so the ground around MAN gasholders could be impacted with tar. The grease seal did not require the recirculation system of the MAN gasholder and the grease remained on the inside walls of the cylinder as the piston moved up and down. The ground around the base of the tank was therefore much less likely to have been impacted by contaminants associated with coke oven and blast furnace gas in the form of tarry sludge deposited in the water tank or the tar associated with MAN dry gasholders.

Closing remarks

I hope this provides the information required.



Prof. Russell Thomas
Technical Director