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U. S. Bureau of Mines
Hydro. Demon. Plant Div.

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DIRECT PRODUCTION OF SYNTHESIS GAS FROM POWDERED FUEL.

I wish to make the following additions to your letter of 12-th ult.

I have further discussed with the Generaldirektor Kost the topics covered in our conference.

We agreed, that a powdered coal fuel gas installation on a bituminous coal basis as a first unit is less desirable to build than a powdered coal synthesis gas producer, i.e. with oxygen gasification. The operating experience at the Rheinpreussen pilot plant installations have repeatedly confirmed the ease and certainty of gasification with oxygen, and the risk of putting up such a unit is small and no difficulties need be expected.

Mr. Kellner (of the "Hermann Göring" works) has told me in the presence of Mr. Kost that the construction of powdered gas producer installation is very important to him, in particular in Watenstedt, because of the insufficient amount of gas available for heating the converters after the completion of the second addition. He had no intention, however, of building an air gas unit, and would prefer the 70 - 80% oxygen, to produce higher heating values. If needed, the gas then could also be sent to the steel works.

I told Mr. Kost in this connection that the proposed installation for the Pattberg mines should be reconsidered to decide, whether the 100 te powdered coal producer installation would not be better located at the gas works instead of the Pattberg mines, and whether a correspondingly large oxygen installation should be built at the same time. Computations have shown that the operating costs of such an installation for the production of synthesis gas, including interest and amortization, are considerably more favorable than the costs of his present water gas installation, especially because of the ever increasing break-downs and costs of repairs. According to his statement, the operating costs per m³ of water gas amounted to but 2.2 Pfg at the gas works, and the increased costs of repairs to be expected could not have been included there. Mixed synthesis gas cost of 2.5 Pfg would not be too high.

In reply to Mr. Kost's question on the operating costs of a synthesis gas installation with an oxygen plant, I have quoted him the price of 1.6 - 1.7 Pfg, but without obligating myself, and that the cost of erection of the required oxygen unit would be between RM 500,000 and 600,000. Mr. K. appeared interested. He suggested, however, that in such a case we would be unable to operate with air-gas, but I replied that we would include a second air gasifier in this installation to permit testing out both processes in one installation. There would be an incentive for Rhenish Prussia, since he always informed us that he could get but 1.2 Pfg/m³ for Ruhr coke oven gas, and that the powdered coal air gasification unit at the Pattberg mines would always remain an auxiliary operation, while a synthesis gas producer built at the gas company would be a profitable business. The latter might also be considered as a reserve water gas producer, if the synthesis gas production be limited to 2000 m³ per hour. As long as operations were carried on with air gas, this fuel gas could be supplied to the coke ovens of the Mine V (Rinselmann ovens) instead of the new Pattberg mines ovens. Mr. Kost thought it plausible. A pipe line is available, no additional costs would be incurred, and the Hinselmann ovens had been built as association ovens.

It would be advisable to meet again within the next weeks. Mr. Kost will by then have informed us, whether your letter of the 12th ult. for a powdered coal unit at the Pattberg mines be considered, or whether it be altered in the above sense. Mr. K. requests data on the costs of installation and operation and the space requirements, because the available space at the gas works is very limited, and Mr. K. would like to keep the construction of the water gas producers as a safety measure.

W. M. Sternberg.