

Memorandum III

Ref: Oxygen Plant

According to the program Boehlen V the oxygen plant is supposed to have an output of 7,800 cu. m. per hour of oxygen. But since the first days of August, the plant had to produce 9,000-10,000 m³ oxygen per hour, i.e. 15-28% more than it is supposed to furnish. The extremely high output caused several breakdowns of the plant due to chcking of the regenerators and the upper part of the column with water and CO₂. The trouble was caused by:

- 1. High temperature of the low pressure air.
- 2. Lack of compressed air.
- 3. Insufficient cooling of the compressed air.

1. Temperature of the Low Pressure Air

The low pressure air which has been cooled by means of cooling tower water has a temperature of 50-60°C. Further cooling takes place in final coolers which are operated with drinking water. Due to the scarcity of such water the final coolers could not always be supplied with water resulting in air temperatures of 40-50°C. after the final coolers. Under such conditions the content of water vapor in the air is very high causing choking of the cold regenerators due to the formation of deposits. It is necessary to install a small pump which is able to supply the final coolers with water.

2. Lack of compressed air

With 3 oxygen apparatuses in operation the volume of the compressed air which is furnished by three compressors is not sufficient for the additional thawing of the oxygen filters, the heat exchangers and the spare apparatus. Since with the high output the apparatus are choked after a short period of time, the 5th apparatus must be quickly thawed. Despite the fact that 4 high pressure compressors are installed only three can be operated because only 3 scrubbers for the removal of the CO₂ are available. Experiments to operate 3 compressors with 2 lye towers failed due to a carrying off of the lye. An additional lye tower together with a pump (output 20 m³/hr., 3 m head of water) must be installed in order to be able to operate 4 high pressure compressor.

3. Unsatisfactory cooling of the compressed air

The compressed air is supposed to have a temperature of 40°C. behind the preliminary coolers, but only temperatures of 32°C. were reached. In addition it must be borne in mind that the ammonia-coils must be thawed once or twice a day and the heat exchanger once a day due to choking with CO₂; should it become necessary it is impossible to repair the ammonia coils. Due to the unsatisfactory cooling of the compressed air the oxygen apparatus cannot be operated under full load. For that reason a 3rd preliminary cooler should be installed. With the additional installation of a middle-pressure-flask and a catch-pot for liquid, the oxygen will be able to furnish the required compressed air.

Memorandum IV

Ref: Steam Supply of the Producers

As experienced December 7, 8, 1942 with an interruption of the electric power supply the supply of low pressure steam is affected which influences the proper operation of the producer plant. It is therefore absolutely necessary to provide an emergency supply for low pressure steam by connecting the high pressure steam network of the A.S.M. with our low pressure steam network.