

Report on Accidents at Politz. June 26 and 28, 1942

When a section of the cycle system which had not been used for some time was again connected to the hydrogenation unit, some liquid, possibly lubricating oil from the recycle pumps, was carried into the valves of one converter. This clogged up the valves resulting in temporary stoppage of the gas flow and the admission of cold gas. When further opening of the valves did not restore gas flow, the unit was detached from the cycle system about nine minutes after the difficulties had started and it was begun to empty the converter. At this time an explosion occurred since the gas flow had been restored shortly before and caused the considerably superheated product to flow into the transfer line from converter #2 to converter #3. This resulted in rupture of the line and the riser pipe was thrown through reaction against the wall to the neighboring stall, broke through the wall and broke off the cold gas line of this stall.

Through the hole in the line the unit released its pressure and produced a tremendous flame of about 262 feet in length and killed seven men who stood on the gallery of the neighboring coal paste container.

All four coal stalls were emptied subsequently and on this occasion one of the units coked up and had to be repaired. The unit was made ready for repair by purging as usual. After all connections of this unit had already been broken and two converters had been removed, sudden pressure release took place which caused an explosion and the formation of a flame which killed two more men. The location of the undetected pressure was probably in the heat exchanger and had remained unnoticed during purging of the unit from inlet to outlet because the heat exchanger was not tight.

The following conclusions relative to the prevention of similar accidents can be drawn:

1. Before connecting a previously unused cycle system to a unit, all possibilities for contamination or clogging should be considered and systematically tested.
2. Experience has shown that clogging of the gas passage and stoppage of cold gas flow is extremely dangerous. If this has occurred, all possible care must be taken to avoid flow in the unit since the temperature in the reactors will rise unfailingly in the absence of cold gas and the converter charge will heat up to such an extent after a few minutes that it will burst the transfer lines if permitted to pass into them. Thermocouple readings are not of much help in this case since they give only an indication of local temperatures and may not even follow the temperature rise sufficiently fast.

In case of difficulties with the gas flow which do not disappear after less than one minute, the unit should be detached from the cycle system and then be emptied. No attempt should be made to eliminate the difficulty by trying to open the valves wider.

3. Before a unit is opened for repairs it should be carefully purged, especially when it is known that coke deposits have formed. Purging should not be confined to flow from inlet to outlet but should also be practiced through all cold gas inlets using all possible openings as outlets.



