Dept. 246 - Training Manual

SECTION V - (continued)

Off-Gas Purification

1. HCl Flow

The reaction of BiØ and Chlorine in the chlorinators gives off HCl gas. Some BiØ and Aroclor are carried over with the HCl, but are condensed by the gas-cooler and stored in the off-gas storage tank. The cooled gas will pass through a Brink mist eliminator then to Dept. 218.

2. HCl Equipment

1. Off-Gas Condenser
2. Off-Gas Condenser Water Circ. Pump
3. Off-Gas Stg. Tank
4. Off-Gas Stg. Tank Pump
5. Off-Gas Stg. Tank Brink Mist Eliminator
6. Off-Gas Drowning Jet

3. HCl Equipment Function

1. Off-Gas Condenser (Item 2-427)

The purpose of the off-gas condenser is to cool the HCl gas and make it possible for the Brinks to remove the entrained BiØ and Aroclor.

2. Off-Gas Condenser Water Circulating Pump. (Item 2-428)

The purpose of this pump is to circulate cooling water through the condenser.

3. Off-Gas Storage Tank. (Item 2-429)

The purpose of this tank is to collect & hold the BiØ and Aroclor removed from the HCl gas until it can be pumped back into a chlorinator for making non-electrical Aroclors.

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SECTION V - (continued)

Off-Gas Purification (continued)

3. HCL Equipment Function (continued)

4. Off-Gas Storage Tank Pump (Item 2-431)

The purpose of this pump is to return the collected BiØ and Aroclor from the off-gas storage tank to the batch chlorinator head tank.

5. Off-Gas Storage Tank Brinks (Item 2-430)

The Brink demister consists of 3 elements in parallel. The purpose is to filter out the cooled BiØ and Aroclor and allow only the HCl gas to pass through.

6. Off-Gas Drowning Jet (Item 2-426)

The purpose of the drowning jet is to drown the HCl gas from the chlorinators and other HCl emission sources in the department.

At times it is necessary to shut off the flow of HCl to the condenser, storage tank or the line to Dept. 218. The drowning jet makes this shut off possible while the chlorinators continue to run.

4. Off-Gas Control Loops

A. There are 3 major control loops in this system.

1) Off-Gas Storage Level Indicator (LI-46)

The function of this loop is to provide an indication of level of material in the off-gas storage tank. The dial reads 0 - 100% and is located near the bottom of the storage tank, N.E. side.

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SECTION V - (continued)

Off-Gas Purification (continued)

4. Off-Gas Control Loops (continued)

2) Off-Gas Storage Tank Temperature Control (TIC-20)

The function of this loop is to provide temperature control for the material in the storage tank. The controller and control valve are located on the second floor by the west handrail. Set point for the controller is 50°C.

3) Off-Gas Condenser Temperature Control (TIC-19).

The function of this loop is to control the temperature of the circulating water to the off-gas condenser. The controller and control valve are located on the first floor near the circulating pump. Set point for the controller is 40°C.

Note - An alarm will be activated if the water circulating pump motor stops.

Note - There are no interlocks in these systems.

B. Other Instrumentation

1) The gas temperature on the outlet side of the condenser will be recorded on the multi point recorder TR-48, point 11. This temperature should range 40-50°C.

2) A pressure gauge is located on top of the off-gas storage tank. The pressure should read approx. 5# PSIG.

3) A manometer is located above the off-gas storage tank on the second floor to measure the pressure drop across the Brinks. The pressure drop should read approx. 4.5 inches.

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