Monsanto

Project File

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FROM (NAME & LOCATION) R. W. Peterson - General Offices

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SUBJECT CEA 1430 - Expand Aroclor at Anniston
Temperature Control of Common
Biphenyl - Santowax System

REFERENCE

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We have agreed to flake Santowax on the Biphenyl flaker a small part of each year. You have proposed a common line for Biphenyl and Santowax transfers to keep the cost of this function down. Santowax must be held at 150°C for flaking and should be transferred in a line jacketed with 100 psig (170°C) steam. However, Biphenyl has a freezing point of 69°C and a desired flaking temperature of 85°C. Its open cup flash point is 123°C. The following ideas are proposed as ways to keep from overheating Biphenyl beyond a safe storage or good flaking temperature.

1. Transfer Line (2" pipe in 3" jacket)

   This 300 ft. line acts like a 162 ft^2 heat exchanger. However, for 85°C biphenyl the losses are only 13,600 BTU/hr. or 15 lbs. of steam/hr. I propose that we have an orifice to meter in 20-30 lbs. of steam per hour, which could be bypassed when handling Santowax. When idle, the line would be hot enough to keep Biphenyl drips from freezing, and would prevent condensate from freezing in the winter. When transferring 85°C Biphenyl the steam would go under vacuum. Steam pressure at 85°C is 9 psia and would require a 21 ft. water column for release. No trap back pressure would be allowed. We would use a french drain instead of recovering condensate to a pig. However, when the transfer is over the vacuum will end and any condensate hang-up will stop. The condensate leg must be insulated.

   This way we could transfer Biphenyl without significant temperature rise and without extra operator attention.

2. Flaker Feed Tank 815

   When storing Biphenyl the heat losses are only 12,600 BTU/hr. This could be supplied by a small (1-2 ft^2) bayonet or plate coil with 100 psig steam. This would be connected to a temperature controller set at 85°C. Some extra area could be provided for remelting of Biphenyl flakes in the manhole basket.

   The main plate coil would be for use only for Santowax, and the plant would be responsible to see it was disconnected and blown out in between usage.

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The recirculation lines at tank 815 would be jacketed, but the steam would be normally disconnected for Biphenyl to avoid overriding the temperature control. The operator could manually steam out the jackets to fight freeze-ups. This also applies to the feed line to the flaker.

3. Flaker Pan, Item 816

With the flaker feed rate around 10 GPM, little reheat is expected from the flaker pan plate coil. It would be connected to 100 psig steam with a 1/4" line and globe valve, with a bypass for Santowax.

If this plan is acceptable to you we will proceed on this basis.

R. W. Peterson
Project Manager

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