

V. Campbell

SILVANIA TRIP REPORT - 12/5/51

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DEC 11 1951
C. R. Tube Engineering

Persons contacted:

Mr. H. W. Kissinger - Plant Industrial Engineer
Mr. Jos. Loughlin - Product Engineering
Mr. R. Stone - Division Engineer (Exhaust)

We were met by Mr. Kissinger who escorted us on a tour through the plant. Since the main object of our trip was to observe and discuss exhaust techniques we were referred to Mr. Loughlin and Mr. Stone.

I - 21" EXHAUST BAKEOUT

A. At the present they are exhausting 21" tubes on a 24 head rotary exhaust unit.

Index speed - 4.5 min.
22 oven positions - 99 min.
6 heating positions - 27 min.
16 cooling positions - 72 min.
peak temp - 410°C
exit temp - 115°C

Type of heating - Gas fired recirculated air
Cooling - Natural cooling in still air

Hydraulic driven, sliding doors are used to isolate each zone. The last zone has an exhaust blower to remove some of the heat.

Implosion shrinkage on this unit has been almost 1% which they consider high. Since last making adjustments they had processed about 300 tubes with no implosions.

Heat curves showed a very smooth cooling curve with a cooling rate of about 4.5°/min. with an almost constant differential of about 15° between inside and outside glass temperatures.

B. INLINE EXHAUST UNIT

Continuous drive - 82 tubes/hr.
135 total positions - 99 min.
120 oven positions - 88 min.
26 heating positions - 20 min.
94 cooling positions - 68 min.
peak temp - 410°C
exit - 115°C

Type of heating - Electric, radiant, panel heaters. Each seven foot section consists of three 13 KW units, one on top, one on either side.

Type of cooling - The cooling section is a double wall oven. The tubes ride through the inner chamber radiating heat to the inner shell which is cooled by means of room air drawn in through dampered openings in the outer by means of exhaust blowers located on top of the oven. Slide dampers located along the top of the inner shell allow some room

air to be drawn directly up through the inner chamber.

This unit has just recently been put in operation and to date has performed well on 17" and 20" tubes. Heat curves on 21" bulbs compared favorably with those from the rotary unit and they were starting to load a few 21" tubes.

II - GAS CHECK

A gas check station is located near each exhaust unit and every tube is gas checked after tip-off. This station is manned at all times. A buggy is removed for servicing after two successive failures for gas or emission. Their upper gas limit is equivalent to a gas ratio of 0.5 on our test set.

III - BUGGY SERVICING

Buggies are given a complete servicing every 30-45 days, i.e., pumps removed and cleaned.

Diffusion pump bodies and jets are cleaned in a vapor degreaser. (Solvent trade name Blakesol.) Mechanical pumps are drained and refilled.

Exhaust systems are checked after assembling and are required to pump down to 5×10^{-5} mm Hg in 30 min.

Exhaust buggies are equipped with a high temperature alarm system which rings when the desired discharge temperature of the pump cooling water is exceeded. This may indicate either warm supply water or poor circulation through pump cooling system.

It is felt by the writers that this visit has been very worthwhile in providing an opportunity to observe and discuss mutual problems with others in the field of T.V. tube manufacturing.

A. J. Bisesi
C. E. Miller
SYRACUSE TUBE WORKS
December 10, 1951

AJB:ib

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