

GE CONFIDENTIAL

Trip Report
Lancaster Glass Co.

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Purpose: Review 11" - HB glass quality, inspection equipment techniques, and manufacturing processes at the vendors plant.

Results: Inspection equipment which will allow adequate quantitative measurement of HB glass criteria is now in place at the vendors' plant. Herein, a definite improvement has finally occurred since the previous similar visit in October 1965.

Persons Contacted: Mr. B. Gerlach, Management
Mr. R. Fox, Management
Mr. B. Greenlee, Sales
Mr. T. Kendrick, Manufacturing
Mr. R. Oldham, Engineering
Mr. H. Shupe, Quality Control

Discussion:

A complete tour of Lancaster facilities was made to personally see the complete manufacturing phase of HB panel and funnel operations. During all discussions we made every effort to impress Lancaster with the need for improved quality and the reasons behind this requirement. During our visit all manufacturing operations other than panel forming were being performed. The remainder of this report will be, then, a review of those operations.

Funnel Press:

This equipment is a 12 head Lynch press with a production rate of 8 pieces/minute. The glassware is manually loaded into an annealing lehr of approximately 8 ft. width. The funnels are unloaded and inspected by 3 operators who check glass quality and open end axial dimensions with go-no go gages. An hourly check is made on mold equipment parameters as measured from the glass product by an additional Q. C. inspector.

Funnel-Neck Seal:

This process is performed on small Litton lathes with a productive rate of 120/hr. The funnels are pre-heated by small electric radiant cones directed at the funnel interior.

Funnel Anode Button Seal:

The funnel-neck assemblies are received from neck sealing lathes and placed on the buttoning jig. R. F. from a 2 1/2 kw lapel oscillator accomplishes the operations of glass removal and subsequent button sealing. The time required is 10 seconds (each) for the glass removal and anode seal. The equipment is very simple in design and is totally manual. After anode insertion, the assembly is lehr annealed. Production rate, therefore, is approximately 120/hr.

Lehr Inspection:

The completed neck-funnel assemblies (after lehr anneal) are 100% inspected for neck tilt, neck OD and ID, and general glass quality. Three inspectors are used in this operation.

Mask Stud Insertion:

Lancaster uses a "mushroom" fixture which utilizes the GE "ball system" to locate mask studs. The equipment is totally manual with an output of 50-60 pieces/hr. Three pieces from each of the (3) units are checked for stud location on an hourly basis. One of Lancasters most difficult problems is deterioration of the non-metallic stud positioning mandrels. We offered assistance in this matter by means of contact with GE "know-how" of such materials as quartz and Luclox.

Seal Edge Grind:

The seal edges are planar ground using Blanchard equipment. Three funnels are loaded into either of two units and process time is approximately 3 minutes. The funnels are referenced from the glass "out-riggers" located 120° apart on the exterior of the funnel yoke section.

Panel Face Polish:

All face panels are polished by means of (6) single head mechanical polishing units. Sanding discs (14" Dia.) of 120 grit size accomplish the initial phase of grind and polish. After sanding, the panels are polished with a cerium oxide slurry on felt polishing discs. The latter phase of this operation is a similarly used method to provide panel seal edge polish.

General:

We were given a tour of the new Lancaster facility which comprises 200,00 sq. ft. It will compose all of the cathode ray bulb parts-finishing operations such as panel-funnel and neck sealing.

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It was noted that a circular frame with Litton burners is in use for panel-funnel sealing. The lathe operators (female) accomplish a productive rate of 80-90 13" bulbs/hr. at this station.

A discussion period occurred between all previously noted Lancaster and GE personnel. At that time, the emphasis was centered upon quality problems. Explanations were given for the necessity of the various specifications and the behavior they played as to finished tube quality. We did not make any commitments regarding any relaxation of glass criteria requirements. Lancaster now has gages available to measure all HB specification parameters. We have obtained confirmation at Lancaster of measurements on defective parts taken in Syracuse. There appears to be no reason for unawareness by Lancaster of any out-of-control conditions.



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