

J. C. Younkers

TRIP REPORT

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ANSWER RETURN LOG

Plant Visited: General Electric Medium Induction Motor Department,
Schenectady

Date: October 25, 1954

Trip made by: D. A. Smeaton

Objective: To observe a method of applying varnish to motor and generator laminations, and to assess the possibility of adapting this method to the filming of glass plates for the PA tube.

Persons Contacted: Paul Richter, Sup't.-Punchings, Tool and Die, Sub-Section.

The equipment observed was located in Building 11, Schenectady General Electric, adjacent to punching operations producing motor and generator laminations for various departments.

The material being processed was sectors of motor and generator laminations of high tensile steel, varying in thickness from .014" for generator steel to .019" to .025" for motor steel. Most of this was magnesium-oxide coated by the supplier, to prevent adhesion from heat treatment after final assembly.

The process was in three stages:- de-burring, varnishing-both sides, and baking, carried out continuously at 30 feet per minute.

The laminations were hand-fed flat onto feed rollers, staggered indiscriminantly to avoid matching of varnish defects occurring at support points. After deburring by grinder, further driven rollers carried the steel to the varnishing station. This consisted of two gelatin rolls, 8" diameter x 48" long, superposed and in light contact, both driven. The cold varnish dripped onto the top surface of the upper roll from holes in a pipe aligned axially, and was applied to the lower roll by means of a bath into which this roll dipped. The roll pressure was adjustable, but was not changed for the various material thicknesses encountered. The varnish used was one of two types; either #1018 ord Varnish or Sanstel 9576; no manipulation of viscosity was required other than maintaining the liquid at room temperature.

The steel issued from the varnish rolls onto cables having contact rings every 5", which permitted point contact only, and these carried the material through a 3-4 minute bake at 980°F.

Several sizes of varnish rolls were examined in their storage racks. These were printer's rollers, manufactured by Samuel Bingham Sons, New York, N. Y., and consisted of a gelatin layer 3" deep, around a 2" steel shaft to give an 8" diameter. No repairs were made to these in the shop; they were returned to the manufacturer in case of surface flaws, cuts, etc.

Close examination of the laminations immediately following varnishing, revealed a definite wavy pattern due to compression of the gelatin during the pass. This pattern was also visible after baking. The varnish, otherwise, was of uniform thickness and of a consistency approaching that of a heavy oil; heavy enough to preclude the possibility of a surface change prior to setting.

There appeared to be very little excess varnish applied from the rolls, as there was no evidence of spilling or draining following application. The varnish flow was adjustable to conform to the appropriate process speed and was held at a minimum.

The uniformity of application appeared to have been assisted by the nature of the steel surface, which was of a fine granular texture due to the magnesium-oxide coating. This roughness was also essential in permitting the rolls to carry the steel through without slippage.

While little similarity exists between the steel surface involved in this case, and the glass surface used in the P.A. Tube application, nevertheless, it is felt that the same fundamental method could be used in P.V.A. filming with the exception that glass and roller would each require driving due to the negligible friction between them. Such a method should produce a uniform film with reliability and rapidity.

D. A. Smeaton

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10/27/54

DAS:rl

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