

cc: GE Buchwald
VC Campbell
C. Dichter
H. Hamilton
AN Reagan
LE Record

TRIP REPORT

CONSOLIDATED VACUUM CORP.
Rochester, N. Y.

REPORT BY: R. B. Lang
Facilities Engineering

DATE OF CONTACT: 9/15/53
DATE OF REPORT: 9/17/53

PERSONS CONTACTED:

A. H. Hartman - Dir. Sales
Wm. Dolke - Sales
Supervisor of Design Engineering

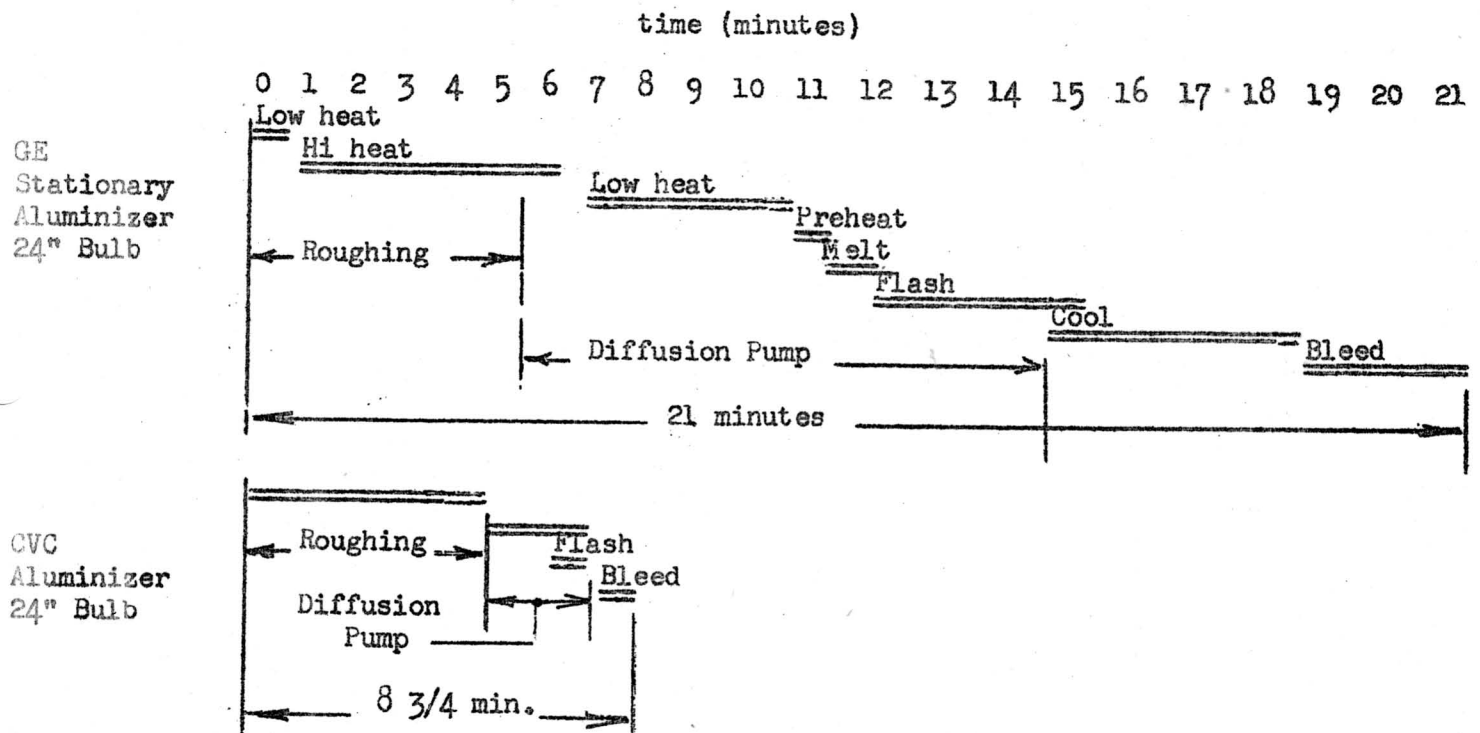
PURPOSE OF TRIP:

1. Watch demonstration of aluminizing buggy.
2. Inspect component parts of aluminizing buggy.

RESULTS:

Shown below is a comparison of 24" bulb aluminizing cycles for G. E.'s stationary units and Consolidated Vacuum Corporation's new valved aluminizing buggy.

Comparison of Aluminizing Cycles



The time difference is explained as follows:

1. CVC is using a booster type diffusion pump which will operate at a fore pressure as high as 750 microns. This pump is capable of a through put of over 1400 micron-liters/sec. at a fore pressure of 300 microns. Moreover, a comparison of the speed curves for our H-4-P fractionative type diffusion pump and the CVC booster pump shows that the CVC pump is roughly four times as fast as the H-4-P in the pressure range of $30\ \mu$ to $10\ \mu$ and twice as fast from $10\ \mu$ down to $1\ \mu$. The speed of the H-4-P begins to exceed that of the CVC at about $0.4\ \mu$. The H-4-P pump speed has been greatly reduced between $5\ \mu$ and $0.1\ \mu$ by the addition of a protective screen in the pump to keep trash from falling into the exposed end. Without the screen, however, the speed of the CVC booster pump is substantially greater above $3\ \mu$.

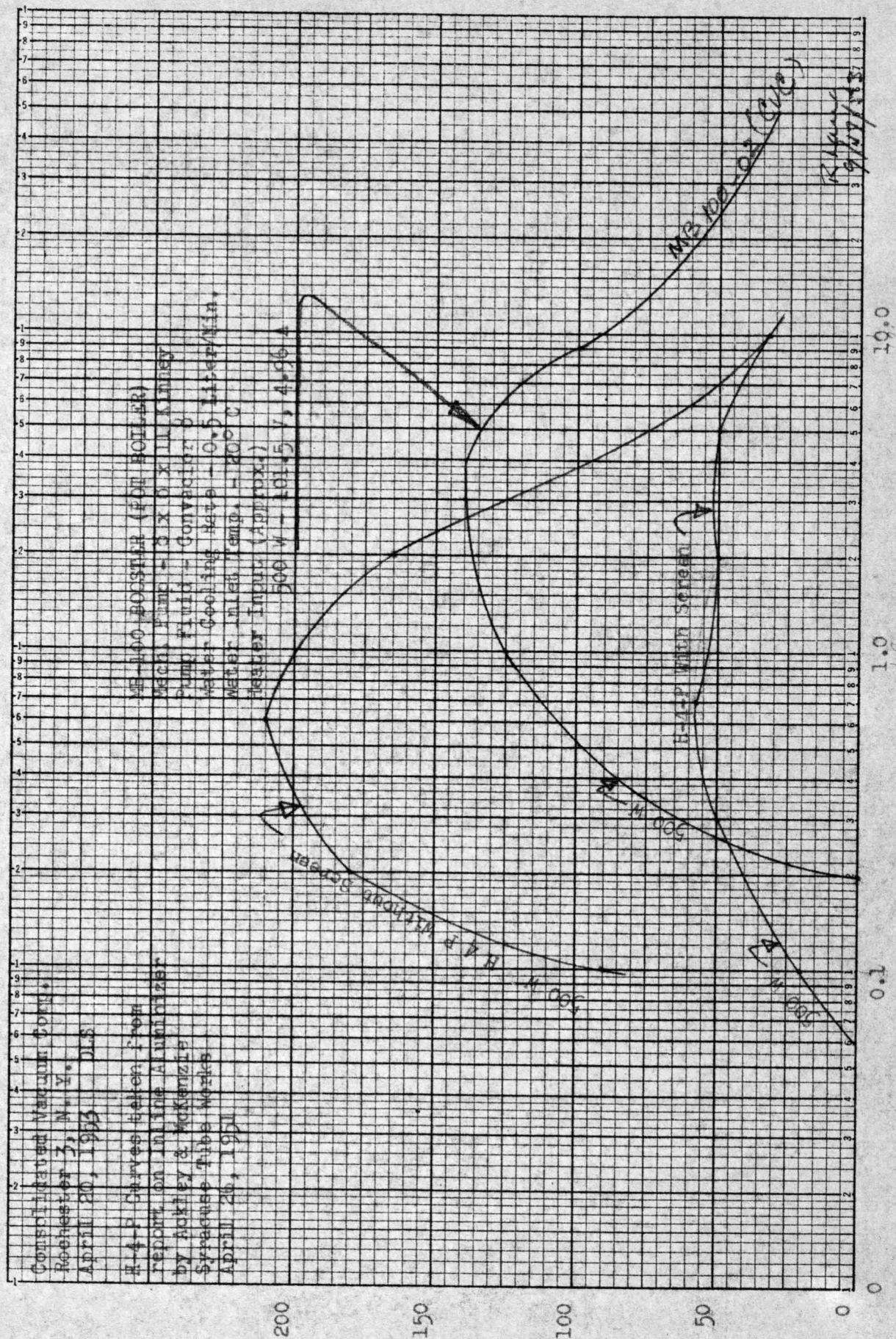
The pump speed curves shown here do not describe the differences between the two pumps as they stand today. Our current factory practice is to operate the H-4-P with 1000 watts input to the oil heater. This would displace the speed curve toward the right - how much is not yet known. At any rate, the difference in performance may be somewhat less than that indicated by the speed curves.

2. CVC used a "one shot" aluminum flash of one minute duration for the 24" bulb. When questioned about the problem of sputtering to the screen, they said they and their customers were experiencing no difficulty. Worthwhile of note, is the fact that they were using stranded tungsten wire loosely coiled for the filament and five small pieces of .040" commercial grade aluminum wire bent double around the filament. None of the coils in the filament were shorted out by the molten aluminum.
3. Bleeding time was cut in half. The bleeder had a needle valve adjustment for control.

Overall workmanship and quality of materials seemed excellent. With one exception, there was no data available on maintenance. The life expectancy of the bronze bellows used in the 4" vacuum valve is 2 years. Buggies have been in operation at Sylvania for 4 months and National Union for 2 months.

There was no information available concerning the speed of the $3/4$ " solenoid valves, leakage of either the $3/4$ " valves or the 4" valve, and the effects of an implosion on the system. CVC feels that implosions during the aluminizing cycle will be so rare that it would be uneconomical to design an implosion proof system. The 4" valve unit appears to be rugged enough to withstand the mechanical stresses of a sudden closure which might result from an implosion.

RB Lang
Facilities Engineering
Cathode Ray Tubes



MB-100 BOOSTER (POT BOILER)
 Mech. Pump - 8 x 8 x 11 Kinney
 Pump Fluid - Convector 8
 Water Cooling Rate - 0.5 Liter/Min.
 Water Inlet Temp. 20°C
 Heater Input (Approx.)
 300 W - 79.0 V, 3.81 A
 500 W - 101.5 V, 4.96 A
 625 W - 124.5 V, 6.00 A

Throughput of Air at 25°C - Micron Liters per Second

Limiting Forepressure
Microns

Consolidated Vacuum Corp.
 Rochester 3, N. Y.
 June 11, 1953

