



TO Mr. R. L. Kling DEPARTMENT LOCATING MAIL CODE
FROM M. F. Patton DEPARTMENT LOCATION MAIL CODE
DATE December 28, 1982 SUBJECT FINAL REPORT - TRANSIENT SUPPRESSOR EVALUATION
PROJECT CTD800251EE

This is the final report for project Transient Suppressor Evaluation. The following summarizes the work performed for this evaluation. Per your request of August 1982, the Sine Control transient suppressor was tested at the Pilot Plant. The transient suppressor was designed to control transient spikes on power lines to within one to two volts of operating voltage and to eliminate harmonics and line noise thereby protecting sensitive electrical instruments. A by-product of the design was to degauss motors which increased motor efficiencies. The manufacturer claimed that uses of this device also produced power consumption reductions of twenty percent or greater. Therefore, this evaluation was requested to determine whether this claim was valid.

The test was delayed from its projected August start up due to two factors. First, no 480 volt equipment was available for use in the test so the supplier replaced it with a 120 volt suppressor. The second delay was caused because the supplier changed manufacturers of suppressors. The suppressor therefore was not installed until late October.

The test was conducted in three stages. Initially, a 120 volt, 1/2 horse power motor was connected to a cycle timer and a watt-hour meter. The first fifteen days the motor was run without the transient suppressor attached, and readings from the watt-hour meter were taken twice a day. Then the suppressor was attached for thirty three days and readings were again taken twice a day. The suppressor was then removed from the circuit and readings taken for another fourteen days. Attached is a graph of the data showing the daily power consumption.

The results of the data shows that the manufacturer was correct in claims of a twenty percent power consumption reduction in twenty days. During the first fifteen days the motor used 93 kwh or 6.2 kwh/d. During the next thirty three days the motor used 158.6 kwh or 4.8 kwh/d. During the last fourteen days the motor used 70 kwh or 5 kwh/d. The reduction in energy usage was 22.58 percent during the time the transient suppressor was attached.

It is concluded that the transient suppressor performed as advertised. The same unit can be attached to a single motor as was used here, or at the main switchgear to protect a plant. The payback on the unit depends on the size of the load and the voltage used. The 120 volt unit costs \$200. For installation on a 1/2 horse power motor, assuming 7.5c/kwh cost of electricity, the payback would be only 9 cents per day, or nine years to recover the \$200 investment. However, if the 120 volt unit were installed in a facility which used 500 kwh/d, then the payback is \$7.5/day or 1.33 months.

It is recommended that a unit be tested in a small plant to verify these findings.

M. F. Patton
M. F. P.

MFP/mh
Attachment