



INTER-OFFICE MEMORANDUM

DATE: April 20, 2004

TO: John Jones, P.E. ; Senior Vice President

FROM: J. Glynn Kindelan, Vice President of Production

SUBJECT: **Update on surge suppression/TVSS application at N.C.P. Spandek production Facilities in Chambersburg, PA and related cost savings.**

As we are always interested in return on investment relative to performance of purchased equipment, I thought that you would find the following interesting.

In March of 2000, we installed transient voltage surge suppression at the Spandek Batch Plant. The TVSS equipment was supplied by POWERSAFE, Inc. in Mifflin, Pennsylvania. The project was managed through Terry Bindschusz, our Maintenance Manager, and Chris Gingrich, our electrician. The installation included a Level 1 main service device on our 480V main line, along with surge suppression on electrical panels in the Spandek Batch Plant. The cost of this equipment was \$ 5,000.00. The approximate value of the protected equipment is \$ 700,000.00.

During a storm in 2003 we sustained a hit from a major surge. The hit was so dramatic that it actually blew the cover off the electrical panel and destroyed the attached surge suppressor. However, we sustained no damage to sensitive electronic/computer equipment that the TVSS was installed to protect, and we incurred no production downtime. Without this equipment we would have had serious problems in the Spandek Batch Plant, which in turn would have created production line losses in the Spandek Plant.

The plant accountant, Jim Bowen, placed an approximate daily downtime cost at the Spandek Plant to be \$ 8,700.00. We could say the surge suppression paid for itself in one day. Had the computerized batch plant at Spandek been down a minimum of two weeks for repairs this would have equated to lost production in excess of \$ 87,000.00.

NITTERHOUSE CONCRETE
ESTIMATED ROI FOR SURGE SUPPRESSION SYSTEM

I. ASSUMPTIONS

- A. Voltage(s)
 - 1. Main Service(s)
 - a. 480V 3 PH
 - b. 208V 3 PH
 - 2. MCC/Distribution
 - a. 480V 3 PH
 - b. 208V 3 PH
 - 3. Branch Panels
 - a. 277/480V 3 PH 4W AC
 - b. 120/208V 3 PH 4W AC
- B. Maintenance Equipment/Repair Cost
 - 1. \$ 20,000/yr. Estimated (i.e. maintenance, labor, and material)
- C. Downtime Cost
 - 1. \$ 8,700/day – Spandeck Plant
 - 2. We will use a 1 day cost for above referenced area only per year

II. TVSS APPLICATIONS

- A. Main Service(s)
 - 1. 160KA/Phase TVSS Devices
- B. MCC/Distribution Panel
- C. Branch Panels
 - 1. 80KA/Phase TVSS
 - a. 120/240V 1 PH
 - b. 120/208V 3 PH

III. TVSS PRODUCT/INSTALLATION

- A. Product Cost = \$ 4,500.00
- B. Estimated Installation Cost = \$ 500.00
- C. Total cost = A + B = \$ 5,000.00

IV. TVSS PROTECTION BENEFITS

- A. Extended Equipment Life (30%-50%)
- B. Increase Reliability to all Protected Equipment
- C. Dramatically Reduced Electrical Maintenance Cost (i.e. Circuit Boards, Computers Etc.)
- D. Dramatically Reduce Downtime
- E. Possibly Reduce Insurance Premium for Casualty/Property Coverage

- F. Dramatically Reduce Future Capital Equipment Investment
- G. Low Initial Investment Relative to Plant/Equipment Cost and Revenue Stream

V. ESTIMATED RETURN ON INVESTMENT (ROI)

- A. Estimated cost of TVSS Equipment & Installation
 - 1. \$ 5,000
- B. Estimated Electrical Maintenance/Equipment Repair Cost
 - 1. \$ 20,000/yr.
 - a. We will use 30% of this total as TVSS Savings (\$ 6,000)
- C. Downtime
 - 1. We will use a one day estimate for the area previously documented. It must be pointed out that there are other downtime areas not included and we are only using a one day estimate.
 - 2. Downtime = \$ 8,700/day
- D. ROI
 - 1. **Breakeven/payback without Downtime @ 30% savings =**
 $\$ 5,000 \text{ (Equipment + Installation)} \div \$ 6,000/\text{yr (Maintenance Savings)} = 0.83 \text{ years}$
 - 2. Life Cycle Savings
 - a. We are using a 20 year Life Cycle based on the 20 year Warranty on the TVSS Equipment
 - b. We assume the Value of Downtime and Electrical Maintenance/Repair is constant over the 20 Year Life Cycle
 - c. *** Life Cycle Savings:** $20 \text{ yrs} \times \$ 6,000/\text{yr} = \$ 120,000 - (\text{Equipment} + \text{Installation}) \$ 5,000 = \$ 115,000$

*** This Investment is Conservatively Estimated @ Approximately 4% of the 20 year Life Cycle Savings.**

**** Above life cycle savings are ultra conservative since they did not include reduction in downtime.**