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### **Cost Savings Examples Avtron Performance View™ Product**

The following are some examples of Cost Savings when Industrial Customers installed the Avtron Performance View System.

- Over a course of several months, a Southern US linerboard machine was experiencing Fourdrinier run away problems resulting in damage to the machine fabric. Traditional means of trouble shooting using a chart recorder connected to the drives did not find the source of the problem. The cost of two machine fabrics (problem occurred twice) plus the unscheduled downtime to install them resulted in over \$250,000 USD of loss. The mill installed the Avtron Performance View on the drive and PLC system. Within the first day of runtime, the problem occurred, the data was collected and analyzed, and the problem was solved. Because of the wide selection of data collected from the system, the problem was solved within several hours of it occurring after the Performance View was installed. The problem was fixed immediately and another \$125,000 of downtime avoided.
- A large Southern Newsprint manufacturer employed a DCS optimization control loop on the machine. The machine incurred a dramatic increase in breaks - approximately 3-4 per day. Down time per break was anywhere between 15 minutes and 2 hours. Cost of a break resulted in \$3,300 to \$26,500 USD. With the help of data from the Avtron Performance View, the mill was able to monitor time-correlated inputs from the DCS and the control action of the drive system. Mill maintenance quickly determined the DCS control loop was changing speeds too rapidly, not allowing the machine to reach its set point before changing it again. Retuning the DCS control loop stopped the breaks from occurring, saving an average of \$53,000 of unscheduled downtime.
- A large industrial company had an average of 100 minutes of downtime per troubleshooting call. With the Avtron Performance View installed and collecting vital data points 24 hours per day from the drive system and PLC, the average time went down to 10 minutes per call. With the Performance View, the average cost per problem was reduced ten-fold, from \$8,400 to \$840 USD.
- During startup of a Performance View system on a Southeastern paperboard machine, the Avtron engineer noticed an anomaly in the speed feedback of the 2<sup>nd</sup> dryer. The speed became very erratic during the startup. He alerted the mill and it was discovered that there was a slipping clutch, as a result of loss of cooling. Fixing this problem immediately saved a minimum of \$30,000 USD of unscheduled downtime, finding the problem before it became critical.
- A Southeastern board mill with a mix of sectional electric drives and mechanical line shaft sections found speed swings getting larger and larger over time on a given section. During the next scheduled outage, maintenance found excessive wear on a PIV drive and fixed the problem. If not found, it would have cost the mill between 6 and 8 hours of unscheduled down time resulting in a loss of \$48,000 USD to \$64,000 USD.

- A Midwestern Paper Mill had an issue with a line-shaft driven machine coasting to a stop for no apparent reason. When looking through the history on the PV it was found that there wasn't a stop issued from the PLC. By looking through the tabular events, the Drive Not Ready bit was going out on the drive itself which would cause the machine to go into a coast condition. The problem occurred several times in a short period of time, and was occurring at a 40 ms interval. Knowing this allowed the mill to concentrate the troubleshooting efforts. Reviewing the drive information, the only items that could cause this to happen were: an emergency stop, a faulty relay, a plc command, or software in the drive changing state. All these signals were monitored between the PLC and drive, and nothing was found in the Performance View. Finally after looking at everything else, the main control board was switched out and found that the board was periodically switching the state from Drive Ready to Drive Not Ready. Using the Performance View system allowed the mill to find the problem and pinpoint the information they needed to find the absolute cause of the drive stopping. It saved approximately 4 hours of time in determining the cause of the problem and approximately \$5200 USD of troubleshooting time.
- A Midwestern non-woven company had several issues regarding splicing efficiency and reliability on a machine. Total production losses due to the issues were \$275,000/year. An industry standard HMI/SCADA package was installed on the line, but was unable to pinpoint or troubleshoot any of these issues. A PV was installed on the unwind area where their most nagging problem existed. It involved random, erratic missed splices causing almost \$60,000 in downtime. Ramifications of a missed splice included loss of product on the spindle, as well as machine downtime due to lack of product on the line. After another occurrence of the issue with PV installed, the problems were immediately traced to faulty operator input, and lack of PLC code to disallow the requested action. As a result, training of the operators took place to not make the requested action, as well as PLC code changes to disallow the requests. The savings that resulted in this effort totaled more than \$60,000/year.