24 VDC Powered Rollers Save Energy and Money for Xerox

Technology Pays Off

The Oregon State University Industrial Assessment Center recently completed an energy assessment of Xerox Corporation's printer manufacturing facility in Wilsonville, OR. Among the findings was a determination that upgrading their current Belt-Driven Live Roller conveyor to a 24VDC powered roller conveyor system, similar to their system in the boxing area, would offer exceptional energy and maintenance savings.

In a comprehensive study of energy use in the facility, the OSU team discovered several opportunities to decrease energy use and increase productivity. Among the items featuring the best return on investment was retrofitting the existing Belt-Driven Live Roller conveyor with Holjeron 24 VDC Microroller powered rollers. Citing an estimated 1.4 year payback period, the assessment makes a strong case for the project. Originally set at a 2.1 year payback, several energy subsidy programs would help fund the project, resulting in 1/3 less payback time. In addition, the project would effectively renew a ten year old system to new active components and controls with a very small investment.

Remarkable Energy Savings

Perhaps the most remarkable finding of the study was that replacing the AC motor system on the conveyor with 24VDC motorized rollers would save an estimated 93% of the electricity. Savings are realized primarily because 24 VDC powered roller systems operate only a zone of 30 inches when product is present and is ready for transport. In AC driven systems, all the motors run continuously and additional control and energy is required to hold or prevent movement to the next zone.

The OSU study measured system loading and the associated running time for the AC system, and calculated the corresponding energy for a 24 VDC powered roller system. The calculations were based on the power consumption measurements of their 24 VDC system in another section of the plant.

Less Maintenance = More Savings

Additionally, maintenance savings were estimated to be reduced by 59% versus the AC driven system. Belt-Driven Live Roller systems require maintenance on the AC motor gearboxes, the pneumatic control delivery system, air bladders and compressors. 24 VDC powered rollers utilize permanently sealed, lubricated motor and gearboxes and require no maintenance throughout their life. Since accumulation is controlled electrically, the number of pneumatic controls can be dramatically reduced, resulting in fewer system components and far less periodic maintenance.

Additional Benefits

The 24 VDC retrofit solution offers two other significant benefits as well. Belt-Driven Live Roller conveyors can be dangerous and require Emergency Stop controls in case a workers clothing or fingers get caught in the drive line. 24 VDC powered rollers can easily be stopped by hand and therefore offer far less chance of injury. In addition, 24 VDC powered roller systems are much quieter for two reasons. First, only sections actually transporting material are on, so a smaller percentage of the whole system is running, thereby reducing noise. Secondly, 24 VDC powered rollers themselves are very quiet when running and the connection to the idler rollers through O-ring drive belts eliminates rattling and noise throughout the system.

Summary

The results of this independent study suggest that by retrofitting the existing AC driven system with 24 VDC powered rollers, Xerox could enjoy a completely new and state-of-the art conveyor system that would consume far less energy and require far less maintenance with a payback period of less than a year and a half. Savings would continue to accrue in the years beyond while improving productivity in a green, quiet and safe manufacturing environment.

Holjeron creates and manufactures brains for conveyors and other equipment. The products we make can replace ones that are not so clever. **Our protocol is simple. Plug it in. It works.**