



PREDICTING BELT FAILURE

We are often asked how to predict impending belt failure by examining the belt's physical characteristics. Since each industrial drive is unique, this can be a difficult task.

The most ideal means of determining when the belt(s) should be replaced is to use service records for that specific drive. This assumes, of course, that the drive has been in service long enough to generate service records. If we know that in the past the belts have typically failed in a narrow range of time, then backing off about 30% from the lowest value of time should provide a belt drive replacement cycle designed to prevent unexpected failure and downtime. Other individuals not concerned about a Preventative Maintenance (PM) program will often follow the rule, "If it ain't broke, don't fix it."

For new drives where PM history and/or service records are not available, some tips on impending belt failure may be helpful. (Also refer to Gates Belt Preventative Maintenance Manual, #14995, for additional discussion.)

V-Belts

A visual examination of banded belts should include checking the band or cover for unusual or extreme wear. If the wear is extreme, is there any evidence of edge cord damage? Check the belt undercord for cracking or chunking out of sections of the undercord. Is the stock still soft? If it is hard and/or glazed it may be due to belt slip or extreme ambient temperature. A hard or "cooked" belt will soon crack.

Bandless, molded notch belts should be checked for excessive notch cracking or any lost cogs. Also for edge cord damage. As with banded belts check for sidewall glazing or hard undercord stocks -- signs of slip or extreme temperatures.

Synchronous Belts

Both rubber and urethane synchronous belts should be visually examined in a similar manner. Check for unusual or excessive fabric wear, particularly on the power flank of the tooth. Check for cracks at the tooth apex, and for any lost teeth. In a normal fashion a synchronous belt should fail by loss of teeth. Any other failure is abnormal. Check for edge cracks or edge cord failures. As with V-belts, any hardening of the belt stocks is a sign of temperature problems -- in this case high ambient temperatures.

Hardware

Always use this visual examination opportunity to inspect the pulleys. Check for excessive wear or damage. V-belt groove gages are available. Sprockets may need to be checked for outside diameter wear using calipers or pi tapes. Worn or damaged parts should be replaced with the belt(s).