

Conveyor belt warranties – why they are important

Industrial conveyor belts are critical components and a significant capital outlay. For most organizations that use conveyors, their day-to-day performance, reliability and longevity has a huge impact on operational success. A warranty is usually regarded as a key factor in the selection of virtually all significant purchases such as TVs, white goods and cars. However, when it comes to the selection of a component that is as critical and costly as a conveyor belt, the significance and importance of a manufacturer's warranty strangely seems to carry very little weight. Conveyor belt specialist *Jeremy Clark* investigates the reasons and explains why warranties are actually far more important than most people seem to realize.

LOW PROFILE

In most walks of life, a warranty or quality guarantee provides the buyer with 'peace of mind'. A well-used sales phrase perhaps, but nonetheless true. Consequently, warranties and guarantees are usually



promoted as a benefit to the would-be buyer as a reflection of the product they are purchasing and the reassurance that the goods will be replaced or repaired at the suppliers cost if the product should prove faulty within the warranty period.

My first, and rather surprising observation when I began to research this subject, was that of the eighteen manufacturers and traders that I was looking at, hardly any mention the subject of warranty on their website or sales literature, let alone promote it as a benefit. It was distinctly treated as a low-profile subject rather than a selling point by the majority. Indeed, for many, there was not even mention of terms and conditions on their websites.

Whether this reflects the belief that the supplier has in the quality of their product or simply a subconscious attempt to avoid complaint is hard to say. Certainly for me, and quite possibly for many others, it does not inspire confidence.

WARRANTY DURATION — A QUESTION OF CONFIDENCE?

The same could be said for the length of the warranty. Of the conveyor belt manufacturers and traders I surveyed, Fenner Dunlop Conveyor Belts (The Netherlands), Kale (Turkey), Trelleborg/SAVA (Slovenia) and SIG (Italy) offered 24-month warranties. Amongst those four, only Fenner Dunlop clearly and strongly promoted its quality guarantee. For the remainder, including other big names such as Contitech, Sempertrans and Rema Tip Top, the standard warranty period was limited to 12 months.

For me, the significance of the duration of warranty is that faults are usually either discovered as soon as a belt is fitted (belt not straight for example) or they slowly become apparent as the months pass, by which time it is often too late.



Only Fenner Dunlop seems to strongly promote its warranty.

Understandably, most warranties have conditions that specify a 'reasonable period' in which to report an issue. However, it is almost impossible to comply with this stipulation when the symptoms of the problem slowly reveal themselves and worsen gradually. It can also give the supplier the opportunity to reject the claim on the basis of 'fair wear and tear'.

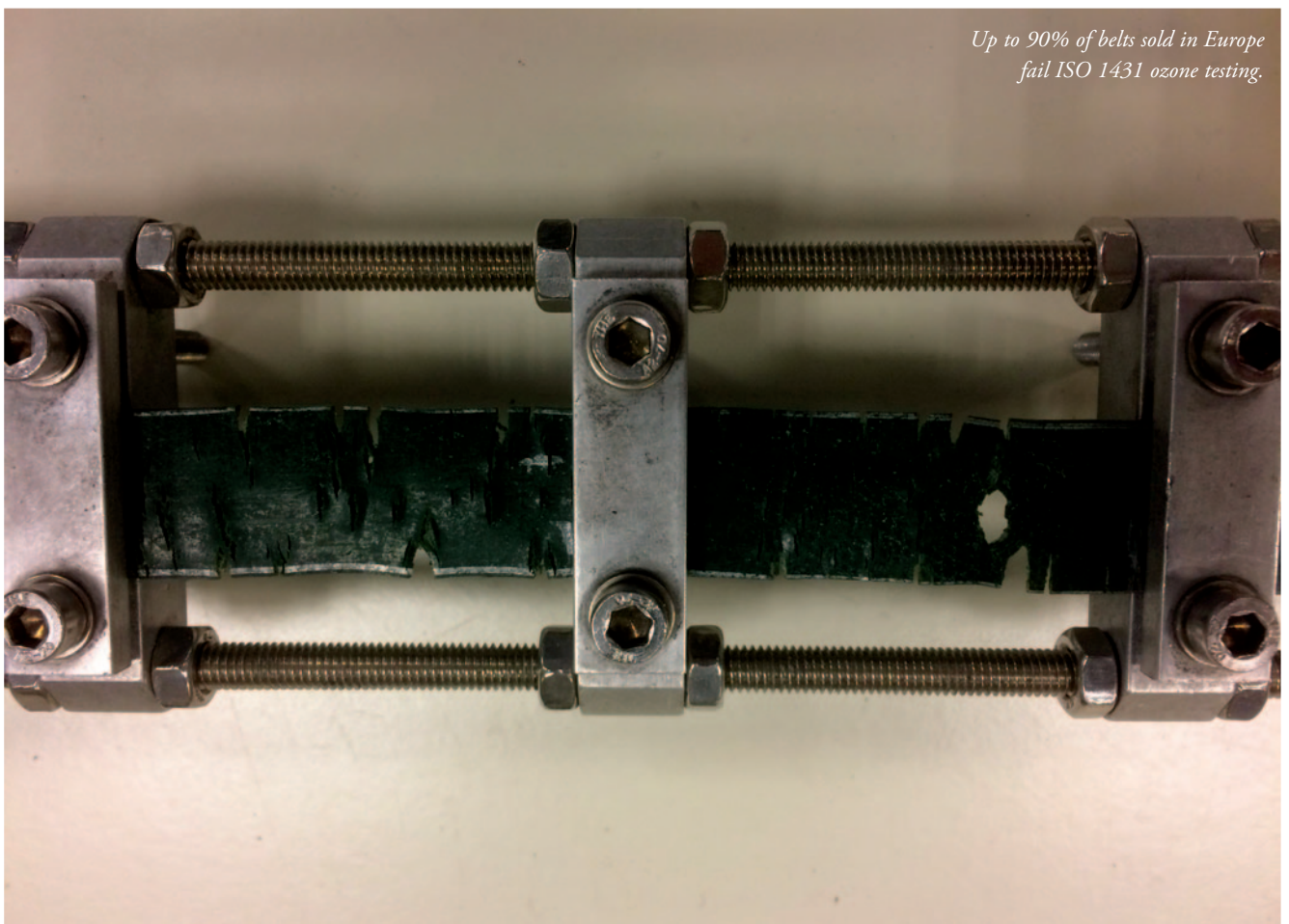
SLOW BUT SURE

One of the most common but most unrecognized causes of gradual belt deterioration is degradation caused by ozone and ultraviolet light. At low altitude, ozone becomes a pollutant and is created by the photolysis of nitrogen dioxide (NO₂) from automobile exhaust and industrial discharges. The reaction, known as ozonolysis, affects the molecular structure of rubber.

The first visible sign is when cracks start to appear in the surface of the rubber. These continue to steadily grow until they complete a 'circuit' and the product separates or fails. Its 'partner in crime' is ultraviolet light from sunlight and fluorescent lighting and also has a seriously detrimental effect on rubber. It accelerates rubber deterioration by producing photochemical reactions that promote the oxidation of the rubber surface resulting in a loss in mechanical strength. This is known as 'UV degradation'. These processes effectively begin as soon as rubber is vulcanized unless antioxidants have been



The first signs — small cracks appear in the surface of the rubber.



Up to 90% of belts sold in Europe fail ISO 1431 ozone testing.

Delamination — the layers of the belt detach themselves.



used to create the rubber compound although the damage may only start to become visible after a few months.

Because of price competition, laboratory testing has revealed that up to 90% of belts sold in Europe, Africa and the

Middle East do not have such protection. The combined effect of ozone and ultraviolet not only dramatically reduces operational lifetime, it also contributes to other problems, including accelerated surface wear and a decline in a belt's

resistance to oil and heat.

STANDING THE TEST OF TIME

Conveyor belts are a considerable investment so to provide genuine value for money, they need to stand the test of time.



Oil absorption over time causes serious distortion.

In fairness, no manufacturer's warranty can ever guarantee a specific length of operational life because there are simply too many variables. However, with the exception of particularly aggressive, demanding applications, most modern-day conveyor belts should run with little or no problem for several years. Nevertheless, in addition to the delayed effects of ozone and ultraviolet damage, there are a number of other problems that can develop over time. Among these is the adhesion between the outer covers and the inner plies and between the plies themselves, which may be only marginally acceptable to begin with and

then decrease in time. This can lead to frequent splice joint failures and delamination of the carcass, where the plies detach themselves and the belt literally begins to fall apart.

Delamination is also symptomatic of heat-resistant belts that have an inadequate level of resistance to heat. Heat accelerates the thermal ageing process of the outer rubber covers, causing them to harden and crack. It also has an extremely destructive effect on the inner carcass of the belt because it gradually destroys the adhesion between the rubber covers on the top and bottom of the carcass and between the inner plies contained within it.

As rubber becomes harder and less elastic, the tensile strength and elongation (stretch) can be reduced by as much as 80%, effectively destroying the operational strength and flexibility of the belt and seriously weakening the splice joints. It is relatively simple to create a rubber compound that will resist even the most extreme temperatures over a short period. However, the difficult and costly part is to create a rubber compound that can resist those temperatures and delay the ageing process for the longest possible period. This is why the length of warranty can be so crucial.

In defence of manufacturers, the operational lifetime of a heat-resistant belt does also very much depend on the conveyor operator. Firstly, that the constant and temporary peak temperatures must not exceed the stated limits of the belt specification and, secondly, that conveyors are not stopped for any length of time while the belt is loaded with hot materials.



Only buy from a source who can be held accountable for the warranty.

Belts that are specified as being resistant to oils and greases are another example of where decline in performance can be gradual. Rubber belts that are not adequately resistant will provide a much shorter working life than they should. As oil imperceptibly penetrates the rubber over time, the rubber gradually softens and its ability to withstand abrasive wear decreases quite dramatically. It also steadily loses its tensile strength while at the same time becoming much more prone to ripping and tearing. While this is happening, the rubber is slowly beginning to swell and distort, leading to steering and handling problems along with a serious reduction in the elongation at break (the amount of stretch before the belt snaps).

As with heat resistance, the cost of producing a belt with short-term resistance to oil is much less than it is to create a belt that can withstand the effects for a much longer and more cost-effective length of time.

ACCOUNTABILITY

As with any warranty for any product, the ability of the purchaser to hold the supplier to account for a problem during the warranty period is paramount. Ease of communication is equally important, including if necessary, legal action. If either of these factors is missing then the warranty is not worth the paper it is printed on.

The biggest single source of rubber belting imported into Europe is from Southeast Asia, the vast bulk of which is from China, who now dominate the market. As with virtually every other market, their strategy is based on mass

volume manufacturing at barely acceptable (and often unacceptable) standards of quality at hugely subsidised prices. Much of the European-based conveyor belt manufacturing capacity has disappeared as a result, creating an unhealthy reliance on low-grade imports.

Indeed, with only one exception (Netherlands-based Fenner Dunlop), virtually all European manufacturers now supplement their production with imported belting while conveyor belt trading companies almost exclusively only sell imported belting. As this market dominance has grown, so has the enormous level of difficulty end-users have trying to lodge warranty claims with Southeast manufacturers. My advice is to always check the provenance of a conveyor belt before committing to buy it.

WARRANTIES ARE IMPORTANT

The conclusion I have drawn from my research is that conveyor belt warranties and quality guarantees should be considered to be very important. In fact, I would say that they are probably more important than ever. The general consensus of opinion seems to be that the general standard of quality has fallen considerably during recent decades. This decline is mirrored by a corresponding decline in the level of expectation by end-users, all of which coincides with the rapidly growing dominance of imported belting from Asia. The relevance and importance of warranties and quality guarantees and the willingness (or reluctance) of the supplier to openly provide such reassurance, clearly needs to be placed much higher on the buying criteria list.

Jeremy Clark