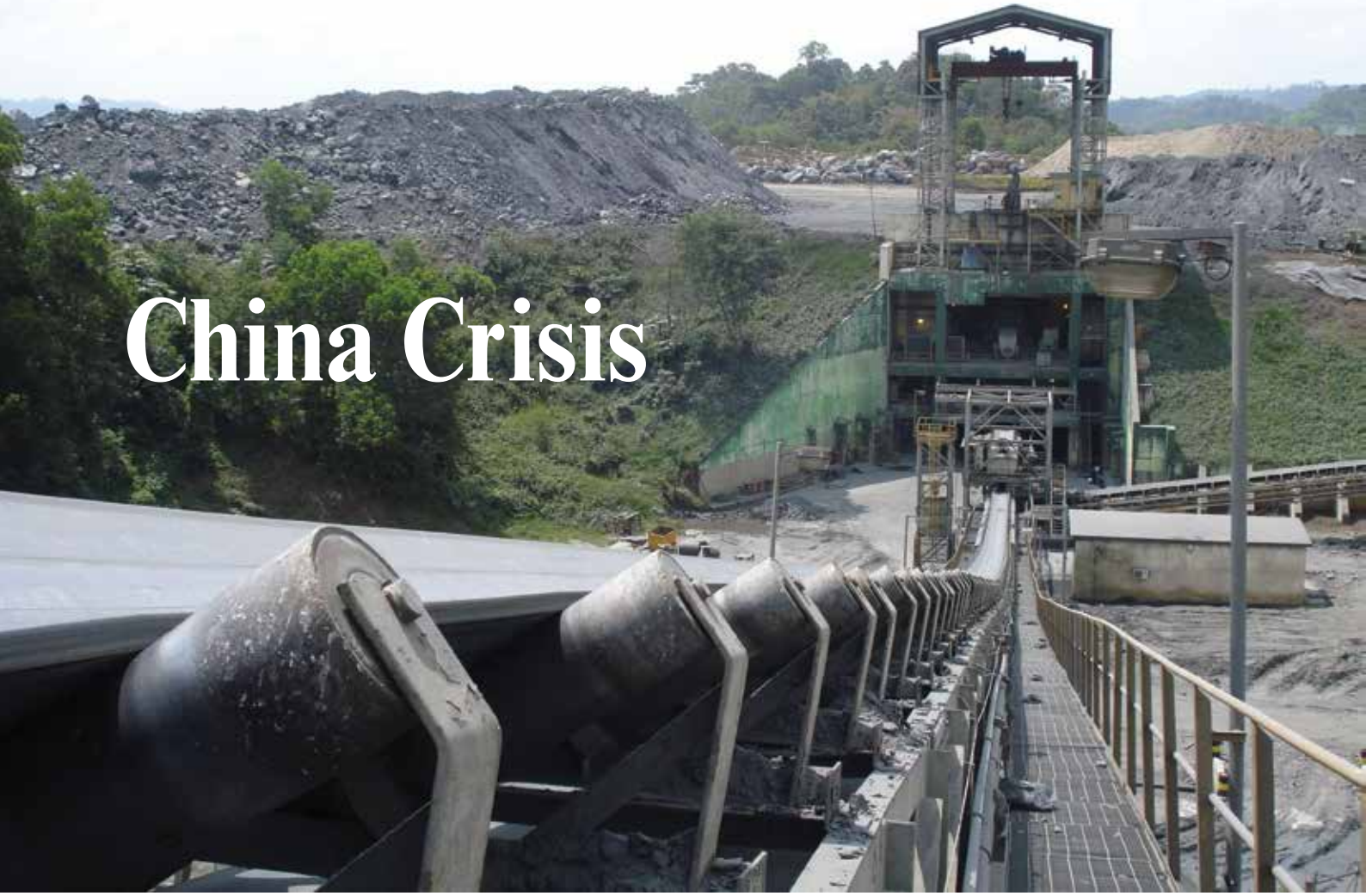
# China Crisis



Going up and up – 48% increase in rubber belting being imported from China.

**How imports from Asia are threatening to destroy the European conveyor belt manufacturing industry.**

For the past twenty years, imports of conveyor belting from Asia into Europe have grown to such an extent that European-based conveyor belt manufacturing now faces possible extinction. Here, Leslie David, an authority on the conveyor belt industry, explains what is happening and why it has such seriously negative consequences for everyone connected with industrial conveyor belts throughout Europe.

## THE ORIENT EXPRESS

There is no doubt that the level of imported rubber industrial conveyor belting used across a wide cross-section of key industries in Europe is growing at an unprecedented rate. By far the biggest single source of rubber belting being imported into Europe is from China. Between 2017 and 2019 imports of fabric reinforced and steelcord reinforced belt grew by 48% to more than 108 million euros.

During the same period, imports from India grew by some 17% to almost 17 million. To put this into perspective, imported belt from China and India already represents between 25% to 30% of the total market. It is growing so fast that one market insider likened it to “an Orient Express train racing towards you at speed”.

## WHAT IS CAUSING THIS GROWTH?

So what is causing this unprecedented growth in imported belt? The answer is, quite simply, price. Industrial conveyor belts are a costly overhead and the incessant demand to cut costs is the biggest driver. At the same time, there has been an abundance of suppliers competing for business, both in terms of actual manufacturers and traders, so the market is more cut-throat than ever before.

Another factor is that while they used to be considered as an important technical component, conveyor belts are now, sadly in my opinion, increasingly viewed by decision makers as a just another commodity. The trend has been for those who run the purchasing departments to make the decisions rather than accepting advice from the engineers actually responsible for operating the conveyors. As a consequence, perceived lowest price is the primary buying criteria rather than performance and lowest cost.

Conveyor belts are surprisingly complex technical components.

Although taking this kind of approach is usually fine when dealing with relatively simple, genuine commodities, the fact is that conveyor belts are surprisingly complex technical components. They play a strategically important role that literally keeps materials and businesses moving. Basing a decision on the up-front price rather than an evaluation based on 'whole life cost' often results in very expensive mistakes being made.

## A GIFT HORSE

To be fair, purchasing professionals (and even most engineers for that matter) would be hard pressed to look a seemingly gift horse in the mouth. When faced with apparently identical specifications and a price difference that can be as much as 50% can certainly represent an enormous temptation. The $64,000 question is how Asian manufacturers can produce the 'same' belt for so much less than a European manufacturer?

I would suggest that the answers that are likely to spring to most minds would be that you are either 'paying for the name' or that the European manufacturer is applying a much bigger profit margin and/or that labour costs in Asia are appreciably lower. Perhaps even a combination of all three. Let's begin with 'paying for the name'. The fact is that 'big name' European manufacturers such as Dunlop Conveyor Belting, Contitech and, perhaps to a lesser extent Semperit, have traditionally built their brand images based on producing belts of much higher quality standards than those competing at the bottom end of the market.

As for the other two 'reasons', I can safely state, having worked on the 'inside' of the industry for quite a few years now, that the bigger profit margins and lower labour costs that people talk about do not stand up to scrutiny. Firstly, given the extreme levels of competition, no European manufacturer would survive for very long if they attempted to apply unrealistic margins. In fact all the European manufacturers that I know could only dream of having a margin that even comes close to double figures!

The 'lower labour costs' argument does not hold water either. The cost of labour, especially in China, has actually been increasing in recent years. In any case, thanks to the higher level of automation nowadays you would not expect to see more than three or four people manning a typical production line. The labour cost element of producing a conveyor belt is therefore very low indeed. So, with the traditional reasons having been shot down in flames, the really interesting question is "So how do they do it?"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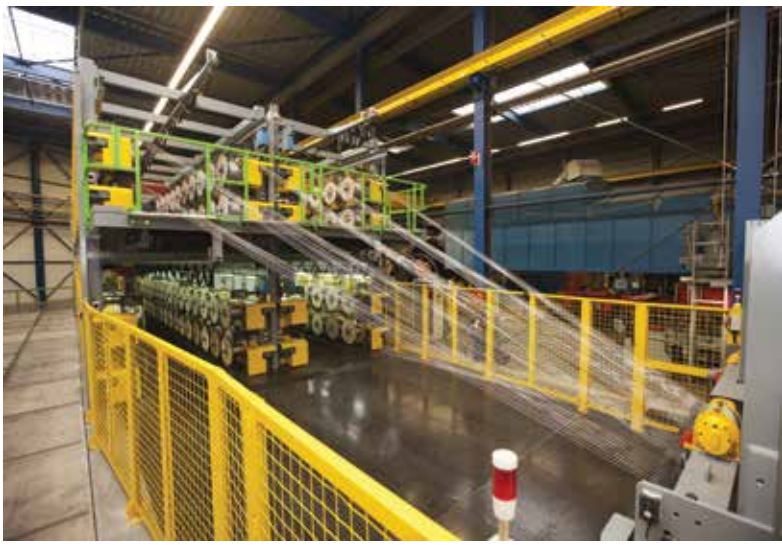

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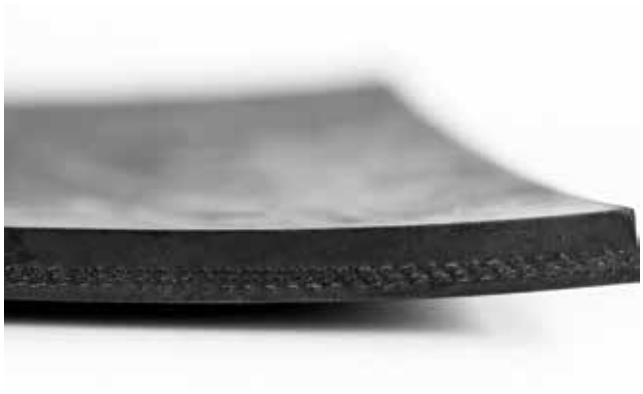

Raw materials constitute some 75% of the total cost of producing a conveyor belt.

## THE COST STRUCTURE

The most important factor to bear in mind is that raw materials constitute between 70 to 75% of the total cost of producing a conveyor belt. Buying power is certainly not a factor because the big European belt manufacturers are all part of some of the biggest tyre manufacturing companies in the world.

This then leaves us with two remaining possibilities – the actual quality of the materials and how those materials are used. The quality of the materials can be broken down to the two main constituent parts of a conveyor belt, which is the carcass and the rubber covers used to protect it.

## THE CARCASS

The most commonly used type of belt is rubber 'multi-ply' with a polyester/nylon (EP) fabric reinforced carcass protected by an outer cover of rubber. This forms some 87% of the belting imported from Asia. It is the carcass that provides the inherent characteristics of a conveyor belt such as its tensile strength and elongation (elasticity or 'stretch' under tension).

Although the belts being offered may state the same specification, there can be huge differences in the actual quality of the fabric plies. In low quality (low cost) fabrics, although the amount of material used in the longitudinal strands (warp) of the fabric may be adequate, the amount of transversal (weft) material is kept to an absolute minimum in order to reduce cost. Although the required tensile strength might be achieved, albeit with a low safety factor, rip and tear resistance is reduced and elongation (stretch) is low.

Low elongation may not sound overly important but insufficient elongation can cause a number of problems including a general inability to accommodate the contours of the conveyor and its drums and pulleys. This can quite easily lead to the premature failure of the belt.

## NOT WHAT THEY SEEM

Another method of cost (price) cutting that is becoming an increasingly common practice found in imported belting is the use of totally polyester (EE) fabric plies in a carcass that is declared as being an EP carcass (polyester/nylon mix) construction. The whole basis of using a mix of polyester and nylon fabric is that it has the best balance of mechanical properties. The use of totally polyester (EE) fabric compromises a whole range of mechanical properties. The biggest danger is that a polyester weft can cause low transverse elasticity, reduces both the troughability and impact resistance of the belt and consequently also causes tracking issues. In addition, less weft in the belt can also reduce rip resistance, fastener strength and ability to handle small pulley sizes. The seriousness of the detrimental physical effects for the end-user are therefore huge. A test I recently witnessed revealed that the tensile strength of the carcass was more than 20% below the specified minimum.

An increasingly common practice - the use of totally polyester (EE) fabric plies in a carcass that is declared as being an EP carcass (polyester/nylon mix) construction.

The simple reason for this deception is that EE fabric costs some 30% less than the cost of EP fabric. This may not seem like a great deal in itself but the fabric plies are a major cost component in any multiple ply conveyor belt. Using the much cheaper polyester fabric is a big help when trying to achieve the perception of a lower 'like for like' price. As far as the manufacturer using these underhand tactics is concerned, they can sleep easy in the knowledge that it is highly unlikely that the end-user will have the kind of laboratory tests carried out that would reveal such a deception.

## THE RUBBER

The rubber used for multi-ply and steelcord conveyor belts usually constitutes at least 70% of the material mass of both multi-ply and steelcord belts and is therefore the single biggest element of cost when manufacturing a conveyor belt. Consequently it is the single biggest opportunity for manufacturers to minimise costs and to compete for orders based on price rather than performance and operational longevity. Two common methods used to keep rubber costs to an absolute minimum are using recycled rubber, usually of highly questionable origin, and the use of cheap 'bulking' fillers such as chalk to replace part of the rubber polymers in the rubber compound.

Because of its adaptability, most of the rubber used in conveyor belting is synthetic. Literally hundreds of different chemical components and substances are needed to create different synthetic rubber compounds to cope with a

Using recycled rubber and 'bulking' fillers such as chalk are common methods to minimise cost and therefore price.

multitude of different (and often combined) demands such as resistance to fire, oil, ozone and abrasion. These chemical components and additives are costly in themselves so a combination of using low grade chemicals at the absolute minimum levels all helps to contribute towards the 'lowest possible cost' objective.

## MISSING IN ACTION

In many cases essential chemical additives are being omitted from the rubber compound mix altogether. The most common example of this are anti-ozonants. These are needed to prevent premature deterioration of the rubber caused by exposure to ozone pollution at ground level and ultra violet light. Random ISO 1431 laboratory testing of imported belt consistently reveals the almost total absence of resistance to the effects of ozone and UV, with belt samples beginning to crack within 6 hours of exposure in the test cabinet. Rubber belts that are not fully resistant to ozone and UV can start to show signs of degradation before they have even been fitted to a conveyor. Despite its crucial importance, not least its huge influence on the working lifetime of a belt, it is extremely rare to find belt imported from Asia that is adequately resistant to ozone and ultra violet.

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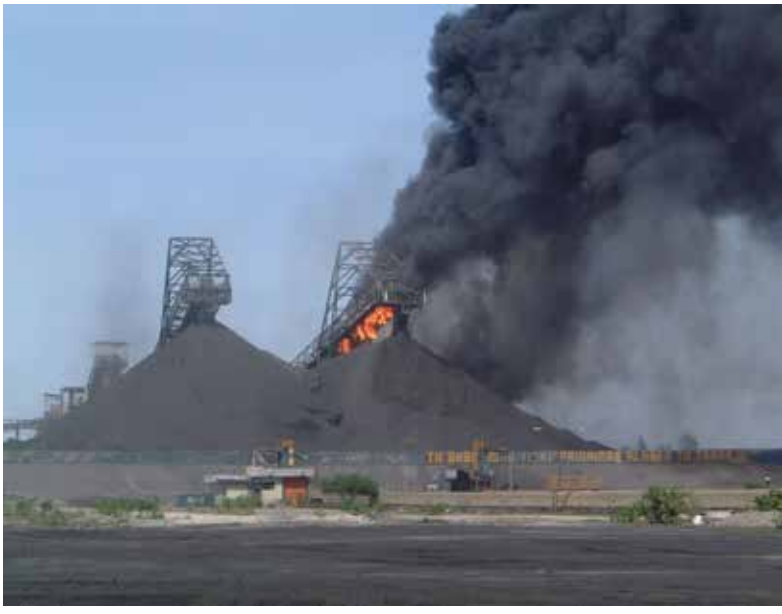
## WEARING THIN

The greatest influence on the operational lifetime of a conveyor belt comes from the level of abrasion resistance of the rubber. As with nearly all other physical qualities, resistance to abrasion is created by using a very specific chemical cocktail within the compound. Abrasion resistance (ISO 4649 / DIN 53516) is measured as volume loss in cubic millimeters, for instance 150 mm³. The most important thing to remember when comparing abrasion test results (or promises!) is that higher figures represent a greater loss of surface rubber, which means that there is a lower resistance to abrasion. The lower the figure then the better the wear resistance. Comparison testing between good quality European-produced belt such as Dunlop Conveyor Belting and Asian import regularly identifies differences in the resistance to abrasion (wear) as much as 50% or higher. One such test recently showed that the abrasion resistance of a sample of an Asian import belt was measured at 220 Mm3. This equates to 47% less wear resistance than the required DIN Y standard of 150 Mm3, so even a 40% price 'advantage' is immediately wiped out by such a huge reduction in wear life.

Apart from using the lowest grade rubber possible, another common ploy is to supply belts where the thickness of the rubber covers are up to 20% (or more) thinner than the promised specification. This represents a huge cost saving for the manufacturer while at the same time reducing the wear life by 20%. So with a much lower resistance to wear and 20% less rubber in the first place, that up-front price that looked so 'economical' to the purchasing department isn't nearly so economical after all. If only they knew!

## PLAYING WITH FIRE?

Having poor resistance to abrasion and ozone is one thing. However, if belts that are sold on the basis of meeting even the most basic ISO fire resistance standards provide an inadequate level of protection then it becomes a matter of life and death.



Belts that provide questionable levels of protection against fire are a matter of life and death.

ISO 340 testing measures the duration of continued burning (visible flame) of six individual samples of a belt after the source of the flame has been removed. The absolute maximum for each sample is 15 seconds with a maximum cumulative duration of 45 seconds for each group of six test samples. In one example I encountered recently the cumulative time that six test pieces of Chinese belt took to self-extinguish was 102 seconds. As one lab technician told me, most samples of Asian import belt "burn like paper".

## HEALTH RISK?

The pressure to compete on price has increasingly led to the use of potentially dangerous chemical substances to artificially accelerate the vulcanization process. When the European Union's REACH (Registration, Evaluation and Authorisation of Chemical substances) regulation EC 1907/2006 came into force in June 2007 concerns over the use of potentially dangerous chemical substances within rubber products should have largely been dispelled. The regulations were introduced to improve the protection of human health and the environment from the risks that can be posed by chemicals. All European manufacturers are legally obliged to register the use of "substances of very high concern" (including those believed to cause various forms of cancer) that are listed within the regulations with ECHA (European Chemical Agency).


Manufacturers outside of EU member states are not subject to the REACH regulations for usage control of hazardous chemicals.

## WAKE UP AND SMELL THE DIFFERENCE!

Manufacturers located outside of EU member states, including Asia of course, are not subject to these regulations and are therefore free to use unregulated raw materials even though they may be prohibited or at least have strict usage limitations within the European community. One of the biggest concerns involves short-chain chlorinated paraffin's (SCCP's) that are commonly used by Asian manufacturers to artificially accelerate the vulcanizing process, thereby reducing production costs. REACH regulations clearly stipulate that SCCP's should either not be used at all or at least only used on a very restricted basis because of their category 2 carcinogenic classifications. They also pose a threat to the environment, which is why they are subject to the Persistent Organic Pollutants (POPs) Regulation in the European Union. Their presence can usually be identified by the unpleasant smell of the rubber. Any rubber technician will tell you that good quality rubber usually has very little smell whereas low quality rubber containing excessive levels of hazardous chemicals such as SCCP's often produce a highly pungent aroma. In other words, you can literally smell the difference!

Although manufacturers located outside of EU member states are not subject to the regulations, those who import belts from Asia ARE responsible for the application of REACH regulation, leaving the manufacturers in Asia free of responsibility for the consequences of their methods. This raises the question of accountability, which I will come to a little later.

## A SIGN OF DECEPTION?

Compliance with CE quality standards is increasingly being stipulated by purchasers of industrial conveyor belts. However, CE accreditation does not apply to conveyor belts because they are not a product category that is subject to specific directives that are required to be CE marked. The letters "CE" used in the CE Marking are the abbreviation of French phrase "Conformité Européene" which literally means "European Conformity". An almost identical mark is being used that many potential users mistakenly believe is a genuine CE mark of European conformity. In reality it actually stands for "China Export", meaning that the product was manufactured in China.


## SELF-INFLICTED DAMAGE

Ironic as it may seem, apart from one exception, virtually all European conveyor belt manufacturers import belt from China and, to a lesser extent, India. They then re-sell it under their own brand in order to supplement their overall output as well as allowing them to compete at the bottom end of the market. However, arguably the biggest proportion of belting is being imported from Asia by traders of all sizes plus a multitude of vulcanizing (service) companies.

## SO WHAT?

Despite the overwhelming evidence of wholesale dumping of huge amounts of rubber conveyor belting, many may well shrug their shoulders and think "So what?" The same attitude may well have prevailed in other industries operating in Europe that have now been largely obliterated by Asian imports such as the steel industry. The fact is that what is happening has several very serious consequences, both in the short and the long-term. These consequences

will impact not only on the European conveyor belting industry but also for the users of industrial conveyor belts in Europe. In my view they can best be summarised as follows:

**Prices** – If imports continue at their present level then Asian manufacturers will no longer need to undercut European prices because the competition will have been killed off.

**Operating costs** – 'Whole life' costs of belts will rise significantly because users will have no alternative but to repeatedly fit and the replace short lifetime, low grade belting.

**Quality standards** – In the pursuit of profit and without the accountability, quality standards and the benchmarks of quality will decline even further. Conveyor belt technical innovation and product development, in which Europe has always led the world, would become a thing of the past.

Less than 5% of rubber conveyor belting is recycled.

**Choice** – End-users will ultimately be left with little or no access to premium quality and specialist performance belt options such as high impact, fire resistant, oil resistant and heat resistant.

**Product warranty** – Finding genuine accountability amongst Asian manufacturers is notoriously difficult. Simply establishing lines of communication with people who are sufficiently knowledgeable and prepared to handle complaints is extremely challenging.

**Technical support and guidance** – There would undoubtedly be a loss of access to expert technical support and guidance.

**Health & Safety** – Asian manufacturers are not subject to European health and safety regulations such as REACH compliance.

**The threat to the environment** – Last but certainly not least, the sheer volume of imported belt poses an enormous threat to the environment. As mentioned earlier, Asian manufacturers are not subject to EU regulation concerning Persistent Organic Pollutants (POPs). Arguably of even greater concern is the enormous environmental footprint because rubber conveyor belts are basically made from oil derivatives. In fact a typical conveyor belt is effectively 45% oil. One ton of scrap rubber will usually contain some 500 liters of oil. The manufacturing process itself consumes high amounts of energy. Low grade Asian belting is consumed and then discarded at least twice as fast as longer lasting, European-made higher quality conveyor belt. Because of its integral mixture of fabrics, steel and rubber, less than 5% of rubber conveyor belting is recycled so the majority of used belting simply becomes 'landfill' waste.

## WAKE UP AND SMELL THE COFFEE!

Not every conveyor belt produced in Asia is of inadequate quality because that is not the case. However, based on what I and my associates in the industry have seen at first hand and continue to experience, the vast majority of imported belt does not provide value for money. Nor is it safe or environmentally friendly. In the face of these growing levels of imported belt from Asia there is no denying that the outlook for the European-based conveyor belt manufacturers (and the industries they supply) looks very grim indeed. The only hope is that enough manufacturers, traders and end-users will wake up and smell the coffee and make a concerted effort to substantially reduce this unhealthy and dangerous reliance on cheap imported belt. The clock is ticking.

## LESLIE DAVID

*Author's Postscript: I had virtually written this article before the seriousness of the outbreak of Coronavirus in China became apparent. While the content was undergoing various levels of approval and verification the world has changed a great deal. I would like to think that in light of what has been happening, Europe and the West in general will now recognise the very real dangers of not being self-sufficient for so many vital components like conveyor belts and the everyday items that we use in our personal lives. We certainly cannot say that we have not been warned.*

## ABOUT THE AUTHOR

After spending 23 years in logistics management, Leslie David has specialised in conveyor belting for over 14 years. During that time, he has written numerous technical guidance features and papers and has become one of the most published authors on conveyor belt technology in Europe.