Reaping the benefits of stainless steel conveyor belts

A combination of increasingly stringent health and safety legislation and growing consumer awareness of food standards is placing new demands on the meat processing industry; from sourcing and traceability to risk management planning, there is no room for error.

This means that every aspect of the process operation – people, systems, materials and equipment – is coming under scrutiny. From hazard analysis to human health risk, it is vital that every possible precaution is taken to ensure maximum standards of hygiene are maintained.

One area that many processors are now looking at is the material used for conveyor belts. Trends have varied around the world but generally speaking it is fair to say that the latter part of the 20th Century saw a move away from solid steel belts to lighter, lower cost plastic alternatives.

Finnish research

Now the tide appears to be turning back on favour of steel belts, with a number of processors deciding that the advantages in terms of hygiene and durability outweigh the higher initial cost. The case for stainless steel was further enhanced recently with the publication of research by Finnish food laboratory VTT Expert Services Ltd confirming that the risk of problems caused by bacterial build-up can be reduced, simply by upgrading to a stainless steel conveyor.

One company for whom these findings came as no great surprise is German meat processor, Bochumer Fleischhandel. Based in the middle of the Ruhr district, Germany's industrial heartland, the company processes approximately 250 tons of pork and beef a day and has been using Sandvik stainless steel belts for many years.

For owner-manager Heinz-Wilhelm Kesten, hygiene is not just a legal requirement; it is something that impacts on every part of the business, from the availability and productivity of systems to bottom line profitability. "Ever higher quality requirements and growing consumer demands make permanent microbiological, physical and chemical control of our products indispensable," he stressed.

This requires a conveyor belt material that can be cleaned quickly and efficiently – short cleaning times ensure high availability – using food-compatible cleaning agents.

Another important consideration for Bochumer Fleischhandel is that the cleaning process should represent best practice in ecological and economical terms, with low water consumption and low use of detergents and other cleaning chemicals.

Investigations into the various options available concluded that solid stainless steel belts represented the best investment for their meat cutting operations.

"Considering the quantities and weights handled, link belts or other alternatives are *Continued on page 12*

not advisable for reasons of load resistance alone," commented Manfred Braun, strategic consultant to Bochumer Fleischhandel.

"Moreover, thanks to their smooth, wear-resistant surface, steel belts are easier to clean than alternative belt materials. In terms of hygiene, steel belts are unrivalled."

This was clearly borne out by the VTT research, which looked at the 'cleanability' of three types of conveyor: a stainless steel (AISI 301) conveyor belt, a solid plastic belt, and a plastic conveyor of slat construction. All three were tested in pristine condition and also with knife damage to replicate everyday wear.

A suspension of three types of microbes – Pseudomonas fragi, Candida albicans and Listeria innocua, chosen to replicate those found in meat processing facilities when cleaning is insufficiently thorough – was applied to the belts and left for predetermined periods. The various belt samples were then cleaned and the microbial loads measured.

VTT Expert Services found that: 'stainless steel is more cleanable than the two different plastic surfaces tested according to the culturing results. The difference is more significant for damaged surfaces'.

As Jürgen Seidel, belt sales manager at Sandvik, explains, the benefits of a steel belt's smooth, hard surface are three-fold. "Firstly, there are no holes, textures or

fibres in which bacteria can hide and grow. Secondly, they are far more resistant to knife damage or the impact of bones, and are therefore less likely to suffer cuts, again where microbes can develop. And thirdly, the belt is exceptionally easy to clean, whether by heat, pressure, brushes, detergents, chemicals or any combination of these."

Cleanliness is not just a health and hygiene matter; it can also impact on costs. As well as low water consumption and reduced cost of cleaning chemicals or detergents, the ease with which a solid steel belt can be cleaned also means less downtime.

"Conveyor steel belts from Sandvik are

easy to clean and are available for use again after only short cleaning times and that is important for our multi-shift operation," Heinz-Wilhelm added.

The other area in which the qualities of stainless steel are immediately apparent is durability. The strength of a stainless steel conveyor makes it suitable for operations such as cutting/deboning, and ensures a long working life with low maintenance and repair requirements. Belts used in meat processing also have to be able to resist corrosive materials like blood, fatty acids and salt and will often operate in conditions of high humidity and varying temperatures. Again, the properties of stainless steel make it ideally suited to environments where the working life of lesser materials would soon be compromised.

"Many meat producers have become aware of this difference in conveyor belt technology and a trend has emerged towards going back to the roots, back to long lasting, robust steel belt conveyors," commented Manfred Braun.

As a leading meat processor with a reputation stretching back over nearly 40 years to protect, Bochumer Fleischhandel is not prepared to take risks where quality is concerned. This drive for quality has seen the company invest in the best processing and handling equipment available. And as far as they are concerned, this means conveyors based on stainless steel belts. ■