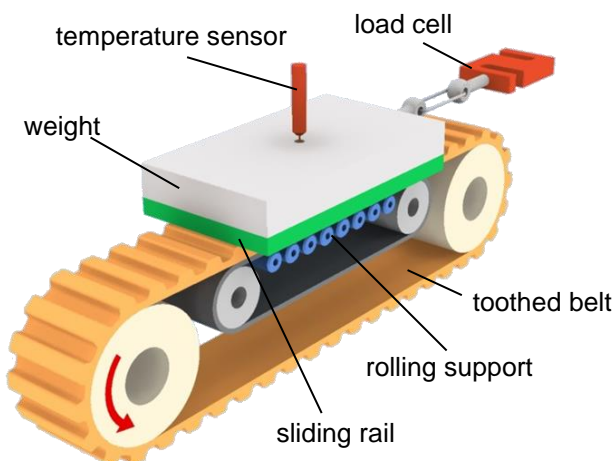


Friction and wear behavior of fabric coated toothed belts

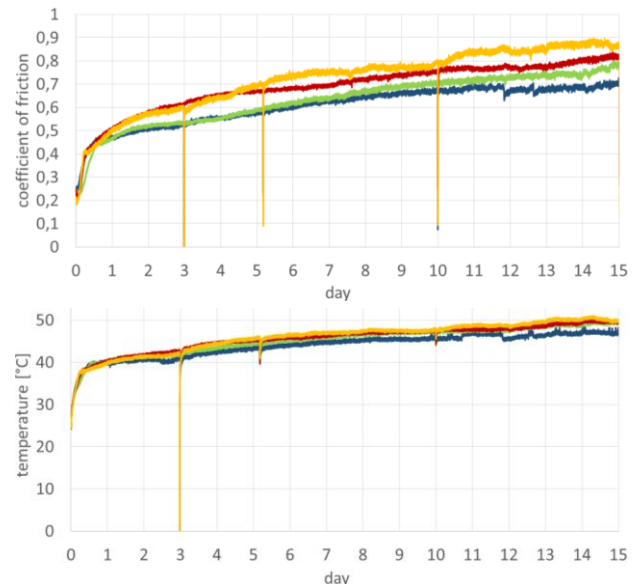


Toothed belts are used in many different technical applications. In addition to drive technologies these are also used for conveying of goods. Thereby the good is transported directly on the back of the belt. Especially in long conveyors tracks the toothed belt has to be supported against sagging. For this purpose sliding rails are used which also transmit the weight force of the goods into frame of the conveyor. Therefore transport toothed belts are often provided with textile fabrics to reduce friction and wear against the sliding rails. Especially in materials handling applications the coefficient of friction (cof) plays a significant role. This has among other things a big influence on the driving power or the heating of the system. Another major factor in this connection is wear which effects the technical lifetime and operational safety.

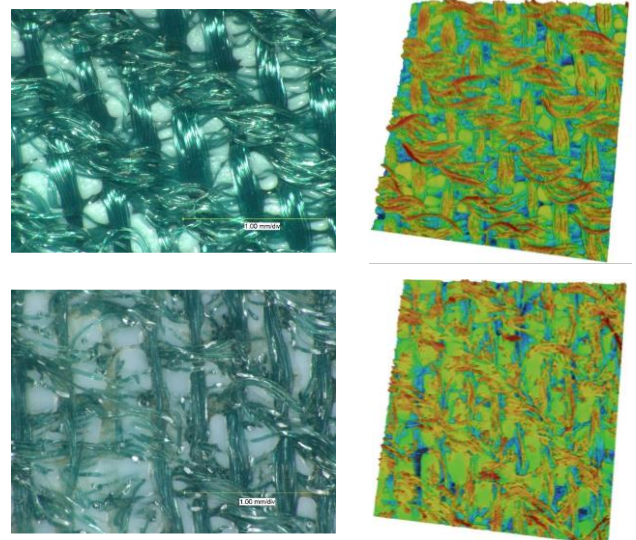
For the above mentioned reasons the knowledge of the friction and wear behavior of textile coatings of toothed belts and sliding rails is an important research topic. For the investigation of the different wear couples the toothed belts are clamped upside down on the pulleys. Thus there is the ability to place the sliding rail material directly on the tooth side. The surface pressure can be varied very easily by placing defined weights. Furthermore the sliding speed can be adjusted.



The experimental layout described makes it possible to record the friction force directly by using a load cell. The determined measured values are transferred to a computer which calculates the coefficient of friction using the quotient of friction force and weight force. Additionally the temperature of the wear couple is logged by a temperature sensor which is placed directly in the sliding rail. To prevent a further heat input the toothed belt runs on a rolling support.



Besides the long-term recording of the progression of cof and temperature also the wear of the fabric coating and the sliding rail is evaluated. For this purpose incident light microscopes are available at the professorship of Materials Handling & Conveying Engineering. Furthermore there are laser microscopes which make it possible to do three-dimensional images of the surface topology of the fabric coating.



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