



Robert Kling

**Personal data:**

Robert Kling from Voith Paper in St. Pölten, Austria, is an expert on the subject of chemical and mechanical press felt cleaning.

Chemical press felt cleaning in the press section

## Felt washing for clean clothing

**The felts used in a paper machine press section are subject to extremely stringent demands and must ensure both optimum dewatering and production process stability.**

**twogether:** In cooperation with the Kolb chemicals company, you prepared a comprehensive study concerning the cleaning of press felts. Your research also deals with felt contamination. Could you tell us what effects these contamination have?

**Robert Kling:** The batt fibers act as a type of filter and retain impurities from the production process. This is unavoidable, but such soiling can lead to a variety of problems. In most cases, these relate to a loss of paper quality, while another phenomenon that can be observed is sheet crushing.

Sheet stealing is another negative side-effect: the paper web has the tendency to suddenly run in the wrong direction in the press. However, the greatest disadvantage for the papermaker derives from the fact that contaminated felt has negative consequences on paper machine runnability. Press dewatering can deteriorate, which leads to an upward

trend in the number of sheet breaks. Increased vacuum in the suction rolls and uhle boxes leads to higher energy consumption and felt wear. Should these problems become acute, the only solution is a felt change. The resultant additional shutdowns naturally result in production losses.

**twogether:** Today, chemical felt washing is indispensable for papermakers. What is the basis for the choice of chemicals?

**Kling:** There are a couple of general rules, e.g. calcium carbonate filler can often be easily removed with acid cleaning agents, while alkali agents are normally the best solution for organic contaminants. However, the most suitable cleaning agent in practice must be established in the course of laboratory testing. Frequently, it becomes apparent that optimum cleaning results are achieved through a combination of diverse cleaning phases. It is also interesting that the average consumption of



cleaning chemicals varies considerably according to paper grade. In the case of tissue, specialty papers, board and packaging, it can be assumed that around 250 g of chemicals per metric ton of paper will be needed for felt washing. Conversely, only 50 g/t are needed for graphic paper. This discrepancy mainly derives from the fact that there are many graphic production lines where no chemical washing is carried out, largely due to the clean raw materials employed. During the optimization of felt washing, we work closely with the chemicals supplier of the respective paper mill.

**twogether:** What are the most frequent causes of the problems that occur?

**Kling:** There are a number of typical risk factors. For example, overdosing with chemicals, or badly coordinated dosing points in the approach flow constitute one such problem. In general it can be said that care must be taken to ensure that the most uniform

conditions possible are created in the approach flow and the paper machine. This applies to the pH-value, retention and water hardness. Grade changes are especially critical, if they are linked to alterations in the chemicals system. When we work with paper mills, we naturally look for such critical points. This often means that a considerable percentage of depositing can be prevented. Clearly, this approach should first be tried and only then should the question of how contamination can be removed from the felt be considered.

**twogether:** What methods are available for felt washing?

**Kling:** Felts are always cleaned mechanically, i.e. with high- and low-pressure showers and uhle boxes. Chemicals merely play a supportive role. In principle, one can differentiate between a continuous felt treatment with chemicals, which is relatively rare, and discontinuous treatment. Occasionally, the felts are subjected to discontinuous treatment, which

can be done either during production or shutdown. However, the most frequently applied method is cleaning during a shutdown. This offers the advantage that negative effects on production are avoided and the felt can be treated with relatively high concentrations.

**twogether:** What recommendations do you have for paper producers with felt contamination problems?

**Kling:** A number of aspects require consideration during felt washing optimization, e.g. the position of the showers, the choice of chemicals and the coordination of subsequent cleaning steps. Clearly, the design of the felts plays a major role how easily the felts get dirty and then can be cleaned. In many cases, the best solution is when answers are sought during close cooperation between the paper mill and its suppliers of chemicals and clothing. I think this offers the best chances that paper quality and paper machine runnability can be noticeably improved.