Fig. 1: A free benchmark test for an initial energy efficiency evaluation of screening systems is available online: www.ScreenFitNavigator.com.

ScreenFit Compass 2011 analyzes screening systems

Study: 70% worldwide waste energy

In the benchmark ScreenFit Compass 2011 study, Voith Paper analyzed 80 fine-screening systems of various generations, makes, models and sizes. The results were clear: 70% of screening processes analyzed worldwide use energy inefficiently. That is an ailment Voith "ScreenFit Doctors" can help cure. They offer expert advice and support to papermakers about rebuilding projects to avoid wasted energy. Voith also offers, via the Internet, a quick analysis of how well or poorly a paper manufacturer's existing screening system performs with regard to energy efficiency.

The ScreenFit Compass process identified only 24 of the 80 systems as energy efficient. Twelve were in the mid range for energy efficiency and have clear possibilities for improvement. The remaining 44 systems proved inefficient, with a very high optimization potential. For such cases, Voith Paper ScreenFit Doctors can provide sustainable solutions for an energy efficient screening process in stock preparation.

In the study, the designs of 80 stock preparation systems worldwide were compared to the current state-of-the-art technology.

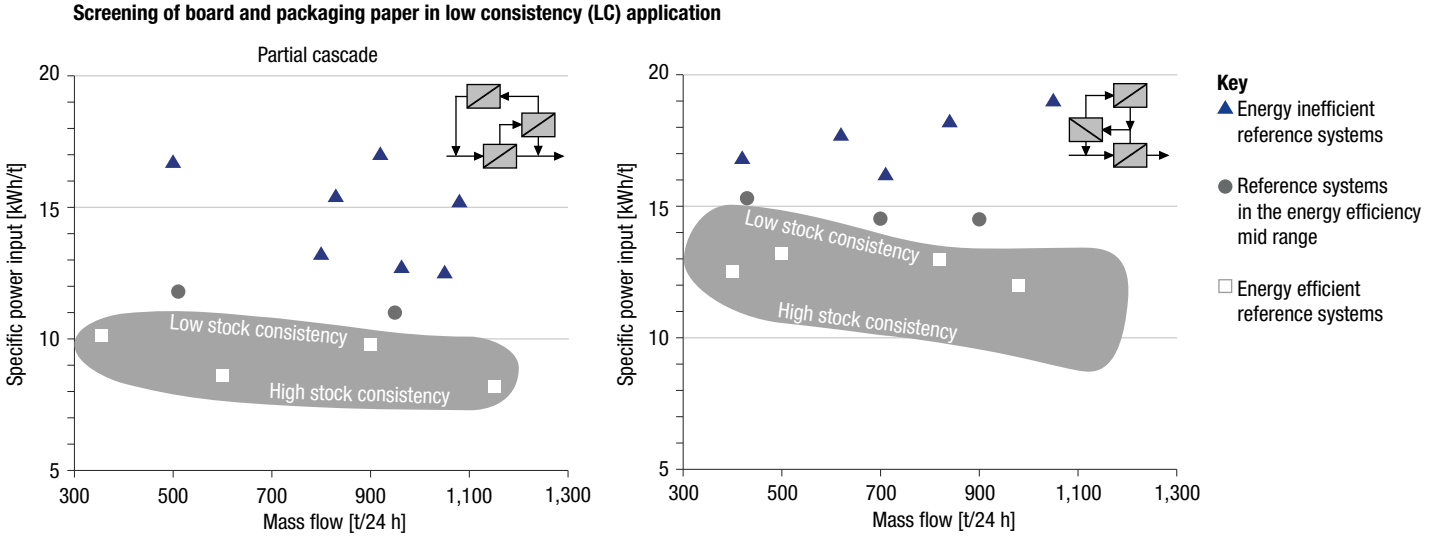
The findings rated the energy consumption of various manufacturers based on stock consistency, screening efficiency, operating mode and paper grade. A full cascade system consumes more specific energy than a partial cascade system because the full cascade returns stock to the upstream stage. Operating in full or partial cascade, however, depends upon technical factors such as screening efficiency and cannot be made dependent on the specific energy requirement. The specific power input refers only to the screening machines in the study. Pumping energies were not taken into account in the calculation.

The trend is toward innovative bar profiles

The wrong choice of screening concept or operation of obsolete systems appear to be the main causes of the poor results in the ScreenFit Compass 2011. To counter those poor results, Voith Paper offers its C-bar screen basket line, which continues to be enhanced with ongoing innovations. Over the past few years, the relationship between screen basket size and screen surface has constantly increased with C-bar family baskets while slot widths have stayed constant. As the latest screen baskets get smaller in size, production capacity increases, and screens once operated in parallel can be switched off. Investment and operating costs can thus be substantially reduced.

Along with the right choice of screen baskets and rotors that match them (e.g., the MultiFoil rotor), stock consistency and the interconnection of the individual screening stages contribute considerably to specific energy consumption. For this reason, modern Voith stock preparation concepts aim at increasing stock

Fig. 2: Significant examples from the ScreenFit Compass 2011 benchmark study of screening systems for board and packaging paper. The study clearly shows how often specific power input is well exceeded. Systems in the gray fields correspond to the current state of technology.



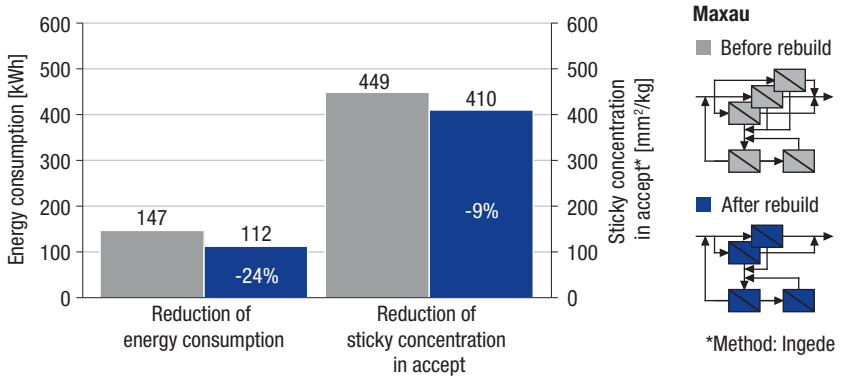


Fig. 3: Reduction of sticky concentration and energy consumption after conversion to C-bar R in the first stage and to C-bar Q in the final stage of the screening system in Maxau. One of the three first-stage screens could thus be shut down.

consistency and improving the relation between energy input and screening efficiency.

The compact design of the new screening systems reduces the size of the stock preparation, which in turn leads to lower investment costs. However, choosing the right screen basket depends not only on open screen surface but also on stock parameters, such as fiber length.

ScreenFit Doctors already successful in practice

The ScreenFit Doctors have proven successful several times, such as in the southern German StoraEnso Maxau paper mill, where graphic paper is produced. The full cascade screening, with three Voith vertical screens working in parallel in the first stage and one screen each in the second and third stage were all equipped with Voith C-bar S baskets.

The intake stock consistency in the fine screening can be classified as low. The conversion to C-bar R for the first two stages and C-bar Q screen baskets for the final stage meant the entire open screen surface of all screens increased nearly 50% – with the same slot width. After shutting down a vertical screen in the first stage, sufficient screen surface still remains. With improved stickies removal, the annual energy saving is about 300,000 kWh. A future throughput increase remains an option for the operating company.

Free benchmark test on the Internet

Voith Paper has now created a way to subject the fine screening for brown and graphic paper to a quick, non-binding self test via the Internet (www.ScreenFitNavigator.com). The calculation for this initial check is based on the results of the screening system study. System operators need only name the system type, identify a few parameters, and give information on the main quality focus for the screening. The program then draws up an initial energy evaluation of the screening system. The energy efficiency of the system becomes visible on a color bar from green to red.

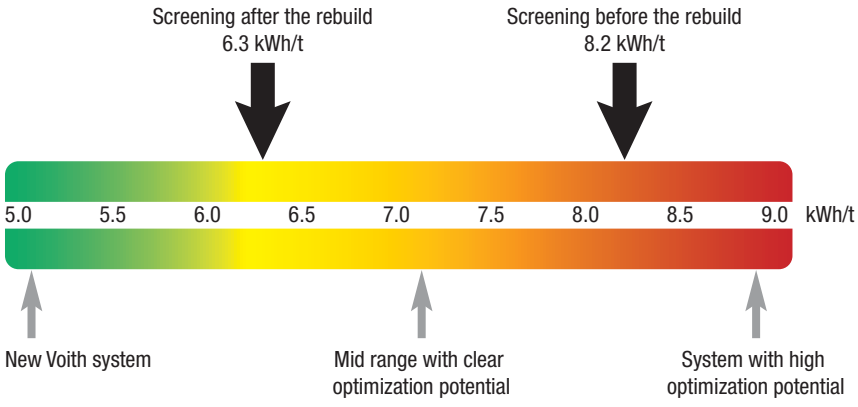


Fig. 4: As a result of the self test with the ScreenFit Navigator, every user gets a first estimation of the energy classification for the system.

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